# PS-1

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Empirical Question

```
library(tidyverse)
library(sandwich)
library(lmtest)
library(jtools)
library(sjPlot)
library(sjmisc)
library(sjlabelled)
library(estimatr)
library(haven)
library(ivreg)
library(oaxaca)

test<- read.csv("~/R/R Homework/ip_frb.txt")
test <- test %>% rename("Prod"="X7.6240000e.000")
test<- test %>% mutate(ln_prod=log(Prod))
test<- test %>% mutate(time=as.numeric(row.names(test)))
time_series_df <- test[c('time','ln_prod')]
ggplot(aes(x=time,y=ln_prod),data = test)+geom_point(size=2)+geom_line(color="red")
```
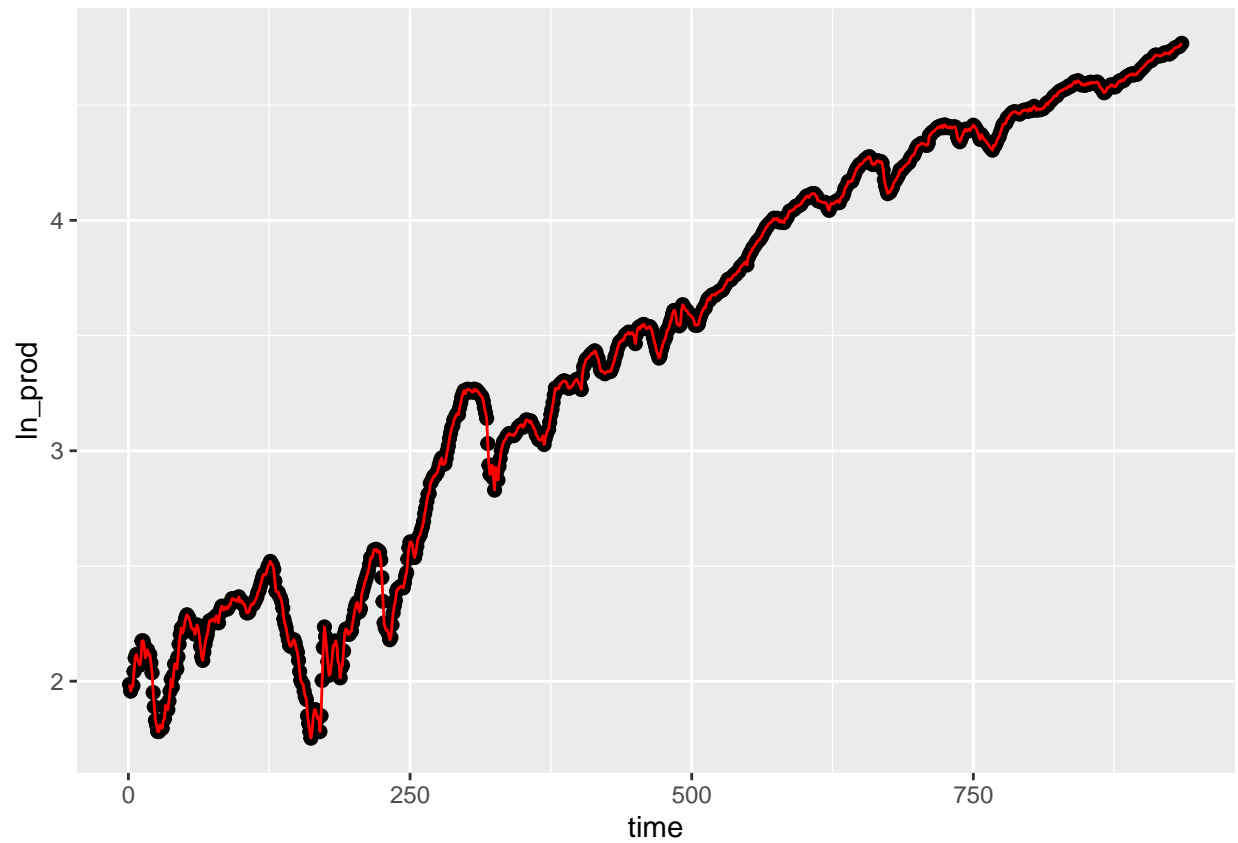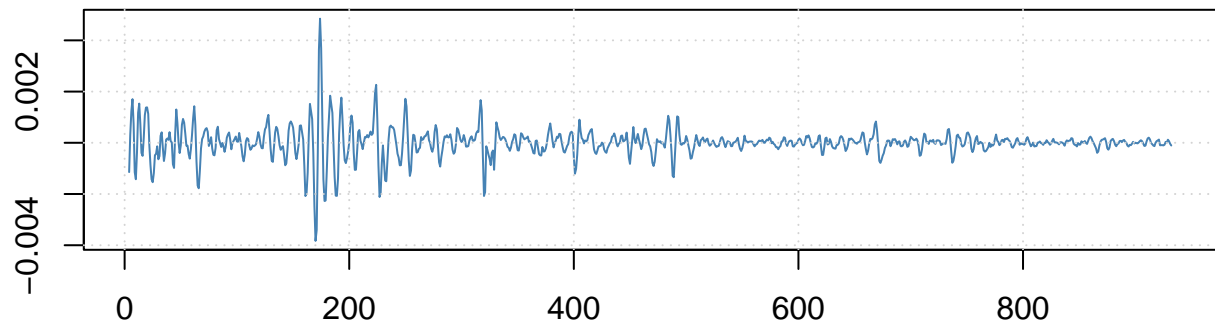
```
library(mFilter)
library(zoo)
ts_zoo <- read.zoo(time_series_df)
ts<-as.ts(ts_zoo)
f<-bkfilter(ts,pl=18,pu=96)
plot(f)
```

Baxter–King Filter of ts
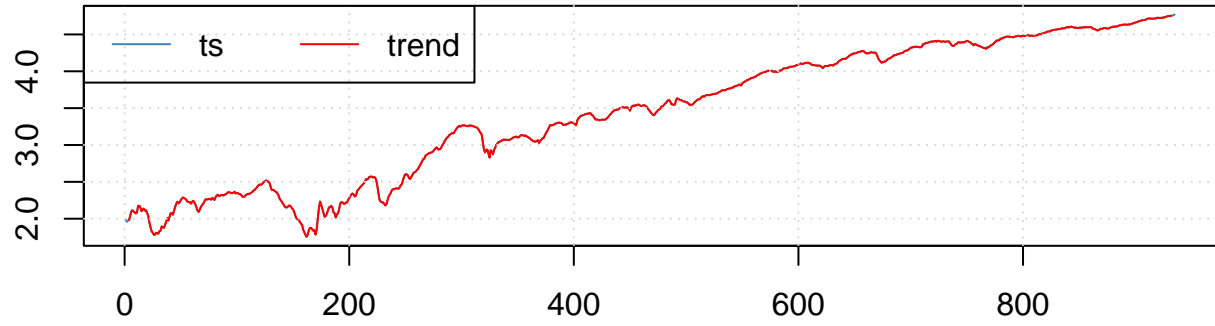
Cyclical component (deviations from trend)


```
#test2<-bkfilter(test['ln_prod'],pl=18,pu=96)
```