Application of Generalized Autoregressive Score Model to Stock Returns

Authors : Katleho Daniel Makatjane, Diteboho Lawrence Xaba, Ntebogang Dinah Moroke

Abstract : The current study investigates the behaviour of time-varying parameters that are based on the score function of the predictive model density at time t. The mechanism to update the parameters over time is the scaled score of the likelihood function. The results revealed that there is high persistence of time-varying, as the location parameter is higher and the skewness parameter implied the departure of scale parameter from the normality with the unconditional parameter as 1.5. The results also revealed that there is a perseverance of the leptokurtic behaviour in stock returns which implies the returns are heavily tailed. Prior to model estimation, the White Neural Network test exposed that the stock price can be modelled by a GAS model. Finally, we proposed further researches specifically to model the existence of time-varying parameters with a more detailed model that encounters the heavy tail distribution of the series and computes the risk measure associated with the returns.

Keywords : generalized autoregressive score model, South Africa, stock returns, time-varying
Conference Title : ICBEFSM 2017 : International Conference on Business, Economics, and Financial Sciences, Management
Conference Location : Cape Town, South Africa
Conference Dates : November 02-03, 2017