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Anyone who has been reading the Editor's Letters for the last several issues has heard me wonder how the financial markets could be so calm when elsewhere in the world, crises and catastrophes seemed to loom on all sides. Well, as of the beginning of August, it appears that the missing financial volatility has been located. It was first discovered hiding among sub-prime mortgages, but it has been rapidly extending outwards through the credit market and the stock market.

Sorry I asked!

This issue of *The Journal of Derivatives* starts off with an article exploring the interface between models and the market for swaptions. Swaption values depend on the dynamics of the underlying interest rates. Term structure models have gotten more and more complicated these days, since they need to be constructed to exclude embedded arbitrage opportunities for any security but to allow the yield curve to evolve with multiple degrees of freedom. Theoretically, the number of stochastic factors in a term structure model can be very large—as many as the number of future swap payment dates, for example. But a model that will be used in practice needs to be computationally efficient enough to support trading activity in real time, which limits the number of factors that can reasonably be used. Fan, Gupta and Ritchken ask, and answer, the question of how many factors are really needed for an adequate swaption model. Their answer is that for pricing a swaption, a single factor model is actually okay, but hedging performance can be significantly enhanced using 3 or 4 factors.

Derivatives theory and practice also interact with regard to the well-known property that an option's value depends on the volatility of the underlying asset, but not on its expected return. In the basic Black-Scholes framework, the drift of the underlying stock is just assumed to be a constant parameter μ, but mean reversion is a more plausible assumption for many kinds of underlyings. The problem is that expected return is irrelevant for option pricing and one only needs to know the volatility, but you have to take proper account of the drift process in order to estimate the volatility from market returns. Lo and Wang discussed this problem in the context of pricing an option on a single asset; in our second article Korn and Uhrig-Homburg extend the analysis to estimating correlations,

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where it is compounded by leads and lags in the price dynamics of the two correlated instruments.

Extracting parameters from market prices is at the heart of the third article, too. Several of the newest derivatives are based on nonstorable underlyings, electricity being a prime example. Pricing must be done off of a forward curve, rather than off the price in the spot market. But actively traded electricity derivatives have Asian-style payoffs, based on the average price of the underlying over some time interval, and this is compounded by strong seasonality. Extracting a smooth implied forward curve from market prices of electricity derivatives presents a considerable challenge, that the authors are able to solve. The fourth article, by Jin, et al, also deals with implementation of an interest rate model. Mean-reversion in the rate and time-varying volatility are implemented as discrete jumps in the lattice, which can lead to computational difficulties. Jin, et al,, show how to avoid them using an approach based on Ehrenfest functions. Our final article looks at flexible chooser caps. A cap contract is composed of a number of options, one caplet for each repricing date. A "flexible chooser cap" gives fewer caplets, but allows the holder the option of choosing when to exercise them, which significantly increases the optionality.

Ohnishi and Tamba show how to sort through the optimal exercise strategy and the resulting valuation for the flexible chooser cap.

It is the "dog days" of August right now, and much of the world has scattered to their favorite vacation, or at least weekend, spots. Your Editor, for example, is currently enjoying spectacular scenery high in the Colorado Rockies. Alas! By the time you are reading this, we will all be back to business as usual. I hope everyone did have a good summer—despite the volatility. And now, whether in school or on the job, best wishes to all for the coming Fall semester.

Stephen Figlewski
Editor