

ECON 4115/5115 Outline of Lecture Notes

Chapter 3. Time Series Decomposition

- Three components: trend, seasonality, and irregular (residual) components
 - Additive: $y_t = S_t + T_t + R_t$
 - Multiplicative: $y_t = S_t \times T_t \times R_t$ (additive after logarithms)
- Transformations and Adjustments
 - Calendar adjustments
 - Population adjustments
 - Inflation adjustments
 - Logarithm transformations: $w_t = \ln(y_t)$
 - Power transformations: $w_t = y_t^p$
 - Box-Cox transformation: $w_t = (y_t^\lambda - 1)/\lambda$
- Decomposition Methods
 - Regression analysis
 - Moving averages
 - Classical decomposition
 - X11 decomposition
 - SEATS decomposition
 - STL decomposition
 - Hodrick-Prescott decomposition
- Applications: Stock Market, Wyoming Economy, and Global Temperatures datasets