| Trabalho de Econometria II  Aluna: Emili Veiga  Taxa de Desemprego  R version 3.3.1 (2016-06-21) -- "Bug in Your Hair"  Copyright (C) 2016 The R Foundation for Statistical Computing  Platform: i386-w64-mingw32/i386 (32-bit)  R is free software and comes with ABSOLUTELY NO WARRANTY.  You are welcome to redistribute it under certain conditions.  Type 'license()' or 'licence()' for distribution details.  R is a collaborative project with many contributors.  Type 'contributors()' for more information and  'citation()' on how to cite R or R packages in publications.  Type 'demo()' for some demos, 'help()' for on-line help, or  'help.start()' for an HTML browser interface to help.  Type 'q()' to quit R.  [Workspace loaded from ~/TrabalhoEcoII/.RData]  > require(xlsx)  Carregando pacotes exigidos: xlsx  Carregando pacotes exigidos: rJava  Carregando pacotes exigidos: xlsxjars  > Tax <- read.xlsx(“TaxaDesemprego.xlsx”, sheetName = "ST")  > Taxa <- ts(Tax, start = 2002.03, frequency = 12)  > summary(Taxa)  Min. 1st Qu. Median Mean 3rd Qu. Max.  4.300 6.000 7.850 8.226 10.200 13.100  > View(Taxa)  > ts.plot(Taxa[,2], ylab = "Taxa", xlab = "Data")    > monthplot(Taxa[,2], ylab = "Taxa", xlab = "Data")    > plot(decompose(Taxa[,2]))    > require(TSA)  Carregando pacotes exigidos: TSA  Carregando pacotes exigidos: leaps  Carregando pacotes exigidos: locfit  locfit 1.5-9.1 2013-03-22  Carregando pacotes exigidos: mgcv  Carregando pacotes exigidos: nlme  This is mgcv 1.8-12. For overview type 'help("mgcv-package")'.  Carregando pacotes exigidos: tseries  ‘tseries’ version: 0.10-35  ‘tseries’ is a package for time series analysis and computational  finance.  See ‘library(help="tseries")’ for details.  Attaching package: ‘TSA’  The following objects are masked from ‘package:stats’:  acf, arima  The following object is masked from ‘package:utils’:  Tar  > acf(Taxa, lag.max = 55, drop.lag.0 = T) |
| --- |
| > require(urca)  Carregando pacotes exigidos: urca  > adf.drift <- ur.df(Taxa, c("drift"), lags = 24,  + selectlags = "AIC")  > acf(adf.drift@res, lag.max = 55, drop.lag.0 = T)    > adf.drift@teststat  tau2 phi1  statistic -1.994954 2.595627  > adf.drift@cval  1pct 5pct 10pct  tau2 -3.46 -2.88 -2.57  phi1 6.52 4.63 3.81  > summary(adf.drift)  ###############################################  # Augmented Dickey-Fuller Test Unit Root Test #  ###############################################  Test regression drift  Call:  lm(formula = z.diff ~ z.lag.1 + 1 + z.diff.lag)  Residuals:  Min 1Q Median 3Q Max  -0.64793 -0.19741 -0.02102 0.18847 0.75967  Coefficients:  Estimate Std. Error t value Pr(>|t|)  (Intercept) 0.156070 0.103736 1.504 0.1352  z.lag.1 -0.025859 0.012962 -1.995 0.0484 \*  z.diff.lag1 -0.052079 0.084318 -0.618 0.5380  z.diff.lag2 0.020306 0.084303 0.241 0.8101  z.diff.lag3 0.069489 0.083413 0.833 0.4065  z.diff.lag4 0.005311 0.078793 0.067 0.9464  z.diff.lag5 -0.017085 0.079167 -0.216 0.8295  z.diff.lag6 -0.045714 0.079217 -0.577 0.5650  z.diff.lag7 0.026568 0.079210 0.335 0.7379  z.diff.lag8 -0.017664 0.078888 -0.224 0.8232  z.diff.lag9 0.039503 0.078237 0.505 0.6146  z.diff.lag10 0.022387 0.078064 0.287 0.7748  z.diff.lag11 0.031418 0.075713 0.415 0.6789  z.diff.lag12 0.345755 0.075684 4.568 1.23e-05 \*\*\*  z.diff.lag13 -0.029295 0.078277 -0.374 0.7089  z.diff.lag14 -0.162714 0.079758 -2.040 0.0436 \*  z.diff.lag15 -0.107435 0.080911 -1.328 0.1868  z.diff.lag16 -0.115885 0.082377 -1.407 0.1621  z.diff.lag17 -0.072703 0.082232 -0.884 0.3784  z.diff.lag18 0.015620 0.082174 0.190 0.8496  z.diff.lag19 -0.119609 0.081545 -1.467 0.1451  z.diff.lag20 -0.062129 0.082069 -0.757 0.4505  z.diff.lag21 -0.139468 0.081891 -1.703 0.0912 .  z.diff.lag22 -0.094083 0.082979 -1.134 0.2592  z.diff.lag23 -0.075995 0.082086 -0.926 0.3565  z.diff.lag24 0.345052 0.082006 4.208 5.08e-05 \*\*\*  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.3086 on 117 degrees of freedom  Multiple R-squared: 0.5944, Adjusted R-squared: 0.5077  F-statistic: 6.857 on 25 and 117 DF, p-value: 1.678e-13  Value of test-statistic is: -1.995 2.5956  Critical values for test statistics:  1pct 5pct 10pct  tau2 -3.46 -2.88 -2.57  phi1 6.52 4.63 3.81  > ts.plot(diff(Taxa, lag = 1, differences = 1)) |
| > Diff <- diff(Taxa, lag = 1, differences = 1)  > acf(Diff, lag.max = 55, drop.lag.0 = T)    > NewDiff <- diff(log(Taxa), lag = 1, differences = 1)  > acf(NewDiff, lag.max = 55, drop.lag.0 = T)    > ts.plot(NewDiff)    > NewDiff2 <- diff(NewDiff, lag = 12, differences = 1)  > acf(NewDiff2, lag.max = 48, drop.lag.0 = T)    > adf.drift2 <- ur.df(NewDiff2, type = "drift", lags = 24, selectlags = "AIC")  > adf.drift2@teststat  tau2 phi1  statistic -5.136943 13.27994  > acf(adf.drift2@res, lag.max = 55, drop.lag.0 = T)    > layout(1:2)  > acf(NewDiff2, lag.max = 48, drop.lag.0 = T)  > layout(1:2)  > NewDiff2 <- diff(NewDiff, lag = 12, differences = 1)  > acf(NewDiff2, lag.max = 48, drop.lag.0 = T)  > pacf(NewDiff2, lag.max = 48)    > fit.tax <- Arima(log(Taxa), order = c(1,1,1), seasonal = c(1,1,1), method = "ML", lambda = 0)  > fit.tax  Series: log(Taxa)  ARIMA(1,1,1)(1,1,1)[12]  Box Cox transformation: lambda= 0  Coefficients:  ar1 ma1 sar1 sma1  -0.1587 0.1198 -0.0209 -0.7273  s.e. 0.7426 0.7420 0.1295 0.1081  sigma^2 estimated as 0.0004309: log likelihood=378  AIC=-746 AICc=-745.6 BIC=-730.78  > t.test <- function(modelo\_arima){  + coef <- modelo\_arima$coef  + se <- sqrt(diag(modelo\_arima$var.coef))  + t <- abs(coef/se)  + ok <- t > qt(0.975, length(modelo\_arima$x) -  + sum(modelo\_arima$arma[c(1,2,3,4,6,7)]))  + resul <- data.frame(Coef = coef, sd = se, t = t, rej\_H0 = ok)  + return(resul)  + }  > t.test(fit.tax)  Coef sd t rej\_H0  ar1 -0.15869086 0.7425513 0.2137103 FALSE  ma1 0.11977817 0.7420360 0.1614183 FALSE  sar1 -0.02086514 0.1294824 0.1611427 FALSE  sma1 -0.72733764 0.1080514 6.7314025 TRUE  > fit.tax <- Arima(Taxa, order = c(0,1,0), seasonal = c(0,1,1), method = "ML",  + lambda = 0)  > fit.tax  Series: Taxa  ARIMA(0,1,0)(0,1,1)[12]  Box Cox transformation: lambda= 0  Coefficients:  sma1  -0.8358  s.e. 0.0833  sigma^2 estimated as 0.001374: log likelihood=284.17  AIC=-564.33 AICc=-564.25 BIC=-558.25  > t.test(fit.tax)  Coef sd t rej\_H0  sma1 -0.8357766 0.0832623 10.03788 TRUE  > diag <- tsdiag(fit.tax, gof.lag = 20)    > Box.test(x = fit.tax$residuals, lag = 40,  + type = "Ljung-Box", fitdf = 0)  Box-Ljung test  data: fit.tax$residuals  X-squared = 45.135, df = 40, p-value = 0.266  > require(FinTS)  Carregando pacotes exigidos: FinTS  Attaching package: ‘FinTS’  The following object is masked from ‘package:forecast’:  Acf  > ArchTest(fit.tax$residuals,lags = 12)  ARCH LM-test; Null hypothesis: no ARCH effects  data: fit.tax$residuals  Chi-squared = 24.67, df = 12, p-value = 0.01646  > require(normtest)  Carregando pacotes exigidos: normtest  Warning message:  package ‘normtest’ was built under R version 3.3.2  > jb.norm.test(fit.tax$residuals, nrepl=2000)  Jarque-Bera test for normality  data: fit.tax$residuals  JB = 3.0179, p-value = 0.173  > plot(forecast(object = fit.tax, h=12, level = 0.95))    > accuracy(fit.tax)  ME RMSE MAE MPE MAPE  Training set 0.01334142 0.2735191 0.2133308 0.1919257 2.773191  MASE ACF1  Training set 0.2239542 0.03758126  > require(BETS)  Carregando pacotes exigidos: BETS  ‘mFilter’ version: 0.1-3  ‘mFilter’ is a package for time series filtering  See ‘library(help="mFilter")’ for details  Author: Mehmet Balcilar, mbalcilar@yahoo.com  ‘BETS’ version: 0.0.98  ‘BETS’ Brazilian Economic Time Series  See ‘library(help="BETS")’ for details  BugReports: https://github.com/pedrocostaferreira/BETS/issues  > BETS.search("unemploy")  Loading required package: DBI  Loading required package: tcltk  BETS-package: Found 30 out of 39073 time series.  > TaxaBETS <- BETS.get(10777)  > summary(TaxaBETS)  Min. 1st Qu. Median Mean 3rd Qu. Max.  4.600 5.900 8.000 8.319 10.320 13.100  > View(TaxaBETS)  > ts.plot(TaxaBETS)    > monthplot(TaxaBETS)    > plot(decompose(TaxaBETS))    > acf(TaxaBETS, lag.max = 55, drop.lag.0 = T)    > adf.driftBETS <- ur.df(TaxaBETS, c("drift"), lags = 24,  + selectlags = "AIC")  > acf(adf.driftBETS@res, lag.max = 55, drop.lag.0 = T)    > adf.driftBETS@teststat  tau2 phi1  statistic -3.007366 6.230824  > adf.driftBETS@cval  1pct 5pct 10pct  tau2 -3.46 -2.88 -2.57  phi1 6.52 4.63 3.81  > summary(adf.driftBETS)  ###############################################  # Augmented Dickey-Fuller Test Unit Root Test #  ###############################################  Test regression drift  Call:  lm(formula = z.diff ~ z.lag.1 + 1 + z.diff.lag)  Residuals:  Min 1Q Median 3Q Max  -0.56178 -0.16357 -0.01742 0.14616 0.68551  Coefficients:  Estimate Std. Error t value Pr(>|t|)  (Intercept) 0.177270 0.074240 2.388 0.01825 \*  z.lag.1 -0.027816 0.009249 -3.007 0.00311 \*\*  z.diff.lag -0.070439 0.081291 -0.867 0.38766  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.2439 on 144 degrees of freedom  Multiple R-squared: 0.06094, Adjusted R-squared: 0.04789  F-statistic: 4.672 on 2 and 144 DF, p-value: 0.01081  Value of test-statistic is: -3.0074 6.2308  Critical values for test statistics:  1pct 5pct 10pct  tau2 -3.46 -2.88 -2.57  phi1 6.52 4.63 3.81  > ts.plot(diff(TaxaBETS, lag = 1, differences = 1))    > DiffBETS <- diff(TaxaBETS, lag = 1, differences = 1)  > acf(DiffBETS, lag.max = 55, drop.lag.0 = T)    > NewDiffBETS <- diff(log(TaxaBETS), lag = 1, differences = 1)  > acf(NewDiffBETS, lag.max = 55, drop.lag.0 = T)    > ts.plot(NewDiffBETS)    > NewDiffBETS2 <- diff(NewDiffBETS, lag = 12, differences = 1)  > acf(NewDiffBETS2, lag.max = 48, drop.lag.0 = T)    > adf.driftBETS2 <- ur.df(NewDiffBETS2, type = "drift", lags = 24, selectlags = "AIC")  > adf.driftBETS2@teststat  tau2 phi1  statistic -4.021196 8.105538  > acf(adf.driftBETS2@res, lag.max = 55, drop.lag.0 = T)    > layout(1:2)  > NewDiffBETS2 <- diff(NewDiffBETS, lag = 12, differences = 1)  > acf(NewDiffBETS2, lag.max = 48, drop.lag.0 = T)  > pacf(NewDiffBETS2, lag.max = 48)    > require(forecast)  Carregando pacotes exigidos: forecast  Carregando pacotes exigidos: zoo  Attaching package: ‘zoo’  The following objects are masked from ‘package:base’:  as.Date, as.Date.numeric  Carregando pacotes exigidos: timeDate  Attaching package: ‘timeDate’  The following objects are masked from ‘package:TSA’:  kurtosis, skewness  This is forecast 7.3  Attaching package: ‘forecast’  The following objects are masked from ‘package:TSA’:  fitted.Arima, plot.Arima  The following object is masked from ‘package:nlme’:  getResponse  > fit.taxBETS <- Arima(log(TaxaBETS), order = c(1,1,1), seasonal = c(1,1,1), method = "ML", lambda = 0)  > fit.taxBETS  Series: log(TaxaBETS)  ARIMA(1,1,1)(1,1,1)[12]  Box Cox transformation: lambda= 0  Coefficients:  ar1 ma1 sar1 sma1  -0.2071 0.1094 -0.1430 -0.9999  s.e. 0.3358 0.3337 0.0881 0.1501  sigma^2 estimated as 0.0003359: log likelihood=394.78  AIC=-779.55 AICc=-779.16 BIC=-764.21  > t.test <- function(modelo\_arima){  + coef <- modelo\_arima$coef  + se <- sqrt(diag(modelo\_arima$var.coef))  + t <- abs(coef/se)  + ok <- t > qt(0.975, length(modelo\_arima$x) -  + sum(modelo\_arima$arma[c(1,2,3,4,6,7)]))  + resul <- data.frame(Coef = coef, sd = se, t = t, rej\_H0 = ok)  + return(resul)  + }  > t.test(fit.taxBETS)  Coef sd t rej\_H0  ar1 -0.2071017 0.33582254 0.6166999 FALSE  ma1 0.1094010 0.33374823 0.3277950 FALSE  sar1 -0.1430458 0.08807869 1.6240683 FALSE  sma1 -0.9998707 0.15011449 6.6607208 TRUE  > fit.taxBETS <- Arima(TaxaBETS, order = c(0,1,0), seasonal = c(0,1,1), method = "ML",  + lambda = 0)  > fit.taxBETS  Series: TaxaBETS  ARIMA(0,1,0)(0,1,1)[12]  Box Cox transformation: lambda= 0  Coefficients:  sma1  -1.0000  s.e. 0.0953  sigma^2 estimated as 0.001292: log likelihood=287.78  AIC=-571.56 AICc=-571.49 BIC=-565.43  > t.test(fit.taxBETS)  Coef sd t rej\_H0  sma1 -0.999998 0.09529261 10.49397 TRUE  > diagBETS <- tsdiag(fit.taxBETS, gof.lag = 20)    > Box.test(x = fit.taxBETS$residuals, lag = 40,  + type = "Ljung-Box", fitdf = 0)  Box-Ljung test  data: fit.taxBETS$residuals  X-squared = 43.264, df = 40, p-value = 0.3338  > require(FinTS)  Carregando pacotes exigidos: FinTS  Attaching package: ‘FinTS’  The following object is masked from ‘package:forecast’:  Acf  > ArchTest(fit.taxBETS$residuals,lags = 12)  ARCH LM-test; Null hypothesis: no ARCH effects  data: fit.taxBETS$residuals  Chi-squared = 15.75, df = 12, p-value = 0.203  > require(normtest)  Carregando pacotes exigidos: normtest  Warning message:  package ‘normtest’ was built under R version 3.3.2  > jb.norm.test(fit.taxBETS$residuals, nrepl=2000)  Jarque-Bera test for normality  data: fit.taxBETS$residuals  JB = 6.8186, p-value = 0.0375  > plot(forecast(object = fit.taxBETS, h=12, level = 0.95))    > accuracy(fit.taxBETS)  ME RMSE MAE MPE MAPE MASE ACF1  Training set 0.001598684 0.2821725 0.2068 0.06336677 2.611416 0.2204397 0.02759609 |