Analyze Time Series Using the Econometric Modeler App

Import data
Conduct a specification test
Transform data
Select models
Perform model diagnostics
Share session results:
  • Export variables
  • Generate functions and reports

Econometric Modeler App Overview

Data Transformation
Prices ↔ Returns
Returns = price2ret(Prices);
Prices = ret2price(Returns);

First-Order Differencing
\[ \Delta y_t = y_t - y_{t-1} \]

Detrending
\[ y = \text{detrend}(y); \]

Data Visualization

ACF Plot
\[ \text{autocorr}(y); \]

PACF Plot
\[ \text{parcorr}(y); \]

Correlation Plot
\[ \text{corrplot}(X); \]

Model Comparisons

Akaike or Bayesian Information Criteria
\[ [\text{aic}, \text{bic}] = \text{aicbic}(\text{logL}, \text{numParam}, \text{numObs}); \]

Learn more: mathworks.com/help/econ
Conditional Mean Models
ARMA, ARIMA, and ARIMAX

Create Models
\[ \text{Mdl} = \text{arima}(p,D,q); \]

Estimate/Fit
\[ [\text{EstMdl}, \text{EstParamCov}, \logL, \text{info}] = \text{estimate}(\text{Mdl}, \text{Y}); \]

Impulse
\[ \text{impulse}(\text{Mdl}); \]

Simulate
\[ [Y,E] = \ldots \text{simulate} ... \]
\[ \text{forecast} ... \]
\[ \text{EstMdl}, \text{numObs}; \]
\[ \text{EstMdl}, \text{numPeriods}, \text{Y0}; \]

Cointegration
\[ \text{Causality} \]
\[ \text{Block-wise Granger causality and block exogeneity tests} \]
\[ [h, \text{pValue}] = \text{gctest}(Y1, Y2); \]

Conditional Variance Models
GARCH, EGARCH, and GJR

Create Models
\[ \text{Mdl} = \text{garch}(p,q); \]
\[ \text{Mdl} = \text{egarch}(p,q); \]
\[ \text{Mdl} = \text{gjr}(p,q); \]

Estimate / Fit
\[ [\text{EstMdl}, \text{EstParamCov}, \logL, \text{info}] = \text{estimate}(\text{Mdl}, \text{Y}); \]

Simulate
\[ [Y,E] = \text{simulate}(\text{EstMdl}, \text{numObs}); \]
\[ \text{forecast}(\text{EstMdl}, \text{numPeriods}, \text{Y0}); \]

Forecast
\[ [Y, \text{YMSE}] = \text{forecast}(\text{EstMdl}, \text{numPeriods}, \text{Y0}); \]