

R solution to hw3

October 25, 2018

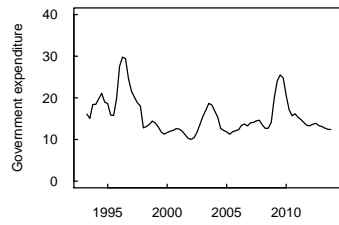
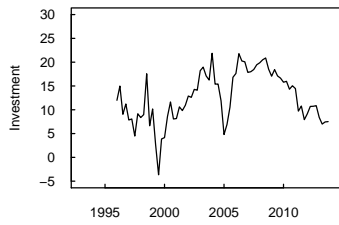
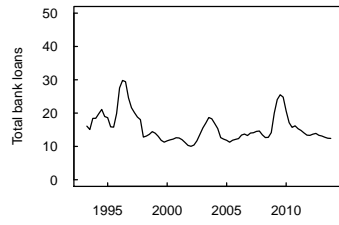
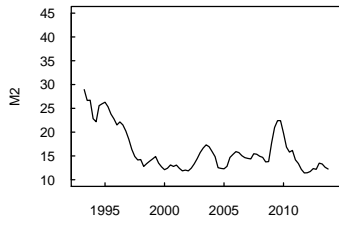
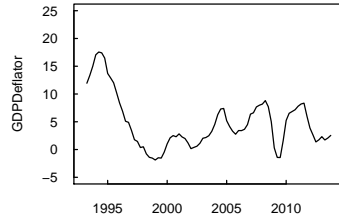
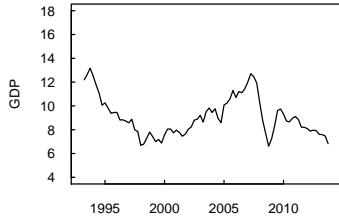
The fig.3 in the reference paper

```
> # set working directory
> rm(list = ls())
> setwd("C:/Users/mignayng/Desktop/TA/hw/hw3/R/sweave")
> data1 <- read.csv("CMTS_quarterly.csv")
> ##fig3
> tsdata <- data1[which(data1['qtime']>1992
+                       & data1['qtime']<2014),]
> attach(tsdata)
> X <- qtime
> opar <- par(no.readonly = T)
> par(mfrow = c(3,2))
> par(mar = c(2,4,2,2))
> # sub-figure 1
> RealGDP = NominalGDP/GDPDeflator
> y1 <- (diff(RealGDP,lag = 4)/RealGDP[-c(1:4)])*100
> plot(X[-c(1:4)], y1, type = 'l', xlab = "",
+       xlim = c(1993,2014), ylim = c(4,18),
+       ylab = "GDP", axes = FALSE)
> box()
> axis(side = 1, at = c(seq(1995,2010,by=5)), lab = c(seq(1995,2010,by=5)),
+       cex.axis = 1, tck = 0.02)
> axis(side = 2, at = c(seq(4,18,by=2)), lab = c(seq(4,18,by=2)),
+       las = 2, cex.axis = 1, tck = 0.02)
> # sub-figure 2
> y2 <- (diff(GDPDeflator,lag = 4)/GDPDeflator[-c(1:4)])*100
> plot(X[-c(1:4)], y2, type = 'l', xlab = "",
+       xlim = c(1993,2014), ylim = c(-5,25),
+       ylab = "GDPDeflator", axes = FALSE)
> box()
> axis(side = 1, at = c(seq(1995,2010,by=5)), lab = c(seq(1995,2010,by=5)),
+       cex.axis = 1, tck = 0.02)
> axis(side = 2, at = c(seq(-5,25,by=5)), lab = c(seq(-5,25,by=5)),
```

```

+     las = 2, cex.axis = 1, tck = 0.02)
> # sub-figure 3
> y3 <- (diff(M2,lag = 4)/M2[-c(1:4)])*100
> plot(X[-c(1:4)], y3, type = 'l', xlab = "",
+     xlim = c(1993,2014), ylim = c(10,45),
+     ylab = "M2", axes = FALSE)
> box()
> axis(side = 1, at = c(seq(1995,2010,by=5)), lab = c(seq(1995,2010,by=5)),
+     cex.axis = 1, tck = 0.02)
> axis(side = 2, at = c(seq(10,45,by=5)), lab = c(seq(10,45,by=5)),
+     las = 2, cex.axis = 1, tck = 0.02)
> # sub-figure 4
> y4 <- (diff(BankLoansTotal,lag = 4)/BankLoansTotal[-c(1:4)])*100
> plot(X[-c(1:4)], y4, type = 'l', xlab = "",
+     xlim = c(1993,2014), ylim = c(0,50),
+     ylab = "Total bank loans", axes = FALSE)
> box()
> axis(side = 1, at = c(seq(1995,2010,by=5)), lab = c(seq(1995,2010,by=5)),
+     cex.axis = 1, tck = 0.02)
> axis(side = 2, at = c(seq(0,50,by=10)), lab = c(seq(0,50,by=10)),
+     las = 2, cex.axis = 1, tck = 0.02)
> # sub-figure 5
> y5 <- (diff(NominalBusGFCF,lag = 4)/NominalBusGFCF[-c(1:4)])*100
> plot(X[-c(1:4)], y5, type = 'l', xlab = "",
+     xlim = c(1993,2014), ylim = c(-5,30),
+     ylab = "Investment", axes = FALSE)
> box()
> axis(side = 1, at = c(seq(1995,2010,by=5)), lab = c(seq(1995,2010,by=5)),
+     cex.axis = 1, tck = 0.02)
> axis(side = 2, at = c(seq(-5,30,by=5)), lab = c(seq(-5,30,by=5)),
+     las = 2, cex.axis = 1, tck = 0.02)
> # sub-figure 6
> y6 <- (diff(NominalGovtC,lag = 4)/NominalGovtC[-c(1:4)])*100
> plot(X[-c(1:4)], y4, type = 'l', xlab = "",
+     xlim = c(1993,2014), ylim = c(0,40),
+     ylab = "Government expenditure", axes = FALSE)
> box()
> axis(side = 1, at = c(seq(1995,2010,by=5)), lab = c(seq(1995,2010,by=5)),
+     cex.axis = 1, tck = 0.02)
> axis(side = 2, at = c(seq(0,40,by=10)), lab = c(seq(0,40,by=10)),
+     las = 2, cex.axis = 1, tck = 0.02)

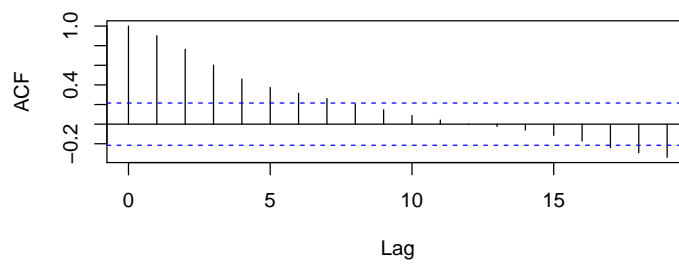
```



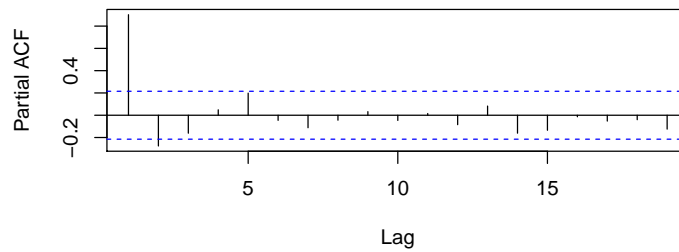
ACF and PCF of all the time series

```
> # ACF and PCF
> par(opar) # initialize parameters
> # GDP
> par(mfrow = c(2,1))
> acf(y1,main="GDP ACF")
> pacf(y1,main="GDP PCF")
```

GDP ACF

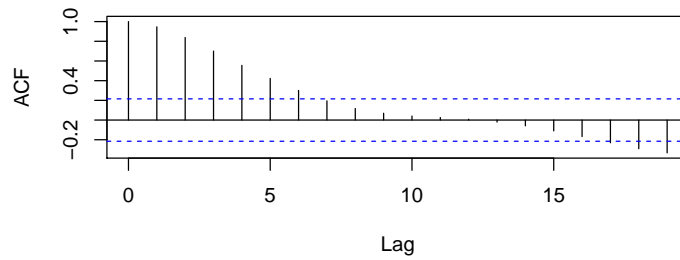


GDP PCF

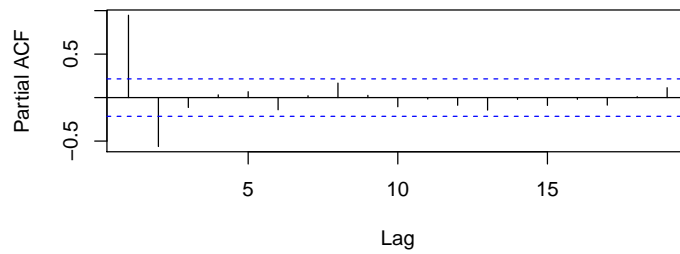


```
> # GDP deflator
> par(mfrow = c(2,1))
> acf(y2,main="GDP deflator ACF")
> pacf(y2,main="GDP deflator PCF")
```

GDP deflator ACF

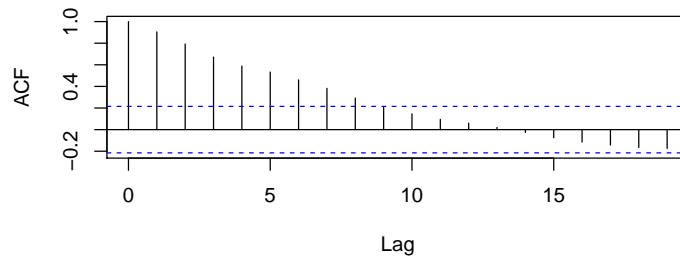


GDP deflator PCF

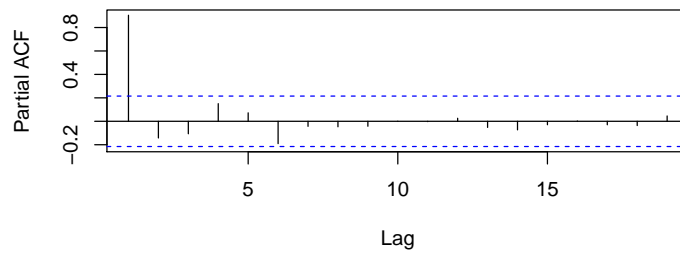


```
> # M2
> par(mfrow = c(2,1))
> acf(y3,main="M2 ACF")
> pacf(y3,main="M2 PCF")
```

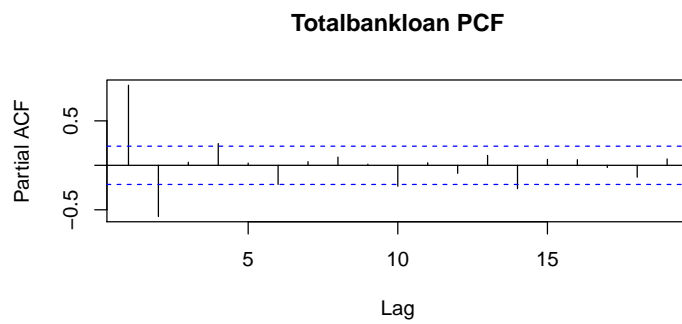
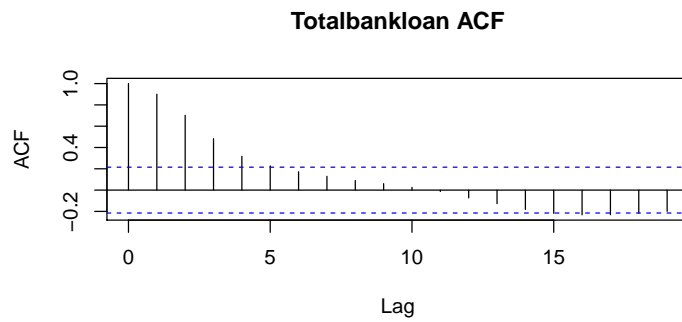
M2 ACF



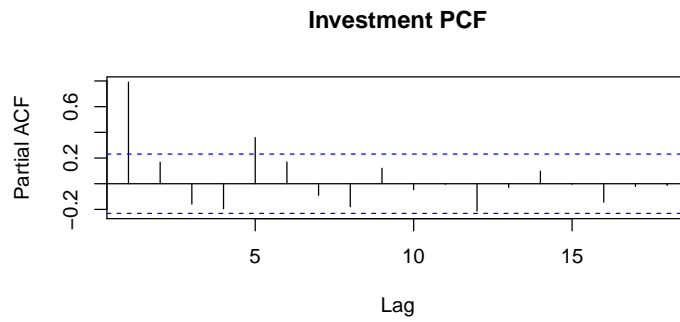
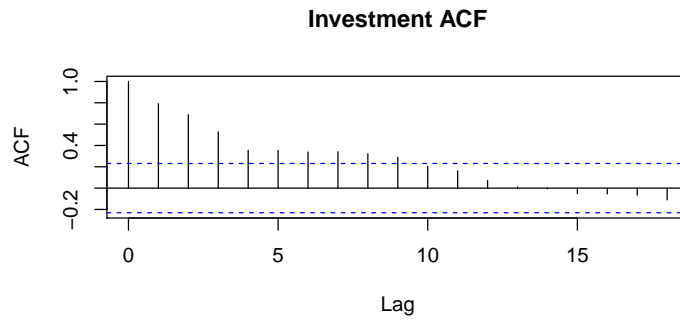
M2 PCF



```
> # Totalbankloan  
> par(mfrow = c(2,1))  
> acf(y4,main="Totalbankloan ACF")  
> pacf(y4,main="Totalbankloan PCF")
```

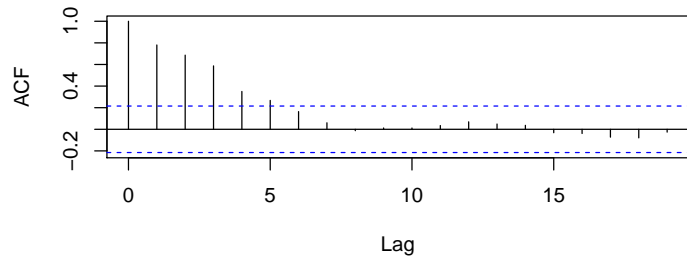


```
> # Investment
> par(mfrow = c(2,1))
> y5 <- na.omit(y5)
> acf(y5,main="Investment ACF")
> pacf(y5,main="Investment PCF")
```



```
> # Government expenditure
> par(mfrow = c(2,1))
> acf(y6,main="Government expenditure ACF")
> pacf(y6,main="Government expenditure PCF")
```


Government expenditure ACF



Government expenditure PCF

