

Using Machine Learning as an Alternative for Predicting Exchange Rates

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Abstract : This study addresses the Meese-Rogoff Puzzle by introducing the latest machine learning techniques as alternatives for predicting the exchange rates. Using RMSE as a comparison metric, Meese and Rogoff discovered that economic models are unable to outperform the random walk model as short-term exchange rate predictors. Decades after this study, no statistical prediction technique has proven effective in overcoming this obstacle; although there were positive results, they did not apply to all currencies and defined periods. Recent advancements in artificial intelligence technologies have paved the way for a new approach to exchange rate prediction. Leveraging this technology, we applied five machine learning techniques to attempt to overcome the Meese-Rogoff puzzle. We considered daily data for the real, yen, British pound, euro, and Chinese yuan against the US dollar over a time horizon from 2010 to 2023. Our results showed that none of the presented techniques were able to produce an RMSE lower than the Random Walk model. However, the performance of some models, particularly LSTM and N-BEATS were able to outperform the ARIMA model. The results also suggest that machine learning models have untapped potential and could represent an effective long-term possibility for overcoming the Meese-Rogoff puzzle.

Keywords : exchange rate, prediction, machine learning, deep learning

Conference Title : ICMVML 2024 : International Conference on Machine Vision and Machine Learning

Conference Location : Tokyo, Japan

Conference Dates : October 03-04, 2024