ABSTRACT

In financial mathematics, statistical tools have been used for time series prediction of prices. Lognormal distribution and the Black-Scholes-Merton formula have also been used for modeling capital returns. However, the modeling of the quantity of capital stock demanded with the concept of mean reversion has not been given a sizeable priority in financial literature. The concept of mean reverting process of demand and return has only been discussed majorly in energy industry by scholars like Coulon, Skorodumov, Van der Hoek and Alizader and Singleton. Dafas however used a mean reverting geometric Brownian motion process to model oil spot prices. The main objective of this study was to develop a model for demand dynamics by using a mean reverting geometric Brownian motion process and apply Dickey-Fuller (DF) test in testing if there exists a mean reverting process in the demand for equity. The methodology used involved a mean reverting geometric Brownian motion process to model demand dynamics for equity shares. Also the presence of mean reversion process in equity demand is tested by Dickey-Fuller test. Finally, the unknown parameters for the mean reverting process of equity demand are estimated by the method of least squares. Results of analyzed historical data taken from Nairobi Security Market support the validity of the model developed and confirm the presence of mean reversion for the demand of equity. This model may be useful to market players in understanding the demand dynamics of equity.