Pricing down-and-out power options with exponentially curved barrier

ABSTRACT

Power barrier options are options where the payoff depends on an underlying asset raised to a constant number. The barrier determines whether the option is knocked in or knocked out of existence when the underlying asset hits the prescribed barrier level, or not. This paper derives the analytical solution of the power options with an exponentially curved barrier by utilizing the reflection principle and the change of measure. Numerical results show that prices of power options with exponentially curved barrier are cheaper than those of power barrier options and power options.