titioners will find other situations in which contingent claims pricing models that can be solved only with numerical techniques can be of use in analyzing complex securities.

REFERENCES

1. F. Black and M. S. Scholes. "The Pricing of Options and Corporate Liabilities." *Journal of Political Economy*, 81 (May–June 1973), 637–59.
2. M. J. Brennan and E. S. Schwartz. "Convertible Bonds: Valuation and Optimal Strategies for Call and Conversion." *Journal of Finance*, 32 (December 1977), 1699–1715.
3. ———. "A Continuous Time Approach to the Pricing of Bonds." *Journal of Banking and Finance*, 3 (July 1979), 133–55.
4. ———. "Analyzing Convertible Securities." *Journal of Financial and Quantitative Analysis*, 15 (November 1980), 907–29.
5. J. E. Ingersoll, Jr. "A Contingent-Claims Valuation of Convertible Securities." *Journal of Financial Economics*, 4 (May 1977), 289–382.
6. S. P. Mason and R. C. Merton. "The Role of Contingent Claims Analysis in Corporate Finance." in *Recent Advances in Corporate Finance*, E. I. Altman and M. G. Subrahmanyam, Editors, Homewood, IL: Richard D. Irwin, 1985.
7. R. C. Merton. "The Theory of Rational Option Pricing." *Bell Journal of Economics and Management Science*, 4 (Spring 1973), 141–83.

DISCUSSION

SCOTT P. MASON*: This paper by John McConnell and Eduardo Schwartz (M&S) concerns the pricing of Liquid Yield Option Notes (LYONs) through an application of Contingent Claims Analysis (CCA). The paper is an excellent example of the art of striking a balance between rigor and practicality in applying CCA to real-world problems. I will try to keep my comments consistent with this "trade-off" spirit of the paper since it is easy to describe (as M&S do) more rigorous or elegant approaches to the LYON pricing problem.

The approach that M&S take is to treat the LYON as a single security which is a function of the firm's stock price. As discussed in the paper, it would be more complete to recognize the role of interest rate uncertainty but the trade-off between the practicality and increased accuracy of this approach is questionable. At this junction I might have explored the possibility of viewing the LYON as a callable/puttable unit comprised of a risky zero coupon bond and a warrant which requires the use of the bond as scrip to exercise. The merit of this approach is to underscore the fact that the LYON is made up of a warrant, not a call option, and therefore has a dilutive effect on the firm's equity. It is also true that with this approach the discount rate for the risky discount bond must be specified as opposed to a discount rate for the entire LYON.

Furthermore, with regards to M&S's specification of a single risk adjusted discount rate for the LYONs problem, I would have specified the short risk free rate of interest as time dependent in a manner consistent with the implied forward rates in the U.S. Treasury term structure. I would have then priced the

* Harvard University

risky zero coupon bond off the yield of the risk free zero coupon bond of the same maturity, possibly making the spread a function of time and the level of the stock price.

The contribution of M&S's work is its case-like treatment of the many practical problems of applying CCA to the pricing of an actual complex security. My comments simply serve to point out that there is more than one way to approximate the CCA approach to the LYONs pricing problem.