

INTISARI

PENERAPAN METODE RECURRENT DAN VECTOR FORECASTING DALAM SINGULAR SPECTRUM ANALYSIS UNTUK PERAMALAN NILAI TUKAR MATA UANG

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Singular Spectrum Analysis (SSA) adalah metode dekomposisi *time series* yang efektif dalam mengidentifikasi tren, musiman, dan *noise*. Penelitian ini menerapkan SSA untuk menganalisis dan meramalkan nilai tukar rupiah terhadap dolar Amerika Serikat, yen Jepang, dan dolar Singapura. Perbandingan dua metode peramalan dalam SSA, yaitu *Recurrent Forecasting* (*R-Forecasting*) dan *Vector Forecasting* (*V-Forecasting*), menunjukkan bahwa *V-Forecasting* memiliki akurasi lebih baik dengan nilai MAE, RMSE, dan MAPE yang lebih rendah. Model terbaik digunakan untuk meramalkan nilai tukar mata uang pada Januari hingga Desember 2025. Hasilnya menunjukkan bahwa rupiah cenderung melemah terhadap dolar Amerika Serikat dan dolar Singapura, tetapi menguat terhadap yen Jepang. Selain itu, analisis SSA mengungkap bahwa pergerakan nilai tukar dipengaruhi oleh faktor eksternal seperti krisis ekonomi global, kebijakan moneter, dan ketidakstabilan geopolitik.

Kata kunci: peramalan nilai tukar mata uang, *singular spectrum analysis*, *recurrent forecasting*, *vector forecasting*

ABSTRACT

APPLICATION OF RECURRENT AND VECTOR FORECASTING METHODS IN SINGULAR SPECTRUM ANALYSIS FOR EXCHANGE RATE FORECASTING

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Singular Spectrum Analysis (SSA) is a time series decomposition method effective in identifying trends, seasonality, and noise. This study applies SSA to analyze and forecast the exchange rate of the Indonesian rupiah against the US dollar, Japanese yen, and Singapore dollar. A comparison of two forecasting methods in SSA, namely Recurrent Forecasting (R-Forecasting) and Vector Forecasting (V-Forecasting), shows that V-Forecasting has higher accuracy with lower MAE, RMSE, and MAPE values. The best model is used to forecast exchange rates from January to December 2025. The results indicate that the rupiah tends to depreciate against the US dollar and Singapore dollar but appreciate against the Japanese yen. Furthermore, SSA analysis reveals that exchange rate movements are influenced by external factors such as global economic crises, monetary policies, and geopolitical instability.

Keywords: *exchange rate forecasting, singular spectrum analysis, recurrent forecasting, vector forecasting*