Abstract

Extreme events are defined as values of the event below or above a certain value called threshold. A well-chosen threshold helps to identify the extreme levels. Several methods have been used to determine threshold so as to analyze and model extreme events. Maximum Product of spacing is one of these methods. However, there is a problem encountered while modeling data through this method in that the method breaks down when there is a tie in the exceedances. This study improved MPS method in order to determine an optimal threshold for extreme values in a data set containing ties, estimated the GPD parameters with the optimal threshold derived and then applied the method to determine the GPD parameters for a real market data that could be containing ties . The study applied a method to determine optimal threshold based on improved maximum product of spacing method and used Generalized Pareto Distribution (GPD) and Peak over threshold (POT) methods as the basis of identifying extreme. The peaks-over-threshold (POT) models are models for all large observations which exceed a high threshold. The POT models are generally considered to be the most useful for practical applications. The study used the method developed to deal with the ties to model the market volume data. This study will help the Statisticians in different sectors of our economy to model extreme events involving ties. To Statisticians, the structure of the extreme levels which exist in the tails of the ordinary distributions is very important in analyzing, predicting and forecasting the likelihood of an occurrence of extreme event.