

Analysis of Economic Time Series

1. Classical linear regression model assumptions

What are the assumptions of the classical linear regression model? Which of these assumptions are violated in time series data? What problems does this cause for OLS estimation?

2. Stationarity

The concept of stationarity, its testing, and methods for handling non-stationarity.

3. Autocorrelation

The concept of autocorrelation, its testing, and methods for dealing with it.

4. Ergodicity and challenges in the social sciences

The concept of ergodicity and its challenges in social science applications.

5. White noise vs. random walk

A comparison of white noise and random walk processes.

6. Distributed lag models, AR and MA processes, ARIMA models

Distributed Lag (DL) models, autoregressive processes $AR(p)$, moving average processes $MA(q)$, and $ARIMA(p, d, q)$ models.

7. Causality, spurious regression, and Granger causality

Testing for causality, the problem of spurious regression, and Granger causality.

8. Cointegration and Vector Error Correction Models (VECM)

Cointegration and the Vector Error Correction Model framework.

9. ARCH/GARCH models

ARCH and GARCH models for volatility modeling.

10. Time Series Modeling – Box–Jenkins methodology

The Box–Jenkins methodology for time series modeling.