ALEV DILEK AYDIN

Halic University, Turkey

SEYMA CALISKAN CAVDAR

Halic University, Turkey

COMPARISON OF PREDICTION PERFORMANCES OF ARTIFICIAL NEURAL NETWORK (ANN) AND VECTOR AUTOREGRESSIVE (VAR) MODELS BY USING THE MACROECONOMIC VARIABLES OF GOLD PRICES, BORSA ISTANBUL (BIST) 100 INDEX AND US DOLLAR-TURKISH LIRA (USD/TRY) EXCHANGE RATES

Abstract:

Artificial neural network (ANN) approach, the application of artificial intelligence, which has been improved by the simulation of cognitive learning process of human brain, has been commonly used in recent years. In this study, the relationship between the exchange rate of US Dollar-Turkish Lira (USD/TRY), gold prices and the Borsa Istanbul (BIST) 100 index has been estimated by using the ANN method and the method of Vector Autoregressive (VAR). The ANN method has been applied by means of multi-layered feedforward neural networks (MLFNs) by using monthly data over the period of January, 2000 and September, 2014. VAR method has also been applied with the same variables for the same period of time. In this study, different from the studies conducted up to present, ENCOG machine learning framework has been used along with JAVA programming language in order to constitute the ANN. The training of network has been done by resilient propagation method. The results obtained by the ANN method have been compared with the results obtained by the econometric forecasting method of VAR. Our results indicate that the ANN approach has superior performance of prediction capability than the VAR method.

Keywords:

VAR Model, Artificial Neural Network, Forecasting, Multi-layered Feedforward Neural Networks, Financial Crisis, JAVA.

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