Modeling and Forecasting GDP in Zimbabwe: A Comparison of ARIMA and Recurrent Neural Network Approaches

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Abstract

This paper compares the effectiveness of time series and recurrent neural network in forecasting Zimbabwe's GDP data. We delve into historical data, reviewing commontime series forecasting models through a review of existing literature and an empirical investigation focused on ARIMA and Recurrent Neural Network LSTM models. By comparing these methodologies to Zimbabwe's GDP data, we identify the RNN model as the most suitable approach, capturing **99.25%** of the variance in GDP compared to ARIMA's performance of **80%**. This outcome underscores the effectiveness of RNNs in predicting Zimbabwe's future economic trajectory, enhancing public understanding of economic trends and preparing citizens for potential economic shifts.

Keywords: Gross Domestic Product (GDP), Time Series, ARIMA, RNN, Model Diagnostics, R2 value.