

1086-60-1080

Thomas W Seaquist* (thomas.seaquist@mavs.uta.edu). *Optimal Stopping for Markov Modulated Diffusions*. Preliminary report.

Accurate pricing of stock options is critical to avoiding arbitrage. Traditional models used in option pricing are limited to a constant drift and volatility of a stock process X_t . In this paper, a Markov modulated Ito-Diffusion is developed to describe a stock that switches drift and volatility through a finite state Markov chain ξ_t . The valuation of a infinite horizon American put option is described by the general optimal stopping problem $V(x, i) = \sup_{\tau} E^{(x, i)} [e^{\int_0^{\tau} -r(\xi_s) ds} \phi(X_{\tau})]$. This optimal stopping problem is solved by using a logarithmic transformation and drawing a connection to a set of PDE's similar to the traditional Black-Scholes equations. (Received September 18, 2012)