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Exponential Smoothing for Irregular Time Series

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Abstract: The paper deals with extensions of exponential smoothing type methods for univariate time series with irregular observations. An alternative method to Wright's modification of simple exponential smoothing based on the corresponding ARIMA process is suggested. Exponential smoothing of order ¡em¿m¡/em¿ for irregular data is derived. A similar method using a DLS (¡em¿discounted least squares¡/em¿) estimation of polynomial trend of order ¡em¿m¡/em¿ is derived as well. Maximum likelihood parameters estimation for forecasting methods in irregular time series is suggested. The suggested methods are compared with the existing ones in a simulation numerical study.

Keywords: ARIMA model; exponential smoothing of order m; discounted least squares; irregular observations; maximum likelihood; simple exponential smoothing; time series;

AMS Subject Classification: 62M10; 62M20; 90A20; 60G35;

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