At this point, in August 2004, uncertainty abounds in every direction one looks. The U.S. economy, that seemed to be finally recovering from the doldrums of the last few years, has stumbled seriously. World oil prices are hitting new all time record highs every day. And, of course, between the war in Iraq and the upcoming U.S. Presidential election, the political future, both international and domestic, looks awfully murky. Even the weather is providing nasty shocks, as hurricane Charly has just finished wreaking havoc all across Florida. With all of this risk, it ought to be a great time for derivatives—if only we knew the underlying probability distribution that all of these random draws were coming from. But that seems to be as uncertain as everything else. Luckily, we still have theory, that lets us make our own assumptions about the data generating process, until the real world calms down a little!

Modeling and managing default risk is probably the single most important area of both research and real world innovation in derivatives today. But neither the structural approach, which focuses on the size of the borrower's assets relative to its liabilities, nor the largely statistical reduced form approach, have proven to be entirely satisfactory. Our lead article, by Giesecke and Goldberg, offers a new kind of hybrid, that connects credit risk to the borrower's assets and liabilities, as in a structural model, but retains the fundamental unpredictability of default of a reduced form model. The key is that default is triggered when assets fall below a given level, but investors are not sure where that level is. The model allows observed price behavior to be incorporated into the market's information set in a plausible way, while providing an explanation for positive credit spreads on short term debt, even for apparently solvent borrowers.

It is well understood that volatility exhibits more complex behavior than the standard Brownian motion of the early option pricing models, which has led to more elaborate and more realistic volatility modeling. A similar recognition is under way with respect to correlations, as basket options, credit products, quantos, and other kinds of derivative instruments based on multiple risk factors have become increasingly prevalent. Copulas, essentially unknown in finance until a few years ago, provide a way to model dependence in a flexible and powerful way. But the common copula functions still may not have enough flexibility to be calibrated simultaneously to market prices for both plain vanilla options on individual risk factors and, shall we say multi-flavor?, instruments

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that depend on the correlations among them. In our second article, Bennett and Kennedy present a simple, but very general, technique for modifying the basic Gaussian copula to do this easily.

Next, Klein shows that the two standard textbook explanations of an interest rate swap, either as a portfolio of interest rate forwards, or alternatively, as a long position in a fixed rate bond matched with a short position in a floating rate bond lead to different prices, or more precisely, to different price ranges in the real world. The article focuses on the role of the market maker, who will nearly always be in the middle between two end-user swap counterparties. Klein shows both theoretically and empirically that it is the fixed and floating interest rates faced by the marginal market maker, rather than the ultimate counterparties, that should actually determine the equilibrium swap spread. In the following article, Chatrath and Christie-David give us a very close look at how futures prices behave during an expiration month, as trading shifts from the maturing contract to the next one. Then, in our final article, Černý offers an intuitive explanation of Fourier transforms, yet another powerful, valuable, but not entirely familiar technique from advanced probability theory, that has greatly broadened the range of derivatives models for which closed-form solutions can be obtained.

By the time you are reading this, both the lazy "dog days" of August, as well as the Republican convention in New York, will be long past (thank heaven!). Best wishes to all for success in the fall semester.

Stephen Figlewski
Editor