

# **D** THE JOURNAL OF **DERIVATIVES**

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**M**y last several Editor's Letters have commented on the elevated level of economic and financial uncertainty around the world. Uncertainty is "risk," but it is quite different from the risk we derivatives fanciers are most concerned with, which is volatility. Uncertainty is not knowing where we're heading; volatility is how bumpy the path will be along the way. The disconnect between these two types of risk is reflected in the wide dispersion we are seeing today among measures of economic performance. Short-term interest rates are extremely low and stable, but uncertainty about future inflation and credit conditions is great. Business profits and stock prices are booming, while employment and GDP growth are lagging behind, and the U.S. housing market appears to still be heading downward. The outlook for what the future will bring in the Eurozone or in Washington, DC, could hardly be murkier. So, going forward, probably the thing we can be most certain about is that we will continue to be highly uncertain about a lot of things. For a while. And how long is "a while?" Who knows?

Turning to the Summer 2011 issue of *The Journal of Derivatives*, where "volatility" is still just volatility, our lead article by Mixon looks at different measures of the volatility "skew" to explore what they actually measure and propose one that facilitates comparison across underlying assets and over time, with levels of baseline volatility that may be quite different. Next, in extending derivatives pricing models to classes of return processes with nonconstant volatility, it has been necessary to introduce new solution techniques, in many cases relying on Monte Carlo simulation with continuous-time theoretical models being replaced by discrete-time approximations. In the continuous-time framework, constraints are introduced on functional forms and parameter values to prevent negative variance. The Heston model, which models variance as a mean-reverting square root diffusion process, is a well-known example. Unfortunately, the discrete-time approximation to the Heston variance process is not so well behaved and does produce negative variances within a simulation, and possible solutions, such as simply throwing out bad simulation runs or replacing negative variance values with zeroes, introduce biases into the process. Zhu provides a neat trick to eliminate this problem.

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“Exotic” option payoffs typically depend on contingencies that are much more complicated than those of familiar plain-vanilla contracts. In some cases, these mainly appear to be elaborate ways to speculate on details of the probability distribution for the asset price at expiration or of its price path along the way. In others, however, the exotic features correspond to the buyer’s actual risk management needs. Among the latter are quanto forward-starting floating-strike Asian options. Chang et al. provide closed form approximation formulas for these weird-sounding but useful instruments. In contrast, the next two articles explore exotic structured products sold to retail investors, which may well fall into the former category. In both cases, part of the appeal is a minimum guaranteed payout, with the possibility of receiving a higher return under certain (hard-to-value) conditions. Baule and Tallau look at “bonus certificates,” for which the minimum payoff is the level of an underlying stock index on expiration day, but it could be higher by an amount that depends on both the terminal stock price and whether the price path breached a prespecified barrier anytime during the life of the contract. Bernard et al. consider “locally capped” contracts, which return the initial principal and perhaps a small interest rate, plus an additional return that cumulates every period at a rate equal to the return on an underlying index during that period or a fixed maximum, whichever is lower. What is surprising is not that the exotic features end up lowering the average return to the investor. It is that investors nevertheless buy these instruments, presumably without fully understanding how much return they are giving up in the process.

In our final article, Jarrow offers his philosophical perspective on building, testing, and using financial models in risk management.

As is appropriate in this season, let us turn our attention from the stress surrounding the many ongoing financial and political problems we’re facing to welcoming a new generation of graduates from colleges and universities around the world. Congratulations to this year’s crop of freshly minted graduates with BA, Masters, and Ph.D. degrees, and to their parents, spouses, and friends whose encouragement and support have helped them achieve this happy occasion!

**Stephen Figlewski**  
**Editor**