ABSTRACT

The increasing public interest in gold as an investment instrument and a store of value amidst global economic uncertainty demands forecasting methods capable of accurately representing data dynamics. The fluctuating and trend-driven movement of gold prices, influenced by various external factors, renders conventional forecasting approaches less effective in capturing the nonlinear relationships and inherent uncertainty within the data. This research aims to implement the Ruey-Chyn Tsaur Fuzzy Time Series (FTS) model with a triangular membership function, utilizing sample gold price data from the period of January 2023 to December 2024. This method combines the fuzzy time series concept with Markov Chain through the formation of transition probability matrices, thereby generating predictions probabilistically and making them more adaptive to historical data patterns. The results indicate that the initial Ruey-Chyn Tsaur FTS forecasting model with a triangular membership function produces excellent forecasting accuracy with a Mean Absolute Percentage Error (MAPE) value of 0.541%. Therefore, this model is deemed capable of providing accurate and relevant forecasting results and is suitable as an alternative approach for forecasting gold prices characterized by non-stationary and trend-patterned data.

Keywords: Gold Price, Fuzzy Time Series Ruey-Chyn Tsaur, Triangular Membership Function, Forecasting