ABSTRACT

Mean reversion is a mathematical concept that is frequently and widely used in stock investing, modeling interest rates and modeling commodities. In particular there is consensus that a commodity price cannot increase exponentially but rather revert to their equilibrium mean levels. The field of mean reversion has been considered a natural choice of option contract in the essence of its concepts and assumptions that both stock's high and low prices are temporary and that stock's price will tend to move to average price over time. Oldrich Vasicek developed a Vasicek model used in valuation of interest rates and that was adopted for credit markets. The concept of mean reverting processes that has been discussed in financial literature has mainly been derived from mean reverting geometric Brownian motion. However, mean reverting logistic Brownian motion has not been discussed in any financial literature. In this study we have used the knowledge of logistic Brownian motion to develop a mean reverting logistic Brownian motion model for price process. The methodology involved analysis of mean reverting models for pricing process in particular Vasicek model. We have considered logistic Brownian motion and incorporated mean reverting process. We have applied the approach of Vasicek model to derive mean reverting logistic Brownian motion. The presence of mean reversion is tested using Dickey-Fuller test. We have finally estimated volatility using maximum likelihood estimate. The results are analyzed from historical price data collected from Nairobi Security Market. This model can be used by long-term investors to the know impact of mean reverting behavior of stocks on assets before allocating decisions on investment and profitability of trading strategies.