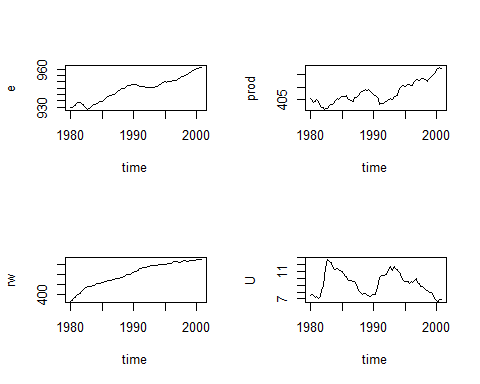
Ejericico 3

1. Con las series Canada haga un análisis de raíz unitaria teniendo en cuenta diferentes configuraciones. Analice los resultados.

library("vars");  
library(MTS)  
library(mvtnorm)  
data("Canada");  
head(Canada)

## e prod rw U  
## [1,] 929.6105 405.3665 386.1361 7.53  
## [2,] 929.8040 404.6398 388.1358 7.70  
## [3,] 930.3184 403.8149 390.5401 7.47  
## [4,] 931.4277 404.2158 393.9638 7.27  
## [5,] 932.6620 405.0467 396.7647 7.37  
## [6,] 933.5509 404.4167 400.0217 7.13

par(mfrow=c(2,2))  
plot(Canada[,1], xlab= "time", ylab = "e")  
plot(Canada[,2], xlab= "time", ylab = "prod")  
plot(Canada[,3], xlab= "time", ylab = "rw")  
plot(Canada[,4], xlab= "time", ylab = "U")

 Para identificar que componente corresponde a que modelo del t-test tenemos que:

* Con Unit root:
* Con drift:
* Con Trend:

autoUrca <-function(df,T.type,Lags=1){  
  
## Enter the DF to analyze  
## Enter the Test type to use, either "none", "drift" or "trend".  
   
names <- colnames(df)   
len <- ncol(df)  
for(i in 1:len){  
   
 cat("---------------------------------","\n")  
 cat("Serie " ,names[i],"\n")  
   
 test <- summary(ur.df(df[, i], type = T.type,lags = Lags))  
 cat("Coefficients","\n")  
 print(test@testreg[["coefficients"]])  
 cat("Critical values for test statistics:","\n")  
 print(test@teststat)  
  
}  
   
}

autoUrca(Canada,"none",1)

## ---------------------------------   
## Serie e   
## Coefficients   
## Estimate Std. Error t value Pr(>|t|)  
## z.lag.1 0.0001181759 5.705343e-05 2.071320 4.155226e-02  
## z.diff.lag 0.7257078274 7.722737e-02 9.397029 1.459571e-14  
## Critical values for test statistics:   
## tau1  
## statistic 2.07132  
## ---------------------------------   
## Serie prod   
## Coefficients   
## Estimate Std. Error t value Pr(>|t|)  
## z.lag.1 0.0002653693 0.0001923111 1.379896 0.171463242  
## z.diff.lag 0.2964928936 0.1068564978 2.774683 0.006875761  
## Critical values for test statistics:   
## tau1  
## statistic 1.379896  
## ---------------------------------   
## Serie rw   
## Coefficients   
## Estimate Std. Error t value Pr(>|t|)  
## z.lag.1 0.001141161 0.0003288068 3.470613 8.398072e-04  
## z.diff.lag 0.461886936 0.0998993777 4.623522 1.429145e-05  
## Critical values for test statistics:   
## tau1  
## statistic 3.470613  
## ---------------------------------   
## Serie U   
## Coefficients   
## Estimate Std. Error t value Pr(>|t|)  
## z.lag.1 -0.002120432 0.004206142 -0.5041275 6.155574e-01  
## z.diff.lag 0.565728232 0.091975877 6.1508327 2.871616e-08  
## Critical values for test statistics:   
## tau1  
## statistic -0.5041275

autoUrca(Canada,"drift",1)

## ---------------------------------   
## Serie e   
## Coefficients   
## Estimate Std. Error t value Pr(>|t|)  
## (Intercept) 1.567226808 4.85697490 0.3226755 7.477935e-01  
## z.lag.1 -0.001542741 0.00514765 -0.2996982 7.651945e-01  
## z.diff.lag 0.728798800 0.07825198 9.3134869 2.378929e-14  
## Critical values for test statistics:   
## tau2 phi1  
## statistic -0.2996982 2.173219  
## ---------------------------------   
## Serie prod   
## Coefficients   
## Estimate Std. Error t value Pr(>|t|)  
## (Intercept) 1.025983015 8.02360012 0.1278707 0.898576279  
## z.lag.1 -0.002252305 0.01969018 -0.1143872 0.909221052  
## z.diff.lag 0.300757815 0.11257399 2.6716457 0.009163715  
## Critical values for test statistics:   
## tau2 phi1  
## statistic -0.1143872 0.9485251  
## ---------------------------------   
## Serie rw   
## Coefficients   
## Estimate Std. Error t value Pr(>|t|)  
## (Intercept) 10.40363448 2.25978896 4.603808 1.562342e-05  
## z.lag.1 -0.02175546 0.00498208 -4.366742 3.786763e-05  
## z.diff.lag 0.18181031 0.10802485 1.683042 9.631530e-02  
## Critical values for test statistics:   
## tau2 phi1  
## statistic -4.366742 18.14043  
## ---------------------------------   
## Serie U   
## Coefficients   
## Estimate Std. Error t value Pr(>|t|)  
## (Intercept) 0.51542359 0.23808891 2.164837 3.341894e-02  
## z.lag.1 -0.05560635 0.02504660 -2.220116 2.927699e-02  
## z.diff.lag 0.59745617 0.09111369 6.557260 5.178844e-09  
## Critical values for test statistics:   
## tau2 phi1  
## statistic -2.220116 2.476187

autoUrca(Canada,"trend",1)

## ---------------------------------   
## Serie e   
## Coefficients   
## Estimate Std. Error t value Pr(>|t|)  
## (Intercept) 47.68112753 17.445770381 2.733105 7.759052e-03  
## z.lag.1 -0.05125552 0.018784746 -2.728571 7.856917e-03  
## tt 0.01921743 0.007005229 2.743298 7.543097e-03  
## z.diff.lag 0.75301096 0.075723518 9.944215 1.614744e-15  
## Critical values for test statistics:   
## tau3 phi2 phi3  
## statistic -2.728571 4.077051 3.81146  
## ---------------------------------   
## Serie prod   
## Coefficients   
## Estimate Std. Error t value Pr(>|t|)  
## (Intercept) 29.28111456 14.506221791 2.018521 0.046974301  
## z.lag.1 -0.07303570 0.036126815 -2.021648 0.046642499  
## tt 0.01421932 0.006151308 2.311593 0.023440768  
## z.diff.lag 0.31025145 0.109678255 2.828742 0.005937612  
## Critical values for test statistics:   
## tau3 phi2 phi3  
## statistic -2.021648 2.44827 2.678632  
## ---------------------------------   
## Serie rw   
## Coefficients   
## Estimate Std. Error t value Pr(>|t|)  
## (Intercept) 23.38960562 7.77366299 3.008827 0.003530337  
## z.lag.1 -0.05420527 0.01924700 -2.816297 0.006150063  
## tt 0.03134192 0.01797252 1.743880 0.085119785  
## z.diff.lag 0.17638974 0.10670109 1.653120 0.102326090  
## Critical values for test statistics:   
## tau3 phi2 phi3  
## statistic -2.816297 13.41979 11.30111  
## ---------------------------------   
## Serie U   
## Coefficients   
## Estimate Std. Error t value Pr(>|t|)  
## (Intercept) 0.683199577 0.264370829 2.584247 1.162547e-02  
## z.lag.1 -0.062506926 0.025355303 -2.465241 1.588904e-02  
## tt -0.002429941 0.001709318 -1.421585 1.591329e-01  
## z.diff.lag 0.573869859 0.092038426 6.235112 2.155442e-08  
## Critical values for test statistics:   
## tau3 phi2 phi3  
## statistic -2.465241 2.345759 3.506757