



Asymptotic Analysis and Identifiability Checks in Time-Series Econometrics for Power-Grid Forecasting in Kenya,

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Abstract

This Data Descriptor focuses on asymptotic analysis and identifiability checks in time-series econometrics for power-grid forecasting in Kenya. A theoretical framework based on asymptotic analysis is employed to examine the identifiability of model parameters in a simplified power-grid forecasting system. A specific assumption regarding the stationarity of the data series is made, and properties such as convergence rates are derived from this assumption. The analysis reveals that under the assumed stationarity condition, the coefficients of the autoregressive process governing the power grid data converge to their true values at a rate of $O(n^{-1/2})$ where n is the number of observations. This finding provides insight into how accurately these parameters can be estimated from finite samples. The study underscores the importance of ensuring stationarity in time-series data for reliable forecasting and highlights the asymptotic analysis as a robust method for assessing model identifiability. Future research should extend this analysis to more complex power-grid systems, including non-stationary components, to improve forecasting accuracy. Additionally, practical applications could include developing diagnostic tools to detect non-stationarity in real-world data. Time-series econometrics, Power grid forecasting, Asymptotic analysis, Stationarity, Identifiability

Keywords: Kenya, Asymptotic Analysis, Identifiability Checks, Time-Series Econometrics, Forecasting, Power Grid, Econometric Modelling

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