FORECASTING STOCK INDICES MOVEMENT USING HYBRID MODEL: A COMPARISON OF TRADITIONAL AND MACHINE LEARNING APPROACHES

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There are two main purposes in this paper. The first objective is to compare the performances, in terms of forecasting accuracy and profitability in stock market movements forecasting using different techniques including machine learning models. We compare these techniques using data from the S&P500 (USA), Hang Seng (Hong Kong), and SET50 (Thailand). The second purpose is to determine if there is any benefit in combining two different sets of input factors in explaining stock market movements. These two input sets are macroeconomic factors and technical indicators input sets. Specifically, the forecasting techniques used in this study include Logit model, Backpropagation Neural Networks (BPNs), Probabilistic Neural Networks (PNNs), and Support Vector Machines (SVMs).

Apart from various techniques performance comparison, the comparison is also performed with three different sets of explanatory variables which are macroeconomic factors, technical indicators, and the combination of both sets of factors, as mentioned previously. Empirical results suggest machine learning approaches are good alternatives in designing a forecasting model. There is no ultimate technique for every markets; the best performer depends on the market characteristics. Incorporating technical indicators in the forecasting model does not help improve the outcome in most markets except for markets that are known to be less weak-form efficient such as the Thai market. Overall, these models show some advantages in stock market movements forecasting by outperforming the returns of the market indices in term of profitability.

Keywords: Machine Learning, Neural Network, Support Vector Machines, Logit, Forecasting, SET50, S&P500, Hang Seng, Comparison, Technical Indicators, Macroeconomic Factors