1.R

Toshiba

Mon Dec 01 16:46:42 2014

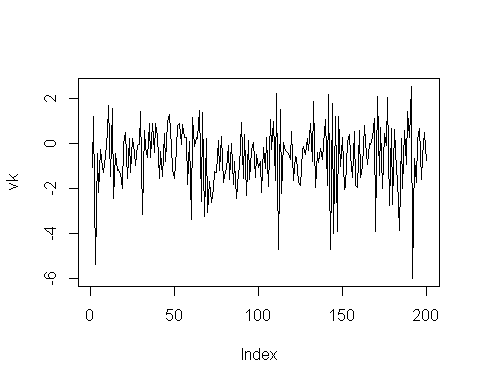
library(TSA)

## Loading required package: leaps  
## Loading required package: locfit  
## locfit 1.5-9.1 2013-03-22  
## Loading required package: mgcv  
## Loading required package: nlme  
## This is mgcv 1.8-0. For overview type 'help("mgcv-package")'.  
## Loading required package: tseries  
##   
## Attaching package: 'TSA'  
##   
## The following objects are masked from 'package:stats':  
##   
## acf, arima  
##   
## The following object is masked from 'package:utils':  
##   
## tar

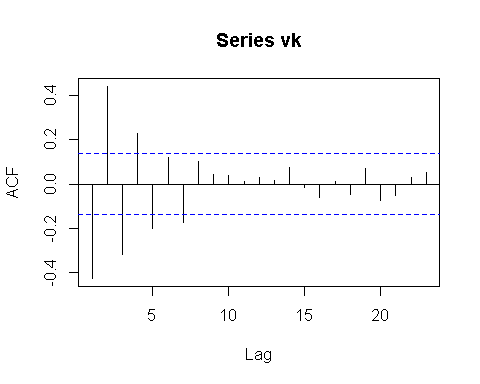
library(tsDyn)

## Warning: package 'tsDyn' was built under R version 3.1.2

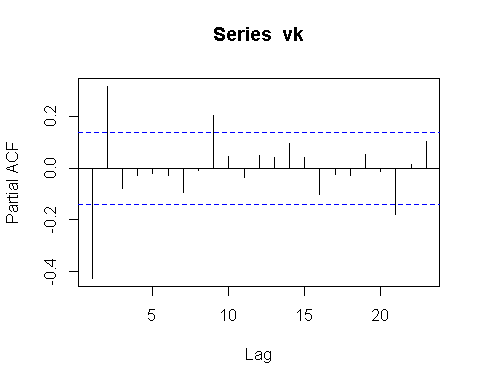
setwd("C:/Users/Toshiba/Desktop/vishal iit/5th sem/Applied time series analysis/assignments/project")  
load("projq1a.Rdata")  
  
plot(vk,type='l')



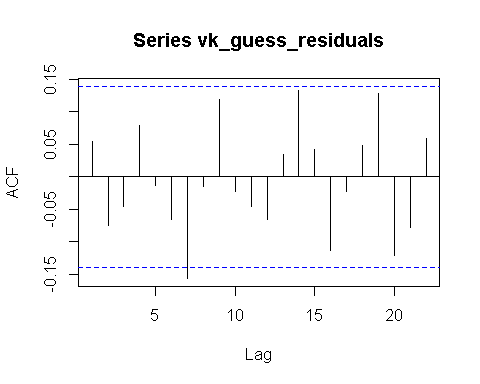
acf(vk)



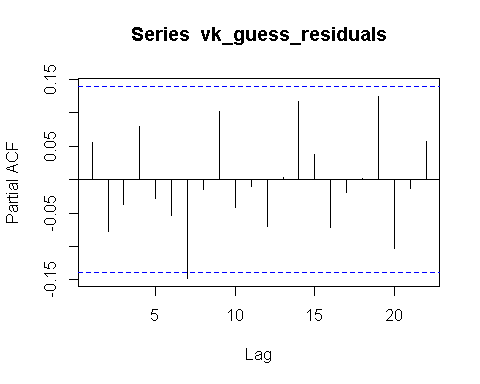
pacf(vk)



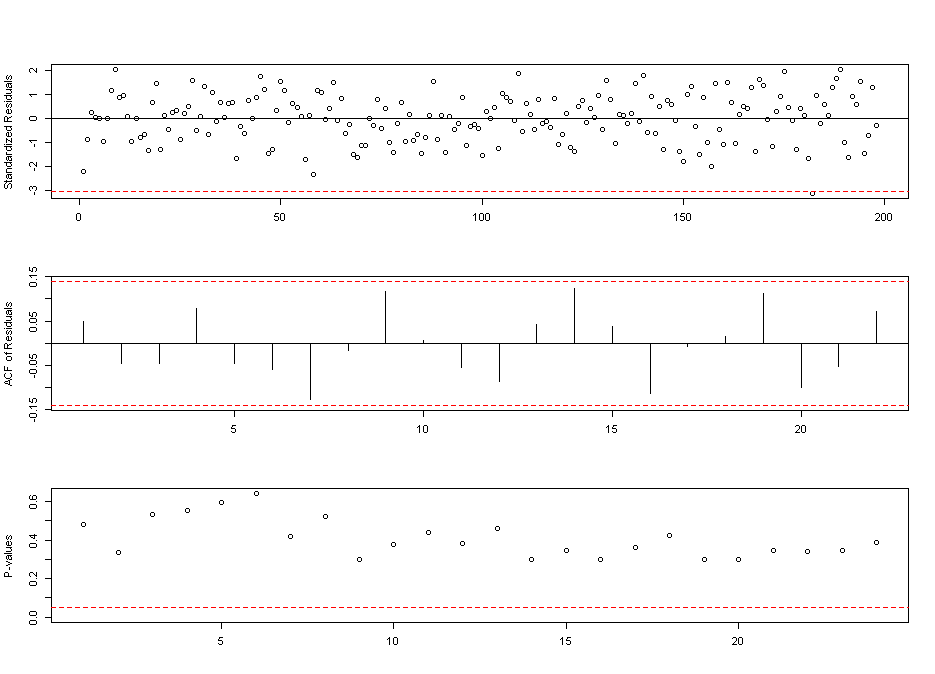
nonlinear\_test=Tsay.test(vk,order=2)# non linear  
  
vk\_guess=tar(vk,2,1,1,method="MAIC",estimate.thd=TRUE)  
vk\_guess\_residuals=vk\_guess$residuals  
acf(vk\_guess\_residuals)



pacf(vk\_guess\_residuals)



Threshold=vk\_guess$n1 # Threshold  
vk\_guess\_1\_coeff=vk\_guess$qr1$coefficients # cofficients for first regime  
vk\_guess\_2\_coeff=vk\_guess$qr2$coefficients # cofficients for second regime  
  
phi\_intercept\_1=vk\_guess\_1\_coeff[1]  
phi\_1\_1=vk\_guess\_1\_coeff[2]  
phi\_2\_1=vk\_guess\_1\_coeff[3]  
  
phi\_intercept\_2=vk\_guess\_2\_coeff[1]  
phi\_1\_2=vk\_guess\_2\_coeff[2]  
  
tsdiag.TAR(vk\_guess)



# part B  
  
epsk=vk\_guess\_residuals  
vk\_guess\_y=vk\_guess$y  
  
Threshold\_mod\_store=0  
phi\_mod\_intercept\_1\_store=0  
phi\_mod\_1\_1\_store=0  
phi\_mod\_2\_1\_store=0  
  
phi\_mod\_intercept\_2\_store=0  
phi\_mod\_1\_2\_store=0  
j=1  
k=1  
l=1  
m=1  
n=1  
o=1  
for (i in 1:200)  
{  
  
epskr1<-sample(epsk,size=200,replace=T)  
vk\_mod=vk\_guess\_y+epskr1  
vk\_guess\_mod=tar(vk\_mod,2,1,1,method="MAIC",estimate.thd=TRUE)  
  
if(!is.na(vk\_guess\_mod$n1))  
{  
Threshold\_mod\_store[j]=vk\_guess\_mod$n1   
j=j+1  
}  
  
vk\_guess\_mod\_1\_coeff=vk\_guess\_mod$qr1$coefficients # cofficients for first regime  
vk\_guess\_mod\_2\_coeff=vk\_guess\_mod$qr2$coefficients # cofficients for second regime  
  
if(!is.na(vk\_guess\_mod\_1\_coeff[1]))  
{  
   
phi\_mod\_intercept\_1\_store[k]=vk\_guess\_mod\_1\_coeff[1]  
k=k+1  
}  
  
if(!is.na(vk\_guess\_mod\_1\_coeff[2]))  
{  
phi\_mod\_1\_1\_store[l]=vk\_guess\_mod\_1\_coeff[2]  
l=l+1  
}  
  
if(!is.na(vk\_guess\_mod\_1\_coeff[3]))  
{  
phi\_mod\_2\_1\_store[m]=vk\_guess\_mod\_1\_coeff[3]  
m=m+1  
}  
  
if(!is.na(vk\_guess\_mod\_2\_coeff[1]))  
{  
phi\_mod\_intercept\_2\_store[n]=vk\_guess\_mod\_2\_coeff[1]  
n=n+1  
}  
  
if(!is.na(vk\_guess\_mod\_2\_coeff[2]))  
{  
phi\_mod\_1\_2\_store[o]=vk\_guess\_mod\_2\_coeff[2]  
o=o+1  
}  
  
}  
  
Threshold\_mod\_mean=mean(Threshold\_mod\_store)  
Threshold\_mod\_var=var(Threshold\_mod\_store)  
Threshold\_mod\_den=dnorm(Threshold\_mod\_store,mean=Threshold\_mod\_mean,sd=sqrt(Threshold\_mod\_var))  
#plot(Threshold\_mod\_store,Threshold\_mod\_den,type="l")  
  
phi\_mod\_intercept\_1\_mean=mean(phi\_mod\_intercept\_1\_store)  
phi\_mod\_intercept\_1\_var=var(phi\_mod\_intercept\_1\_store)  
phi\_mod\_intercept\_1\_den=dnorm(phi\_mod\_intercept\_1\_store,mean=phi\_mod\_intercept\_1\_mean,sd=sqrt(phi\_mod\_intercept\_1\_var))  
#plot(phi\_mod\_intercept\_1\_store,phi\_mod\_intercept\_1\_den,type='l')  
  
  
phi\_mod\_1\_1\_mean=mean(phi\_mod\_1\_1\_store)  
phi\_mod\_1\_1\_var=var(phi\_mod\_1\_1\_store)  
phi\_mod\_1\_1\_den=dnorm(phi\_mod\_1\_1\_store,mean=phi\_mod\_1\_1\_mean,sd=sqrt(phi\_mod\_1\_1\_var))  
#plot(phi\_mod\_1\_1\_store,phi\_mod\_1\_1\_den,type='l')  
  
phi\_mod\_2\_1\_mean=mean(phi\_mod\_2\_1\_store)  
phi\_mod\_2\_1\_var=var(phi\_mod\_2\_1\_store)  
phi\_mod\_2\_1\_den=dnorm(phi\_mod\_2\_1\_store,mean=phi\_mod\_2\_1\_mean,sd=sqrt(phi\_mod\_2\_1\_var))  
#plot(phi\_mod\_2\_1\_store,phi\_mod\_2\_1\_den,type='l')  
  
phi\_mod\_intercept\_2\_mean=mean(phi\_mod\_intercept\_2\_store)  
phi\_mod\_intercept\_2\_var=var(phi\_mod\_intercept\_2\_store)  
phi\_mod\_intercept\_2\_den=dnorm(phi\_mod\_intercept\_2\_store,mean=phi\_mod\_intercept\_2\_mean,sd=sqrt(phi\_mod\_intercept\_2\_var))  
#plot(phi\_mod\_intercept\_2\_store,phi\_mod\_intercept\_2\_den,type='l')  
  
phi\_mod\_1\_2\_mean=mean(phi\_mod\_1\_2\_store)  
phi\_mod\_1\_2\_var=var(phi\_mod\_1\_2\_store)  
phi\_mod\_1\_2\_den=dnorm(phi\_mod\_1\_2\_store,mean=phi\_mod\_1\_2\_mean,sd=sqrt(phi\_mod\_1\_2\_var))  
#plot(phi\_mod\_1\_2\_store,phi\_mod\_1\_2\_den,type='l')

|  |  |  |
| --- | --- | --- |
| Variable | Actual | Mean |
| Threshold | 175 | 156.66 |
| Intercept1 | -0.165 | -0.419 |
| -d11 | -0.0248 | -0.107 |
| -d21 | 0.422 | 0.272 |
| Intercept2 | 0.366 | -0.13 |
| -d12 | -1.88 | -1.74 |