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% Example 2.1 %

% Box-Jenkins Analysis %

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% File upload

macv=xlsread('Chap2UKmacvar.xlsx');

infl=macv(2:end,14);

% Stationarity ADF test

[h,pvalue]=adftest(infl);

% 1. Specification

Mdl = arima(1,0,0);

% 2. Selection

% 2.1 Estimation

[inflEstMdl inflEstMdlParamCov infllogL]=estimate(Mdl,infl);

% 2.2 Information criteria

[aic,bic] = aicbic(infllogL,2,size(infl,1));

% 3. Model checkDiagnostics

% Residuals

[resinflFit] = infer(inflEstMdl,infl);

% 3.1 Normality

[hNorm0,pNorm0] = lillietest(resinflFit, 'Alpha',0.01);

% 3.2 Ljung-Box Q-test

[hLBQ0,pValueLBQ0] = lbqtest(resinflFit,'Lags',[5,10],'Alpha',0.01);

% Graph residuals

stdr = resinflFit/sqrt(inflEstMdl.Variance);

figure; hold('on');

subplot(2,2,1); plot(stdr);

title('a. Time Series of Residuals')

subplot(2,2,2); hist(stdr);

title('b. Histogram Standardized Residuals')

subplot(2,2,3); autocorr(stdr);

title('c. Sample Autocorrelation Function')

subplot(2,2,4); parcorr(stdr);

title('d. Sample Partial Autocorrelation Function')

set(gcf, 'PaperPositionMode', 'manual');

set(gcf, 'PaperUnits', 'centimeters');

set(gcf, 'PaperPosition', [0.5 0.5 28 20]); %left bottom width heigh

set(gcf, 'PaperOrientation', 'landscape');