Curso de Macroeconometria

Resolução da Lista 12

Rodney N Silva

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Resolução dos Exercícios

```
library(BETS)
library(forecast)
library(urca)
library(stargazer)
library(png)
library(xtable)
library(ggplot2)
library(vars)
library(lubridate)
library(ggplot2)
library(scales)
library(ggthemes)
library(XLConnect)

#1.
setwd( "C:/Users/rodney/Documents/Macroeconometria/Aula12")
### Coletar os dados
dbgg <- window(BETS.get(13762), start=c(2007,01))
xtable(tail(dbgg))
```

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2017						72.79	73.24	73.71	73.81	74.38	74.43	

```
# Divida Bruta vai até Nov de 2017
dbgg <- ts(c(dbgg,dbgg[length(dbgg)]),
           start=c(2007,01),frequency = 12)
selic <- window(BETS.get(4189), start=c(2007,01))
inflacao <- window(BETS.get(13522), start=c(2007,01))
# Pib vai até Terceiro trimestre de 2017
pib <- BETS.get(22099)
# Previsão do Pib para Quarto trimestre de 2017
# Usar o indice de commodities CRB para gerar um modelo Arimax
wb = loadWorkbook("data0717.xls")
df = readWorksheet(wb, sheet = "T1",
                   header = TRUE,colTypes=XLC$DATA_TYPE.NUMERIC,startRow = 3)[,-c(1:2)]
df <- df[complete.cases(df),]
crb <- apply(df, 2, sum)
```

```
crb <- ts(crb,start=c(2015,1),frequency = 4,end=c(2018,4))
crbd <- 0
for(i in 2:16){
  crbd[i] <- 100*(crb[i]-crb[i-1])/crb[i-1]

}
crbd <- crbd[-1]
pib_m <- window(pib,start=c(2015,2),end=c(2017,3))
crbd_m <- ts(crbd,start=c(2015,2),end=c(2017,3),frequency=4)
crbd_f <- ts(crbd[11],start=c(2017,4),end=c(2017,4),frequency=4)
pibm <- auto.arima(pib_m,xreg=crbd_m)
pibf <- forecast(pibm,xreg=crbd_f)
stargazer(print(pibf))
```

Point Forecast Lo 80 Hi 80 Lo 95 Hi 95 2017 Q4 164.9245 161.4711 168.3778 159.643 170.2059

Tabela 1

Statistic	N	Mean	St. Dev.	Min	Max
Point Forecast	1	164.924		164.924	164.924
Lo 80	1	161.471		161.471	161.471
Hi 80	1	168.378		168.378	168.378
Lo 95	1	159.643		159.643	159.643
Hi 95	1	170.206		170.206	170.206

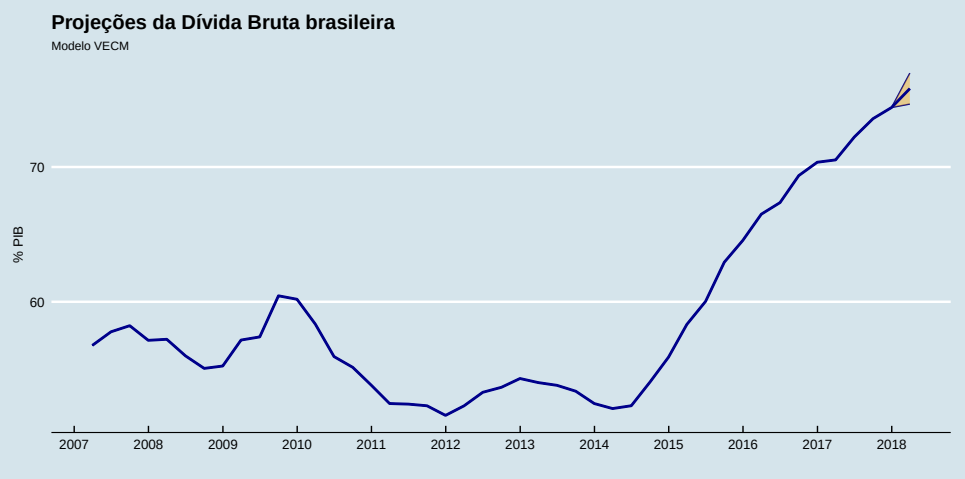
```
pib <- ts(c(pib,pibf$mean),start=c(1995,01),frequency = 4)

# nfsp vai até nov de 2017, o valor de dezembro utilizado é o mesmo
# de novembro
nfsp <- window(BETS.get(5793), start=c(2007,01))
nfsp <- ts(c(nfsp,nfsp[length(nfsp)]),
           start=c(2007,01),frequency = 12)
cambio <- window(BETS.get(3697), start=c(2007,01))
### Construir variáveis
dpib <- (((pib+lag(pib,-1)+lag(pib,-2)+lag(pib,-3))/4)/((lag(pib,-4)+lag(pib,-5)+lag(pib,-6)+lag
juroreal <- (((1+(selic/100))/(1+(inflacao/100)))-1)*100
# juroreal vai até nov de 2017, o valor de dezembro utilizado é o #mesmo de novembro
juroreal <- ts(c(juroreal,juroreal[length(juroreal)]),
               start=c(2007,01),frequency = 12)
### Juntar os dados mensais
data <- ts.intersect(dbgg, juroreal, nfsp, cambio)
### Trimestralizar
data <- ts(aggregate(data, nfrequency=4, FUN=mean),
start=c(2007,01), freq=4)
### Juntar todos os dados
data <- ts.intersect(data, dpib)
colnames(data) <- c('dbgg', 'juroreal', 'nfsp', 'cambio', 'dpib')
### Selecionar Defasagem
def <- VARselect(data,lag.max=4,type="both")
### Teste de Cointegração Máximo AutoValor
jo.eigen <- ca.jo(data, type='eigen', K=5,
                  ecdet='const',spec='transitory')
```

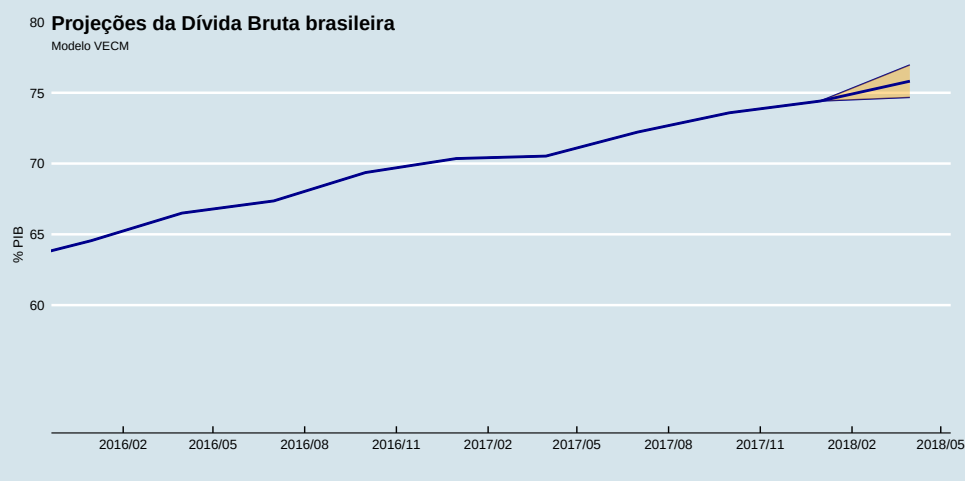
```
vec <- cajorls(jo.eigen, r=3)
vec.level <- vec2var(jo.eigen, r=3)
fcast <- predict(vec.level, n.ahead = 1)

dbggf <- c(data[,1], fcast$fcst$dbgg[,1])
dbggl <- c(data[,1], fcast$fcst$dbgg[,2])
dbggu <- c(data[,1], fcast$fcst$dbgg[,3])
time <- seq(as.Date('2007-03-31'), length.out = 45, by='3 month')
df <- data.frame(time=time, dbggf=dbggf, dbggl=dbggl, dbggu=dbggu)

ggplot(df, aes(x=time))+
  theme_economist()+
  geom_line(aes(y=dbggf), size=.5, colour='darkblue')+
  geom_line(aes(y=dbggl), size=.5, colour='darkblue')+
  geom_line(aes(y=dbggu), size=.5, colour='darkblue')+
  scale_x_date(breaks = date_breaks("1 years"),
               labels = date_format("%Y"))+
  xlab('')+ylab('% PIB')+
  labs(title='Projeções da Dívida Bruta brasileira',
       subtitle='Modelo VECM')+
  geom_smooth(aes(x=time, y=dbggf, ymax=dbggu, ymin=dbggl),
              colour='darkblue', fill='orange', stat='identity')
```




```
ggplot(df, aes(x=time))+
  theme_economist()+
  geom_line(aes(y=dbggf), size=.5, colour='darkblue')+
  geom_line(aes(y=dbggl), size=.5, colour='darkblue')+
  geom_line(aes(y=dbggu), size=.5, colour='darkblue')+
  scale_x_date(breaks = date_breaks("3 months"),
               labels = date_format("%Y/%m"))+
  scale_y_discrete(limits=c(60,65,70,75,80))+
  coord_cartesian(xlim = as.Date(c("2016/1/1","2018/3/31")))+
  xlab('')+ylab('% PIB')+
  labs(title='Projeções da Dívida Bruta brasileira',
       subtitle='Modelo VECM')+
  geom_smooth(aes(x=time, y=dbggf, ymax=dbggu, ymin=dbggl),
              colour='darkblue', fill='orange', stat='identity')
```


Projeções da Dívida Bruta brasileira
Modelo VECM
% PIB
80
75
70
65
60
2016/02
2016/05
2016/08
2016/11
2017/02
2017/05
2017/08
2017/11
2018/02
2018/05