Abstract

In recent years, Artificial Neural Networks (ANNs) models have been advocated as a useful alternative to traditional statistical methods for financial predictions. In this thesis, artificial neural networks are set up to forecast the daily returns of the Hang Seng Index (HSI) over the period 1990-1999. Before we formulate the artificial neural networks, the return indices were examined for randomness using the rescaled range analysis. The relationship between the levels of the index and their corresponding technical indicators are then captured by an artificial neural network, which generates trading signals over two subperiods of "Bear Market" and "Bull Market". The out-of-sample prediction performance of the neural network for these subperiods is evaluated using the measures of MSE, MAPE, NMSE, gradient and sign statistics. Our results also suggest that with or without transaction costs, the profitability of trading rules based on these neural network predictions are always superior to a buy-and-hold strategy and other benchmark strategies for the bear market sub period identified. However, during the bull market subperiod, the buy-and-hold strategy generates much higher returns than neural network and the other simple technical trading rules under study.