

KESSIRI MORA : A COMPARISON ON PARAMETER ESTIMATION METHODS
IN SIMPLE LINEAR REGRESSION WITH FIRST-ORDER AUTOREGRESSIVE
ERROR TERM. THESIS ADVISOR : ASST. PROF. CAPT. MANOP VARAPHAKDI,
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The objective of this study is to compare parameter estimation methods for forecasting in simple linear regression having autocorrelated disturbance terms. The methods are Ordinary Least Squares Method, Nonlinear Least Squared Method, and First Difference Transformation Method. The comparison was done under conditions of severity of autocorrelation (ρ), sample sizes, and three forms of independent variable. The data for this experiment were generated through the Monte Carlo Simulation technique. The experiment was repeated 500 times under each condition to calculate the square root of the mean squared forecast error (RMSE) of each method.

The results of the study are summarized as follows :

1. In case of low autocorrelations, $\rho \leq 0.4$, the RMSE's of the Nonlinear Least Squares Method and Ordinary Least Squares Method are at the same level, and the First Difference Transformation Method has the maximum RMSE for all sample sizes and all forms of the independent variable.
2. In case of medium autocorrelations, $0.5 \leq \rho \leq 0.7$, the Nonlinear Least Squares Method has the minimum RMSE, and the first Difference Transformation Method has the maximum RMSE for all sample sizes and all forms of the independent variable.
3. In case of high autocorrelations, $0.8 \leq \rho$, the First Difference Transformation Method has the minimum RMSE, and the Ordinary Least Squares Method has the maximum RMSE for all sample sizes and all forms of the independent variable.