

Meeting: 1000, Albuquerque, New Mexico, SS 4A, Special Session on Financial Mathematics: The Mathematics of Derivative Securities

1000-91-115 **Dwight Grant** (dgrant@swcp.com), Anderson School of Management, Dept of FIT Management, 1924 Las Lomas Avenue, NE, Albuquerque, NM 87131, and **Gautam Vora*** (vora@unm.edu), Anderson School of Management, Dept of FIT Management, 1924 Las Lomas Avenue, NE, Albuquerque, NM 87131. *Extending the Universality of the Heath-Jarrow-Morton Model.*

Heath, Jarrow, and Morton (HJM) developed an important model of the evolution of interest rates. A key assumption of the model is that interest rate changes are normally distributed in continuous time. Implementing the HJM-method of evolution of interest-rates in discrete time for more complex volatility functions remains a significant challenge. In this article, we present a relatively simple and flexible method of implementation, that extends the usefulness of the HJM model. The derivation assumes that the distribution of interest rates is stable, but not necessarily identical, for each discrete time period. This allows us to identify the drift-adjustment terms necessary to build interest-rate lattices and trees and Monte Carlo simulations that satisfy exactly the no-arbitrage and volatility conditions, even complex ones, of the model. The much more difficult discrete-time implementation methods suggested in the literature, HJM (1991) and Jarrow (1996) do not accomplish that. We illustrate our analytical implementation with three examples of volatility functions and demonstrate its superiority to other methods of implementation. (Received August 20, 2004)