Neural Network Approach to Estimating Conditional Quantile Polynomial Distributed lag (QPDL) model with an application to Rubber Price returns

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Abstract

In this paper we consider the estimation of the conditional quantile polynomial distributed lag (QPDL) using neural network to investigate the influence of the conditioning variables on the location, scale and shape parameters of the new QPDL model developed. This method avoids the need for a distributional assumption and applies conditional quantiles approach which allows the investigator to employ a range of conditional functions which exposes a variety of forms of conditional heterogeneity to give a more comprehensive picture of the effects of the independent variable on the dependent variable. The models fitted were adequate with high R-square values. Also from the actual and the predicted plots we observed that there was no significant difference between them. The results suggest that neural network used in estimating the QPDL model offers a useful alternative for estimating the conditional density, as the use of artificial neural networks in this study have also proven to produce good prediction results in regression problems.

Keywords: Backpropagation, feedforward, Hidden neurons, polynomial transformation.