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At last count, there were nine Democrats and 10 Republicans currently running for President of the United States, in a race that will not be decided for a year and a half. If we add the perennially strong candidate "None of the Above" to both camps, the total number of contestants reaches 21. Since all readers of *The Journal of Derivatives* understand that options are valuable, the more we have, the better off we are. So right now, we must be ecstatic about the 2008 election campaign. In theory.

Turning to this issue of *The Journal of Derivatives*, the common theme in the five papers is understanding and managing problems that come up in implementing theoretical derivatives models in the real world. Each paper takes a fairly clear theoretical model and shows how significant difficulties develop when one attempts to turn it into an operational tool for use in the real world.

In the first article, Borovkova, Permana, and v.d.Weide consider how to extend the standard lognormal diffusion model that leads to convenient closed-form solutions for options in the Black-Scholes framework to the case of derivatives on positions that combine both long and short exposures, such as options on spreads and options on baskets that include short positions, for which the standard lognormal distribution is not a tenable assumption. Their elegant, straightforward, and effective solution, is to use negative and/or shifted lognormals. The approximating distribution is readily derived, and since it remains within the lognormal family, it leads to closed-form valuation equations. The second article addresses a problem that is increasingly prevalent: pricing corporate securities with derivative features such as convertible bonds, that are simultaneously exposed to equity risk, interest rate risk and default risk. Derivatives problems with multiple stochastic factors lead to quite complex pricing models, especially when the risk factors are correlated with one another. Chambers and Lu are able to devise a recombining lattice structure in which such problems can be readily handled.

Practitioners who use theoretical valuation models in trading derivatives start by calibrating their models to the market. Parameter values are implied out from observed prices in order to make the model consistent with the market. Academic researchers face a

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similar problem in testing alternative theoretical models against one another by comparing their abilities to match market prices. Anyone who has done this quickly understands that there are different approaches, and the choice of objective function (whether to minimize discrepancies in dollars, or in percent, or in some other metric) makes a difference in the outcome. In our third paper, Detlefsen and Härdle demonstrate how much difference this seemingly arbitrary choice makes.

Next, Hugu and Rom-Poulsen address a problem that arises in using Monte Carlo simulation to value derivatives that are path-dependent but also allow early exercise. These are some of the most computationally intensive problems in derivatives because they require two levels of simulation: simulation of an underlying interest rate process plus a subsidiary simulation going forward from each possible exercise point. The difficulty the authors point out, and offer a solution to, is that the sampling error in the sub-simulations becomes confounded with volatility of the underlying and produces an upward bias in the estimated value of the security. Our final paper considers a problem somewhat like Hugu and Rom-Poulsen's, in the sense that it disappears asymptotically, that is, it is resolved by brute force if enough computer power is thrown at it, but it has a significant impact when an approximate solution must be obtained in a reasonable amount of time. Here the difficulty arises in using a finite difference solution to the fundamental partial differential equation, because the boundary condition at the initial date requires all of the probability mass to fall on a single point. The numerical problem this can cause may only crop up in the middle of a calibration run, but it can make the estimation break down entirely. Hurn, Jeisman and Lindsay show how to eliminate it simply by recasting the estimation in terms of the cumulative distribution function rather than the density.

In this season, like butterflies coming out of their cocoons, students all over the world are celebrating their emergence from the Ivory Tower into the real world, equipped with fresh new college and graduate degrees. And parents all over the world are celebrating the end of tuition payments. We offer our hearty congratulations and best wishes to all of them.

Stephen Figlewski
Editor

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