Homework week 2

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Using pdfetch

To show how to use pdfetch, I'm going to use a simple exercise: how to compute the income to wealth ratio of households for many countries at once. First you need to load the library

```
library(pdfetch)
```

In this specific example, I will need to get data from different databases: flow data from the non-financial transaction for consumption and two measures of disposable income (gross and net), stock data from the financial balance sheet: total financial assets and stock data from the non-financial balance sheet: housing wealth.

We will first get the data from the non-financial transactions

```
# Selecting the flows for nasa_nf_tr
names<-c("B6G","B6N","P3")
#getting the data in a raw format
NF_TR_raw = pdfetch_EUROSTAT("nasa_10_nf_tr", UNIT="CP_MNAC", NA_ITEM=names, from="1994-12-31", to="201
                                                    SECTOR=c("S14_S15"), DIRECT = "PAID")
#Transforming the data into a data.frame (easy to access and to view)
NF_TR<-as.data.frame(NF_TR_raw)
```

Then we look for non-financial balance sheets

```
#selection of the flows for nama_10_nfa_bs (N11N - dwellings - net)
names<-c("N11N")
NFA_BS_raw = pdfetch_EUROSTAT("nama_10_nfa_bs", UNIT="CP_MNAC",ASSET10=names, from="1994-12-31", to="20
NFA_BS<-as.data.frame(NFA_BS_raw)
```

And finally the financial balance sheet

```
#selection of the flows for nasa_10_f_bs (BF90 - net financial assets)
names<-c("BF90")
F_BS_raw = pdfetch_EUROSTAT("nasa_10_f_bs", UNIT="MIO_NAC",CO_NCO="CO",NA_ITEM=names, from="1994-12-31"
                                                    SECTOR=c("S14_S15"))
F_BS<-as.data.frame(F_BS_raw)
```

If you look at the different data frame generated, you will see weird column names. This is due to the way pdfetch works, he concatenates all the information regarding a timeseries (all the meta-data: geo, na_item, unit, etc...) into one name, separated by dots. This is not realy readable, so I created a little sub-routine to clean those column name and only keep the indicator and the country code. Because each data frame has different names, I had to update each routine for the data frame. While I'm doing this, I'm also creating a new dataset called HHdata which concatenates all the information coming from the 3 datasets. The only issue with this is the length of the varisous timeseries, so I had to truncatenate some of these. The last thing I'm doing is to collect all the country code I can get, to be used afterwards.

```
# Automatic procedure to remove the non-interesting bit of the colnames
HHdata<-c()
newcoln<-c()
countries<-c()
```

```
# For the the NF_TR data.frame
coln<-colnames(NF_TR)
for(i in 1:length(coln)){
    name<-coln[i]
    tname<-strsplit(name,"\\.")[[1]]
    newname<-paste(tname[c(4,6)],collapse=".")
    #Adding the current country code to the list of country codes
    countries<-c(countries,tname[6])
    # If the column contains only NA, remove it from the dataset
    if(sum(is.na(NF_TR[,i]))!=length(NF_TR[,i])){
        newcoln<-c(newcoln,newname)
        #creating the HHdata dataset by column binding the exisiting HHdata with the new column
        HHdata<-cbind(HHdata,NF_TR[,i])
    }
}

# For the the NFA_BS data.frame
coln<-colnames(NFA_BS)
for(i in 1:length(coln)){
    name<-coln[i]
    tname<-strsplit(name,"\\.")[[1]]
    newname<-paste(tname[c(4,5)],collapse=".")
    #Adding the current country code to the list of country codes
    countries<-c(countries,tname[5])
    # If the column contains only NA, remove it from the dataset
    if(sum(is.na(NFA_BS[,i]))!=length(NFA_BS[,i])){
        newcoln<-c(newcoln,newname)
        #creating the HHdata dataset by column binding the exisiting HHdata with the new column
        HHdata<-cbind(HHdata,NFA_BS[,i])
    }
}

# For the the F_BS data.frame
coln<-colnames(F_BS)
for(i in 1:length(coln)){
    name<-coln[i]
    tname<-strsplit(name,"\\.")[[1]]
    newname<-paste(tname[c(6,7)],collapse=".")
    #Adding the current country code to the list of country codes
    countries<-c(countries,tname[7])
    # If the column contains only NA, remove it from the dataset
    if(sum(is.na(F_BS[,i]))!=length(F_BS[,i])){
        newcoln<-c(newcoln,newname)
        #creating the HHdata dataset by column binding the exisiting HHdata with the new column
        HHdata<-cbind(HHdata,F_BS[,i])
    }
}
```

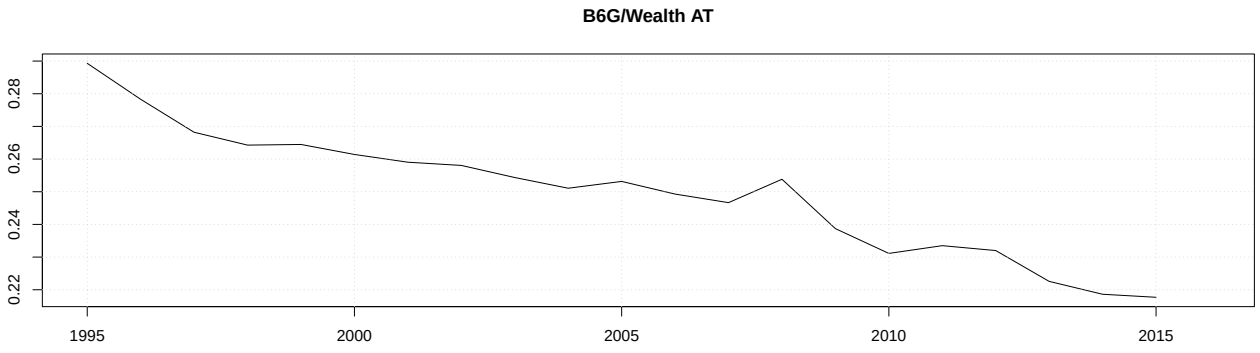
Now, I will transform the HHdata into a data.frame for ease of use and give nice names to column and rows.

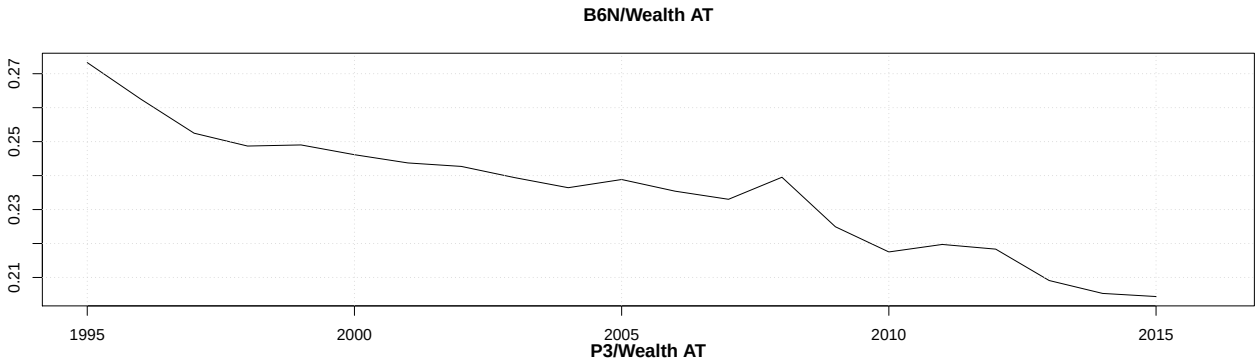
```
HHdata<-as.data.frame(HHdata)
colnames(HHdata)<-newcoln
rownames(HHdata)<-rownames(F_BS)
```

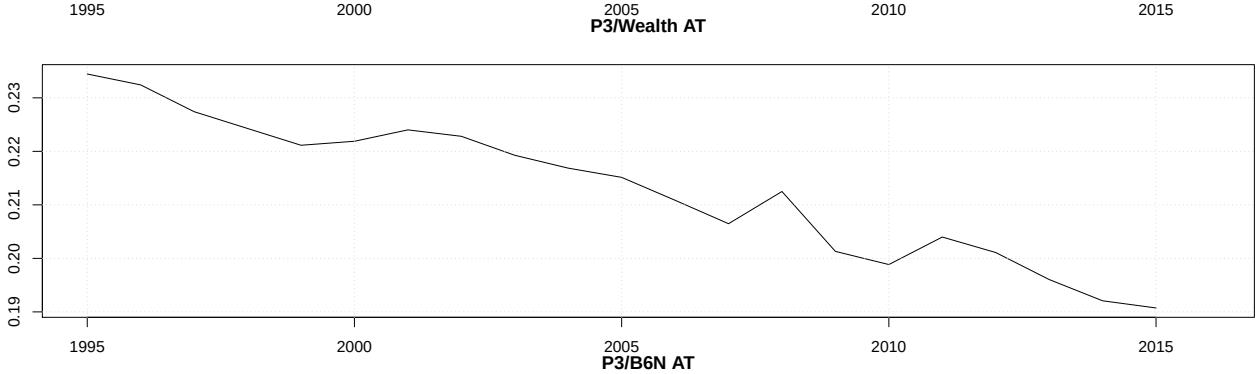
Now I want to plot the data I'm interested in for all the countries for which I can. Remember the `countries`

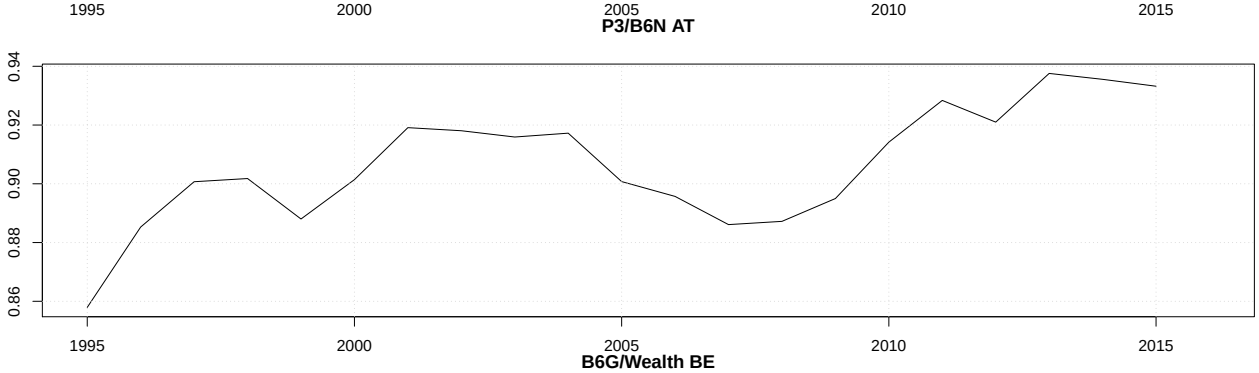
vector containing all the country codes? I am going to extract all the codes by using the `unique` function which gives me each code only once. Then I will apply the plot procedure for each country.

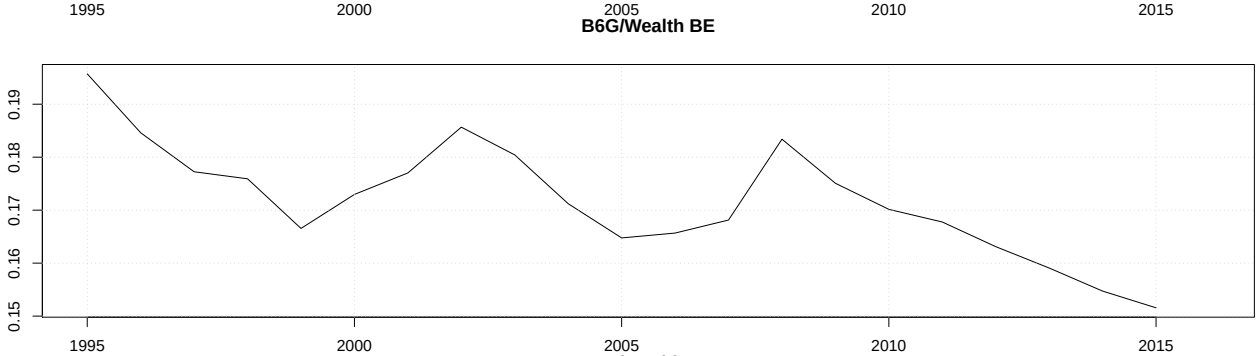
```
# getting the unique country codes
countries<-unique(countries)

#For each country
for(country in countries){
    #Get all the column in which the country code exists
    indices<-grep(country,newcoln)
    #Plotting the data only if I have the 5 timeseries I need
    if(length(indices)==5){
        #This will create a jpg with the country code as name
        #jpeg(filename=paste(country,".jpg",sep=""))
        #Dividing the plot into 4 sub-plots (2 by 2)
        #par(mfrow = c(2,2))
        #Plot 1 gross disposable income over total wealth
        timeseries<-HHdata[,paste("B6G",country,sep=".")]/
            (HHdata[,paste("N11N",country,sep=".")]+HHdata[,paste("BF90",country,sep=".")])
        plot(as.numeric(substr(rownames(HHdata),1,4)),timeseries,type="l",main=paste("B6G/Wealth",count
        grid()
        #Plot 2 net disposable income over total wealth
        timeseries<-HHdata[,paste("B6N",country,sep=".")]/
            (HHdata[,paste("N11N",country,sep=".")]+HHdata[,paste("BF90",country,sep=".")])
        plot(as.numeric(substr(rownames(HHdata),1,4)),timeseries,type="l",main=paste("B6N/Wealth",count
        grid()
        #Plot 3 total consumption over total wealth
        timeseries<-HHdata[,paste("P3",country,sep=".")]/
            (HHdata[,paste("N11N",country,sep=".")]+HHdata[,paste("BF90",country,sep=".")])
        plot(as.numeric(substr(rownames(HHdata),1,4)),timeseries,type="l",main=paste("P3/Wealth",country
        grid()
        #Plot 4 total consumption over net disposable income
        timeseries<-HHdata[,paste("P3",country,sep=".")]/
            (HHdata[,paste("B6N",country,sep=".")])
        plot(as.numeric(substr(rownames(HHdata),1,4)),timeseries,type="l",main=paste("P3/B6N",country),
        grid()
        #This finished the jpeg creation
        #dev.off()
    }
}
```

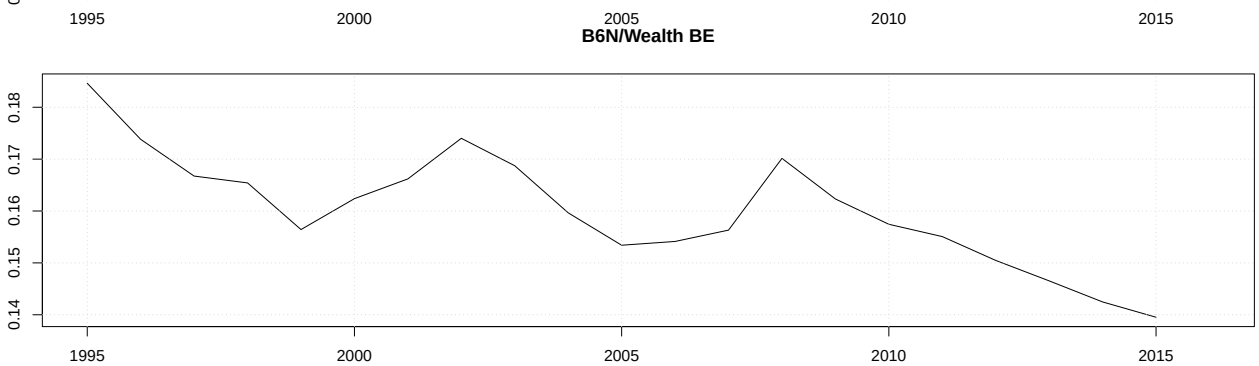


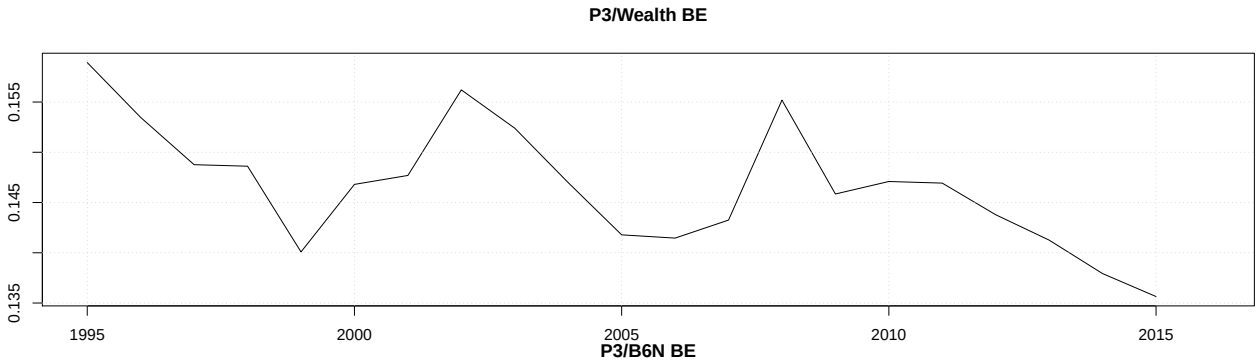

B6N/Wealth AT
0.27
0.25
0.23
0.21
1995
2000
2005
2010
2015

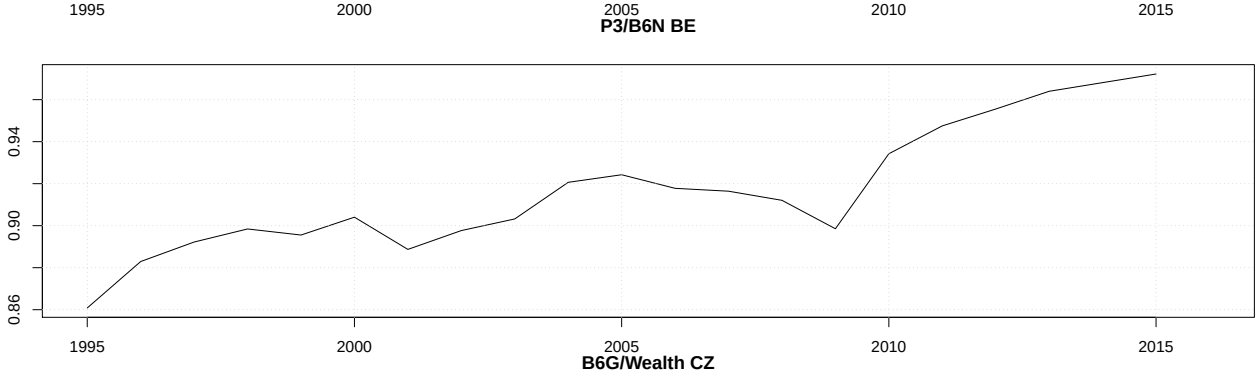

P3/Wealth AT
0.23
0.22
0.21
0.20
0.19
1995
2000
2005
2010
2015


P3/B6N AT
0.94
0.92
0.90
0.88
0.86
1995
2000
2005
2010
2015

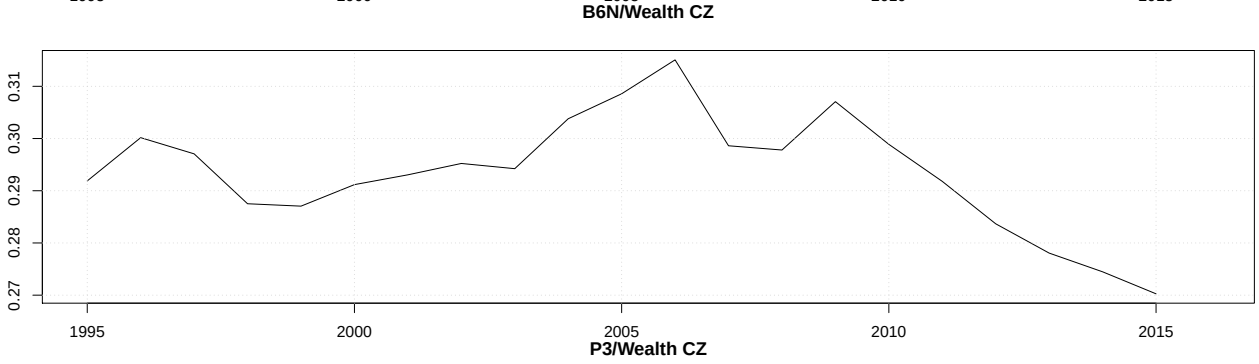

B6G/Wealth BE
0.19
0.18
0.17
0.16
0.15
1995
2000
2005
2010
2015

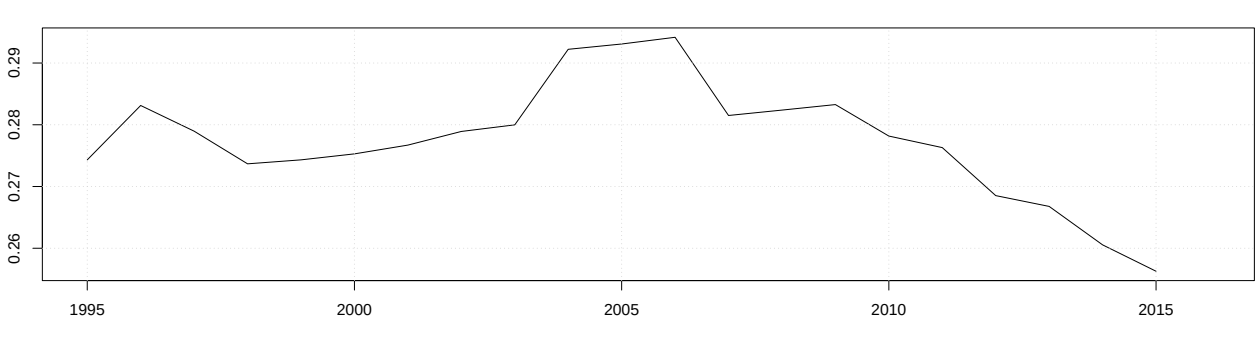

B6N/Wealth BE
0.18
0.17
0.16
0.15
0.14
1995
2000
2005
2010
2015

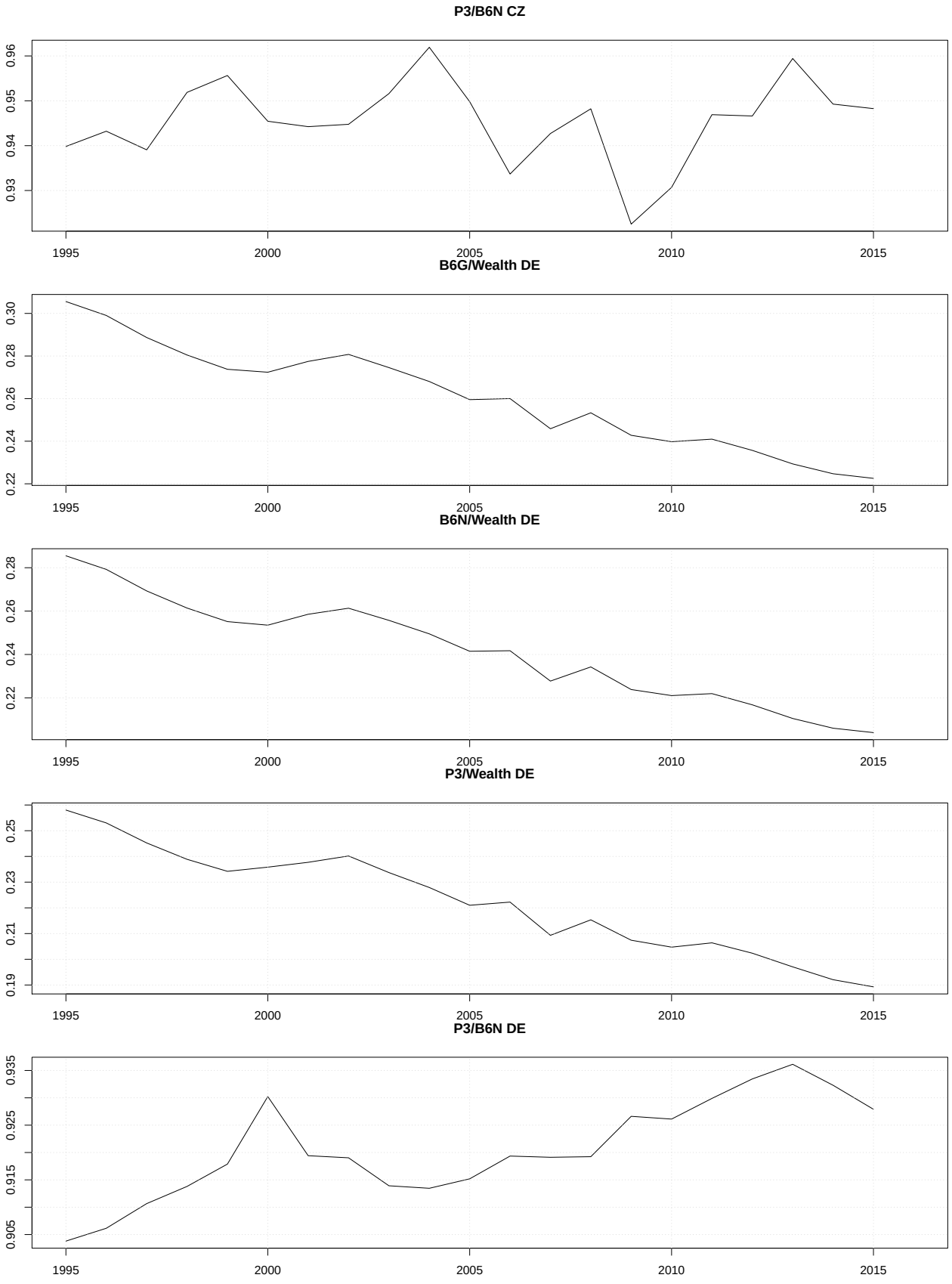

P3/Wealth BE
0.155
0.145
0.135
1995
2000
2005
2010
2015

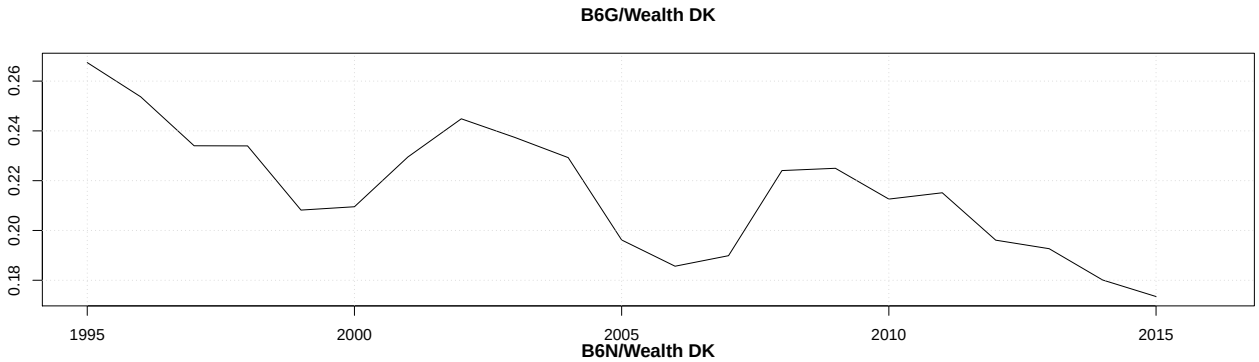

P3/B6N BE
0.94
0.90
0.86
1995
2000
2005
2010
2015

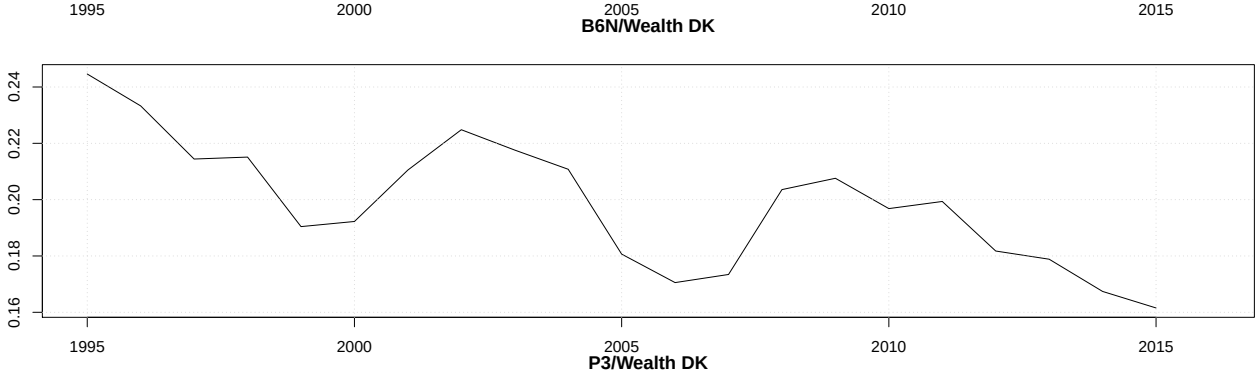

B6G/Wealth CZ
0.33
0.32
0.31
0.30
0.29
1995
2000
2005
2010
2015

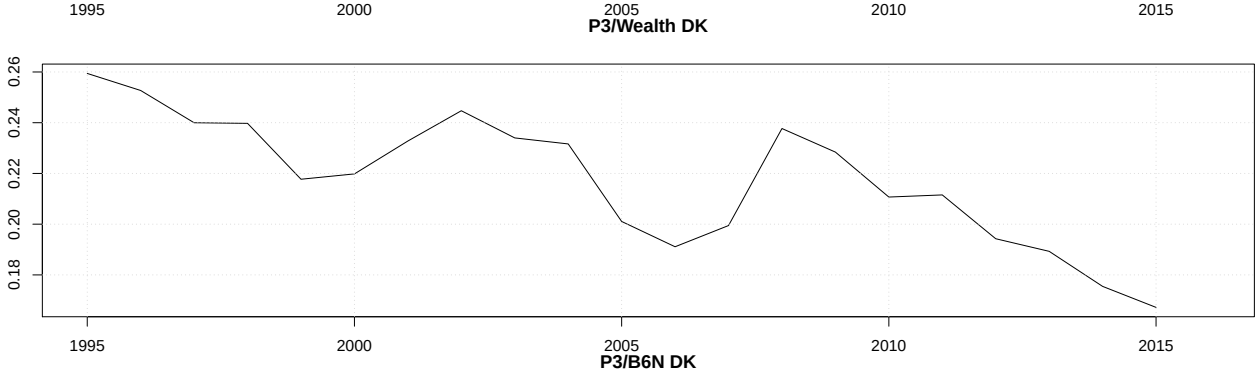

B6N/Wealth CZ
0.31
0.30
0.29
0.28
0.27
1995
2000
2005
2010
2015

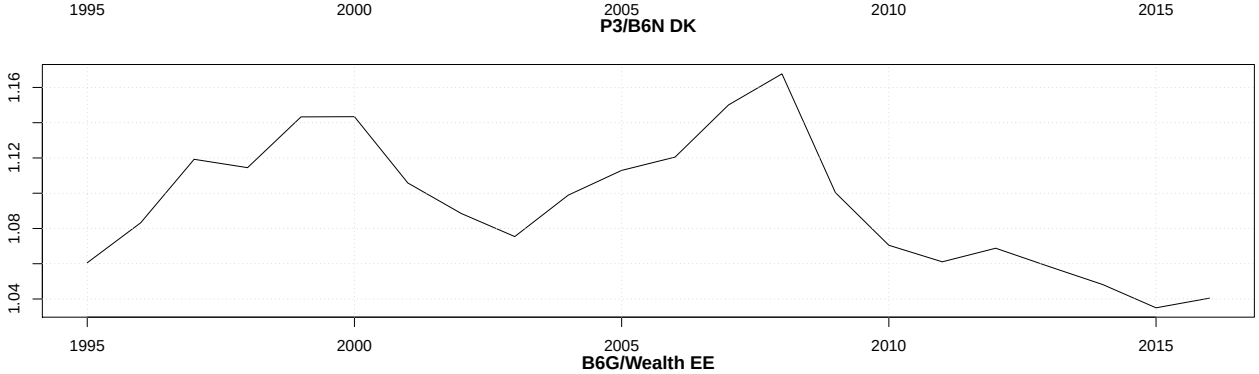

P3/Wealth CZ
0.29
0.28
0.27
0.26
1995
2000
2005
2010
2015

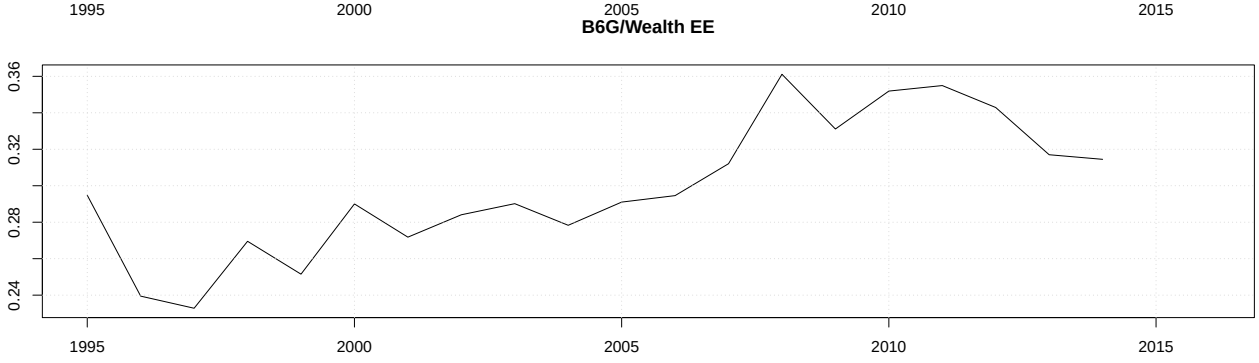

P3/B6N CZ
0.93
0.94
0.95
0.96
1995
2000
2005
2010
2015
B6G/Wealth DE
0.22
0.24
0.26
0.28
0.30
1995
2000
2005
2010
2015
B6N/Wealth DE
0.22
0.24
0.26
0.28
1995
2000
2005
2010
2015
P3/Wealth DE
0.19
0.21
0.23
0.25
1995
2000
2005
2010
2015
P3/B6N DE
0.905
0.915
0.925
0.935
1995
2000
2005
2010
2015

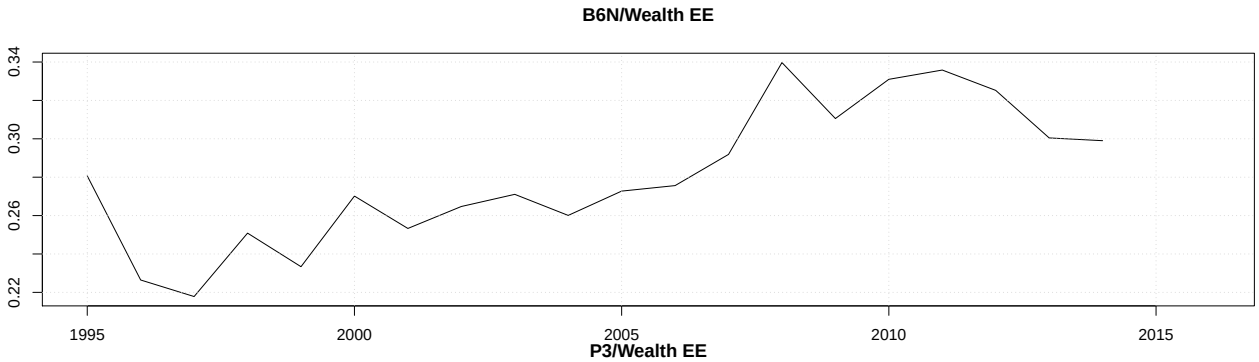

B6G/Wealth DK
0.18
0.20
0.22
0.24
0.26
1995
2000
2005
2010
2015

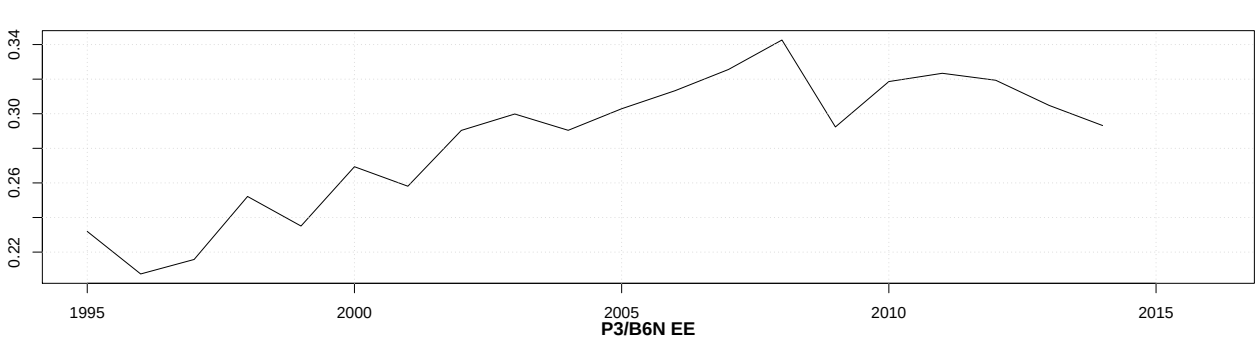

B6N/Wealth DK
0.16
0.18
0.20
0.22
0.24
1995
2000
2005
2010
2015

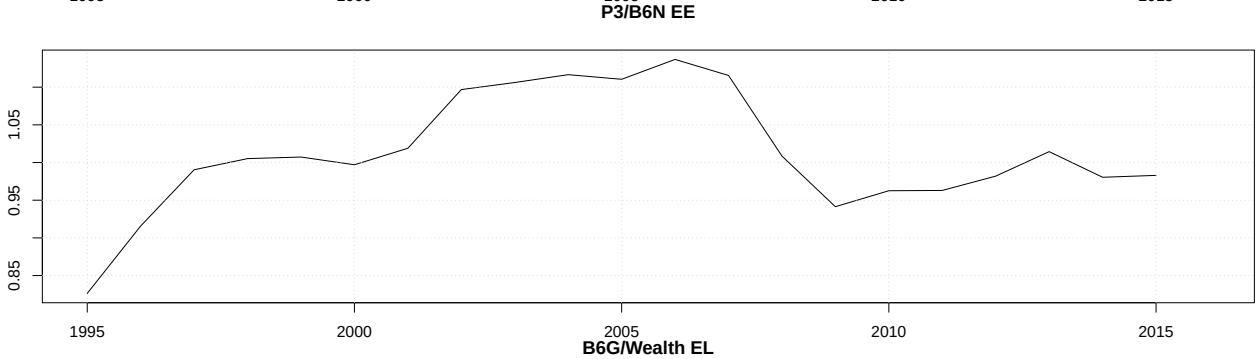

P3/Wealth DK
0.18
0.20
0.22
0.24
0.26
1995
2000
2005
2010
2015

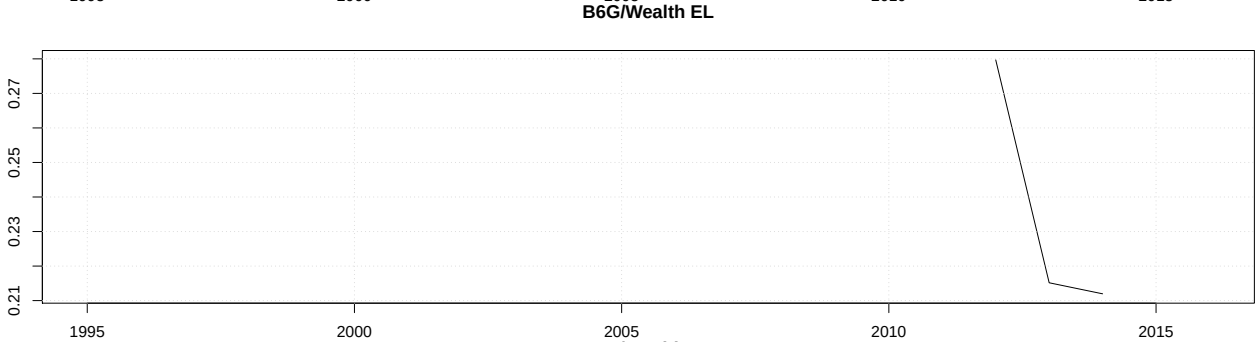

P3/B6N DK
1.04
1.08
1.12
1.16
1995
2000
2005
2010
2015

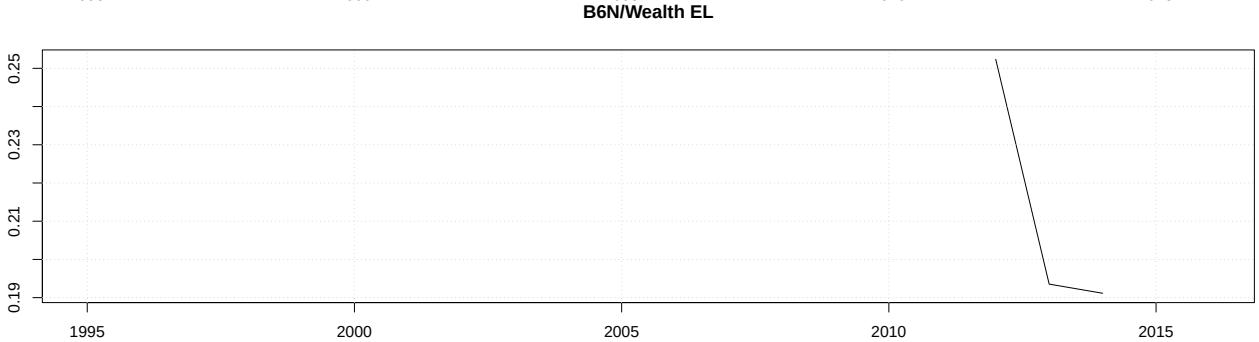

B6G/Wealth EE
0.24
0.28
0.32
0.36
1995
2000
2005
2010
2015

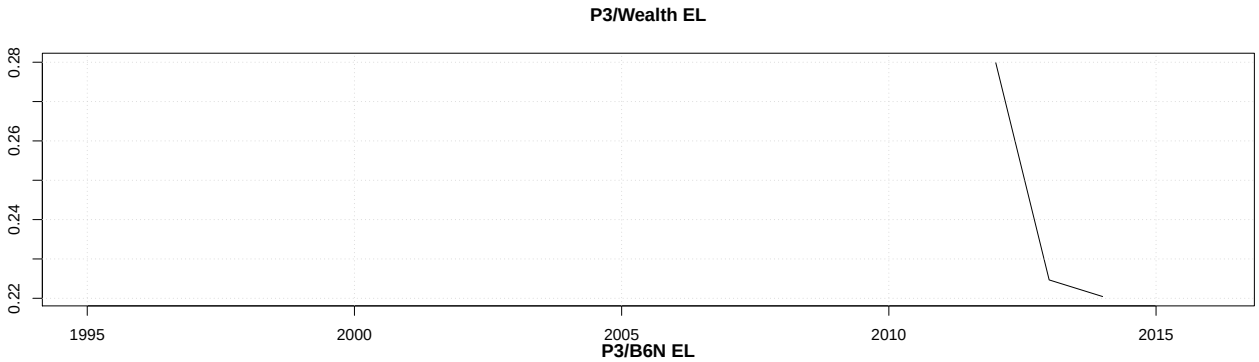

B6N/Wealth EE
0.22
0.26
0.30
0.34
1995
2000
2005
2010
2015

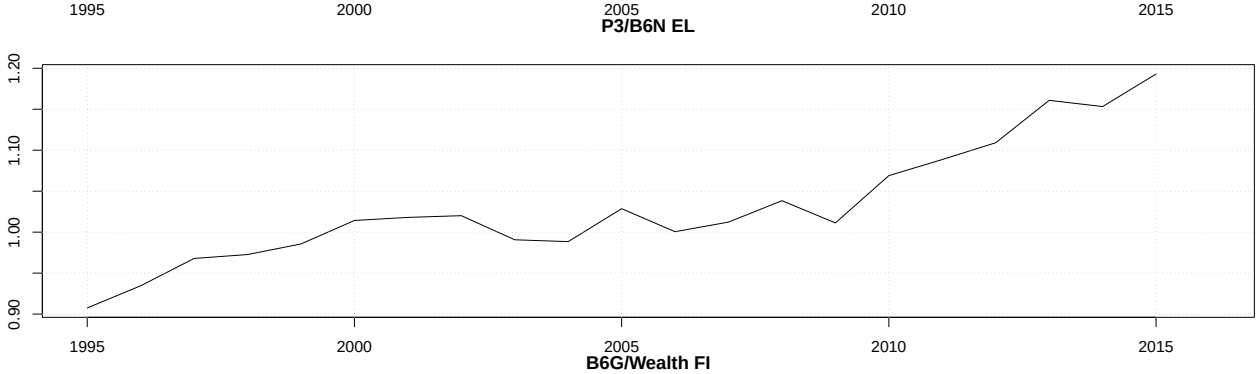

P3/Wealth EE
0.22
0.26
0.30
0.34
1995
2000
2005
2010
2015

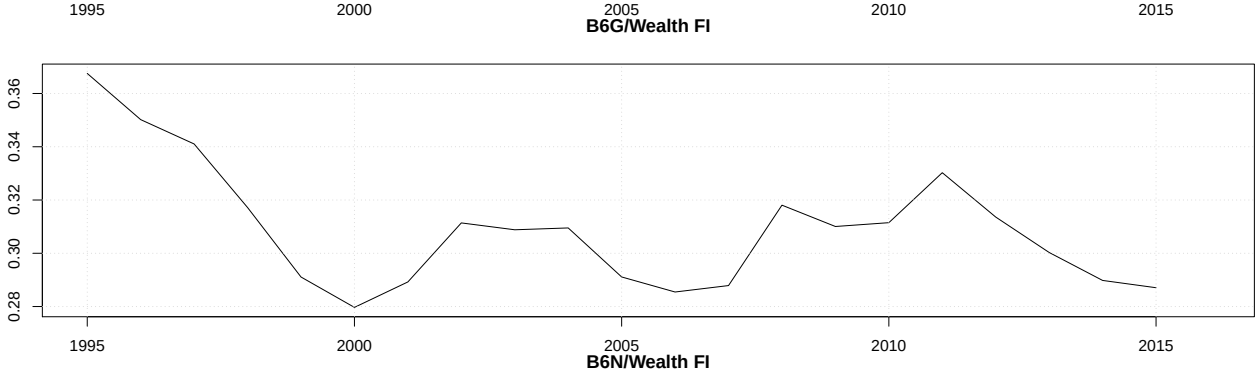

P3/B6N EE
0.85
0.95
1.05
1995
2000
2005
2010
2015

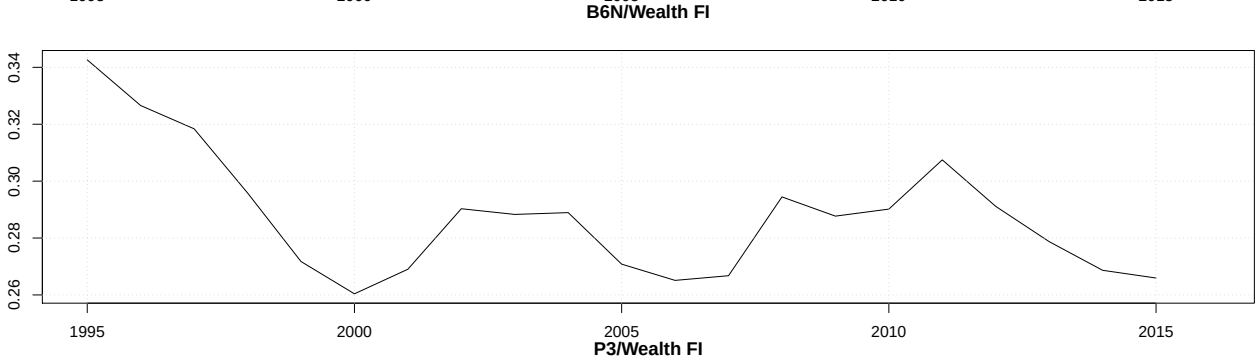

B6G/Wealth EL
0.21
0.23
0.25
0.27
1995
2000
2005
2010
2015

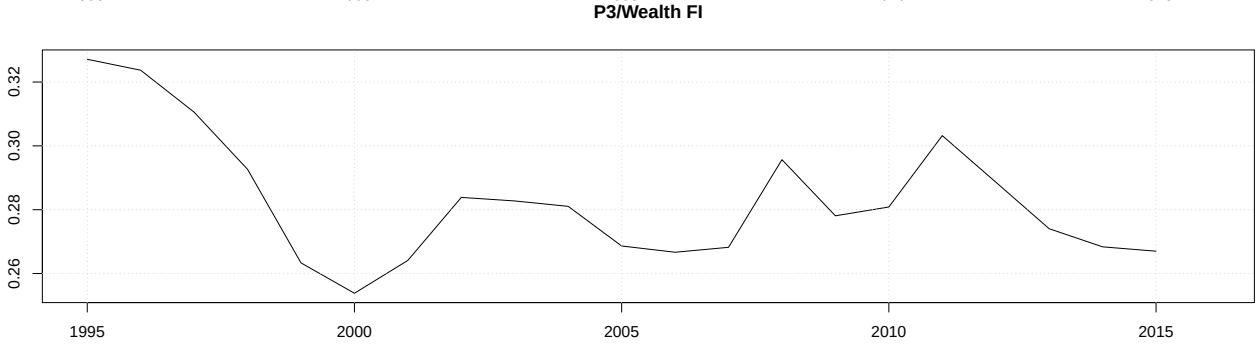

B6N/Wealth EL
0.19
0.21
0.23
0.25
1995
2000
2005
2010
2015

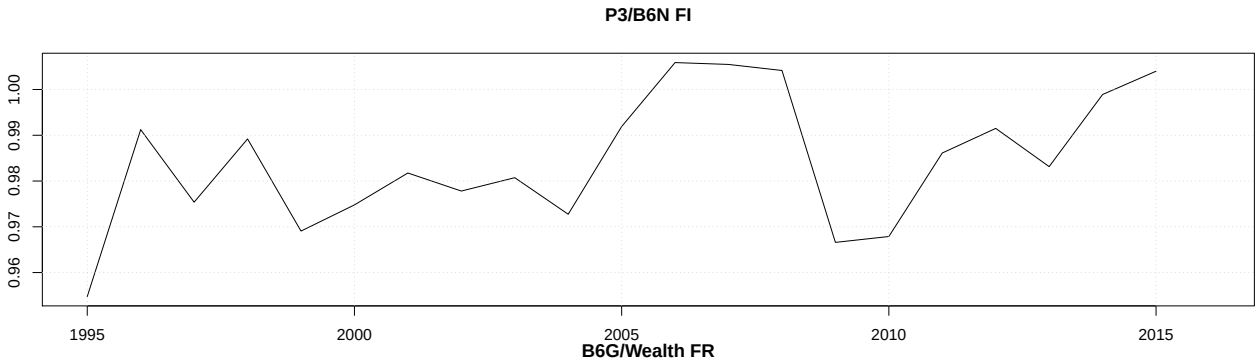

P3/Wealth EL
0.28
0.26
0.24
0.22
1995
2000
2005
2010
2015

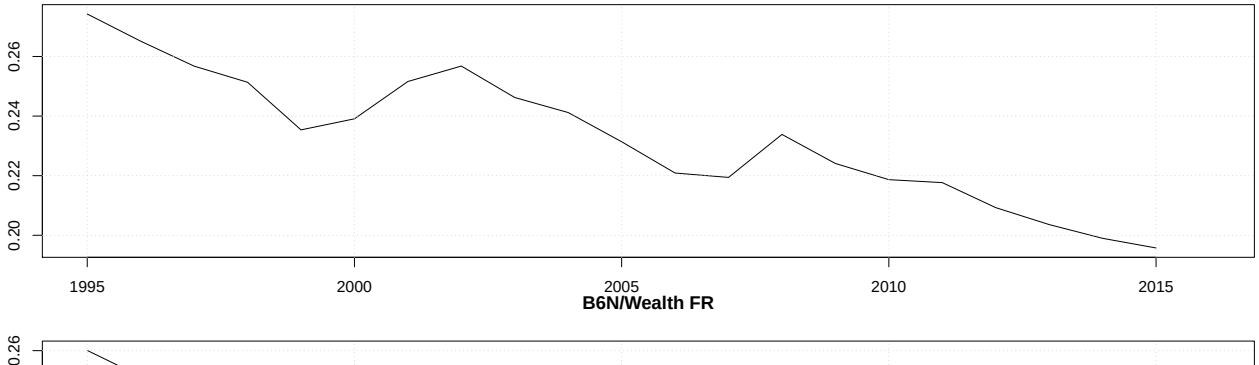

P3/B6N EL
1.20
1.10
1.00
0.90
1995
2000
2005
2010
2015

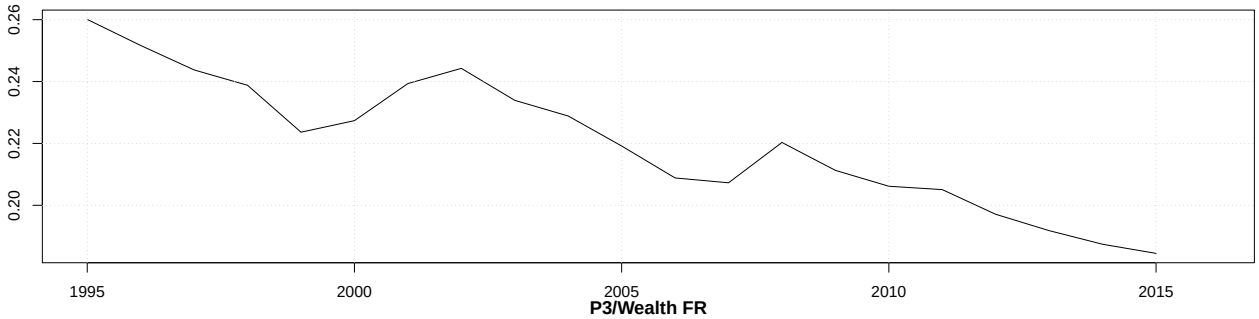

B6G/Wealth FI
0.36
0.34
0.32
0.30
0.28
1995
2000
2005
2010
2015

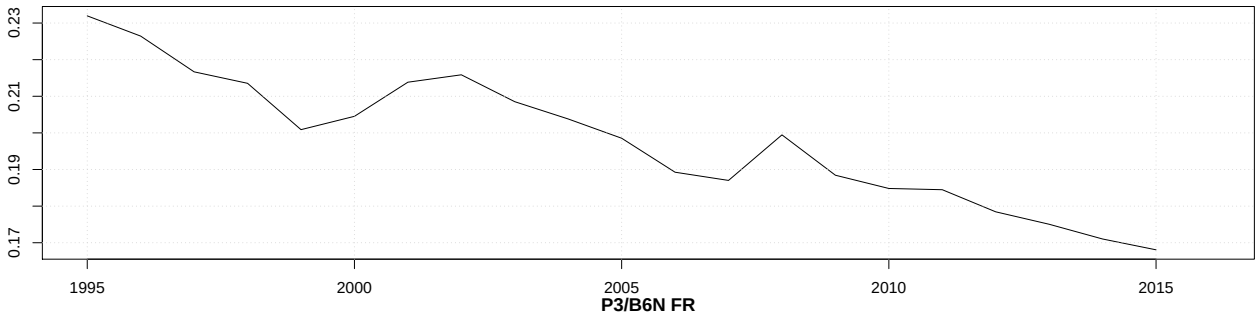

B6N/Wealth FI
0.34
0.32
0.30
0.28
0.26
1995
2000
2005
2010
2015

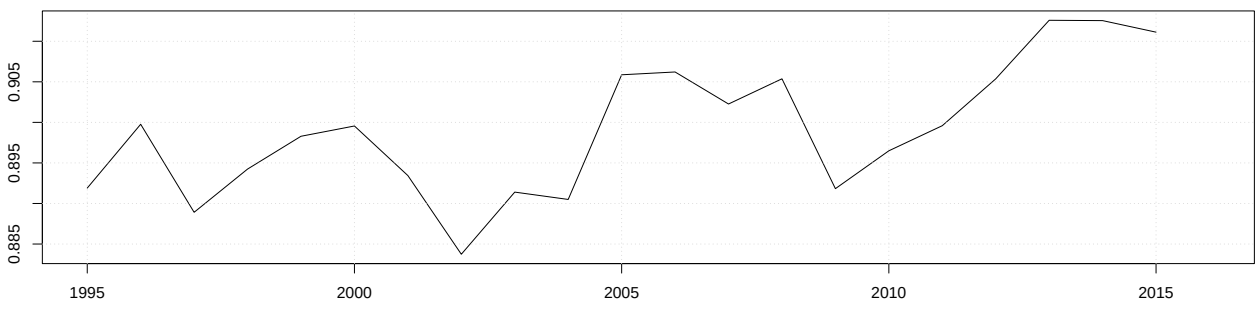

P3/Wealth FI
0.32
0.30
0.28
0.26
1995
2000
2005
2010
2015

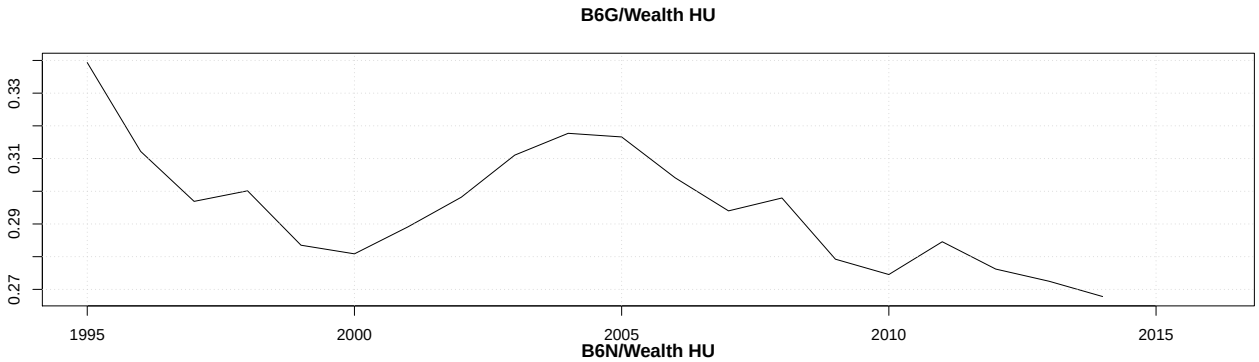

P3/B6N FI
0.96
0.97
0.98
0.99
1.00
1995
2000
2005
2010
2015

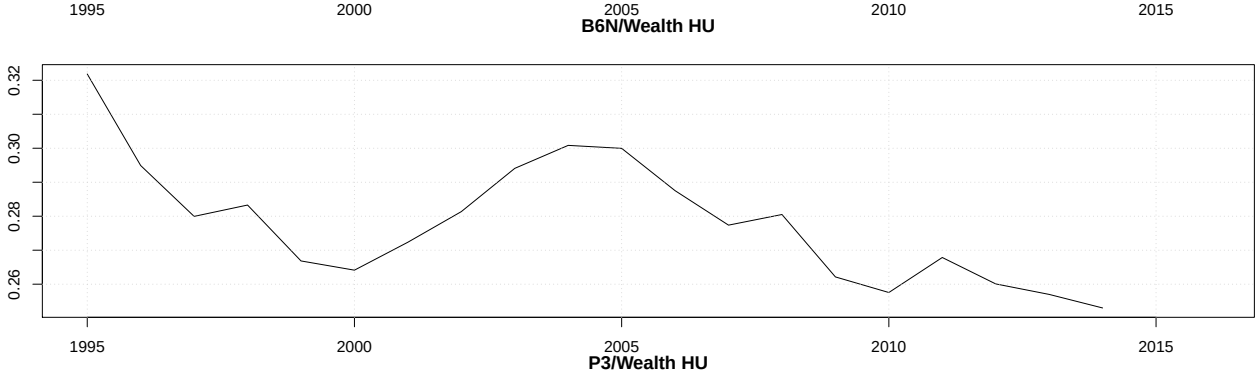

B6G/Wealth FR
0.20
0.22
0.24
0.26
1995
2000
2005
2010
2015

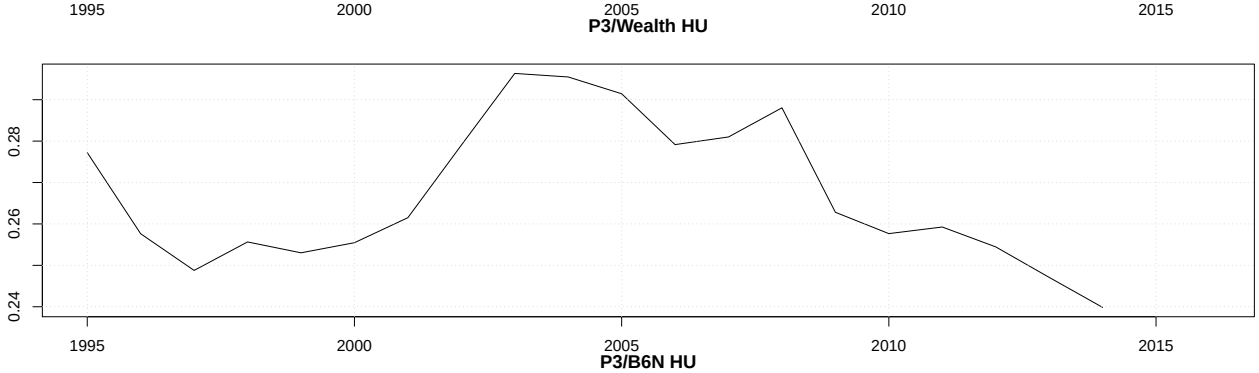

B6N/Wealth FR
0.20
0.22
0.24
0.26
1995
2000
2005
2010
2015

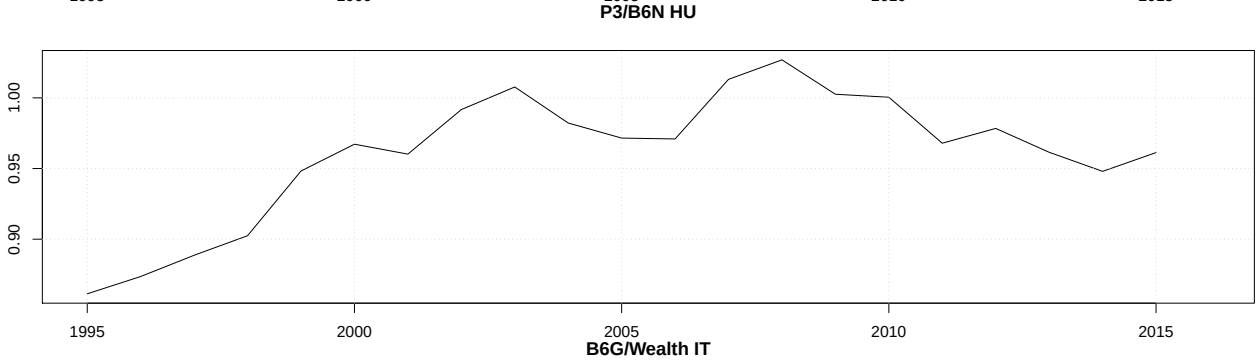

P3/Wealth FR
0.17
0.19
0.21
0.23
1995
2000
2005
2010
2015

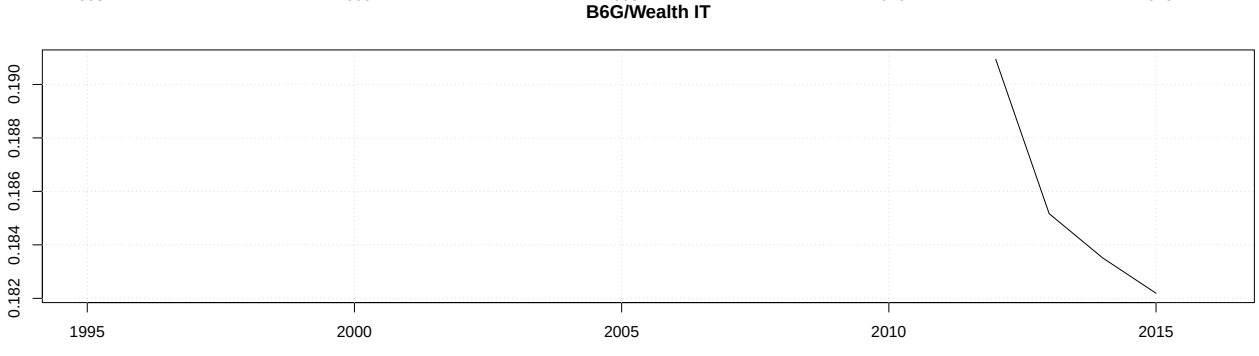

P3/B6N FR
0.885
0.895
0.905
1995
2000
2005
2010
2015

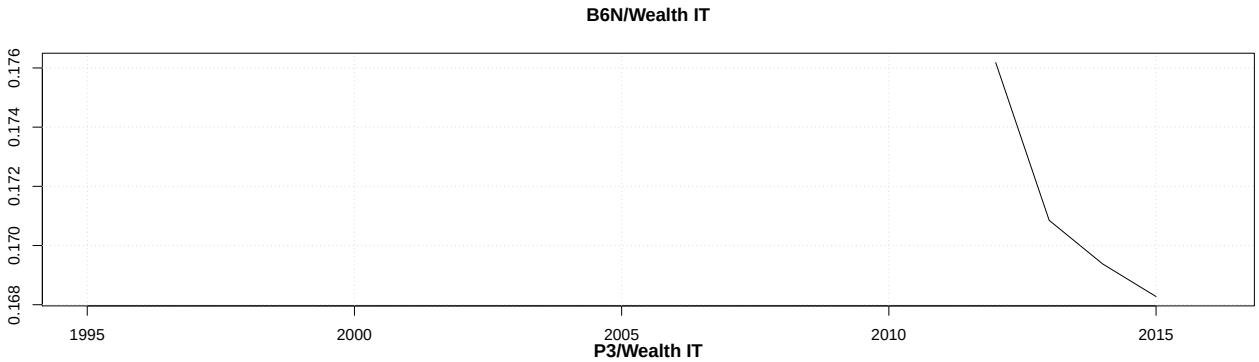

B6G/Wealth HU
0.27
0.29
0.31
0.33
1995
2000
2005
2010
2015

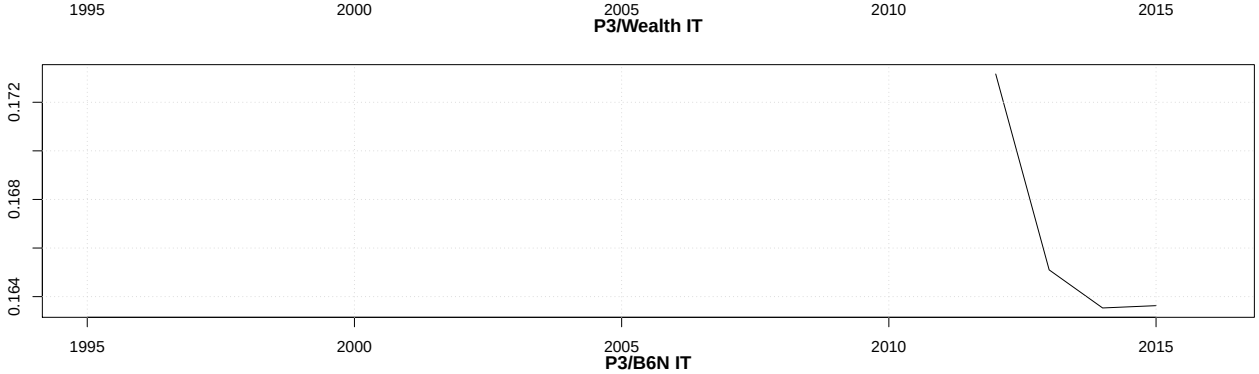

B6N/Wealth HU
0.26
0.28
0.30
0.32
1995
2000
2005
2010
2015

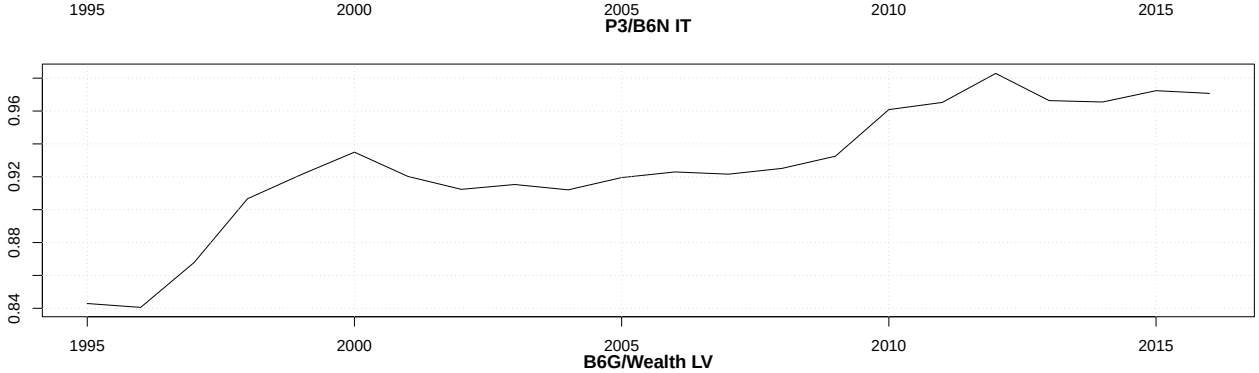

P3/Wealth HU
0.24
0.26
0.28
1995
2000
2005
2010
2015

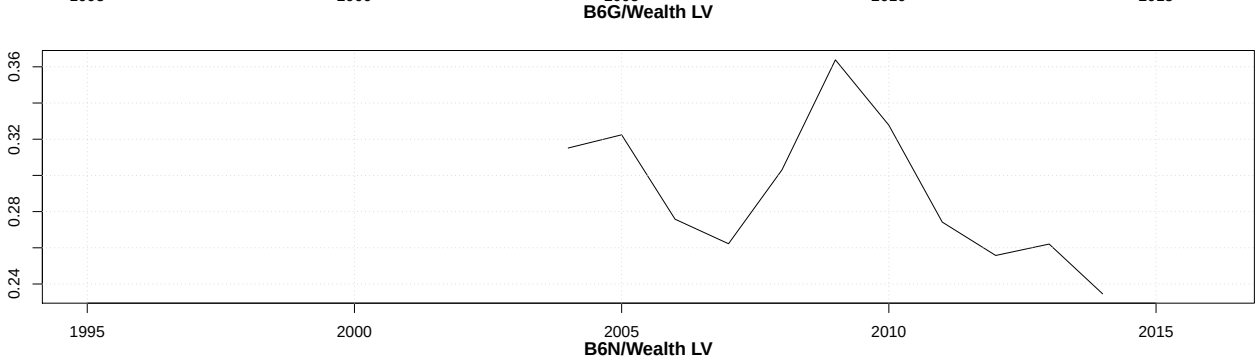

P3/B6N HU
0.90
0.95
1.00
1995
2000
2005
2010
2015


B6G/Wealth IT
0.182
0.184
0.186
0.188
0.190
1995
2000
2005
2010
2015

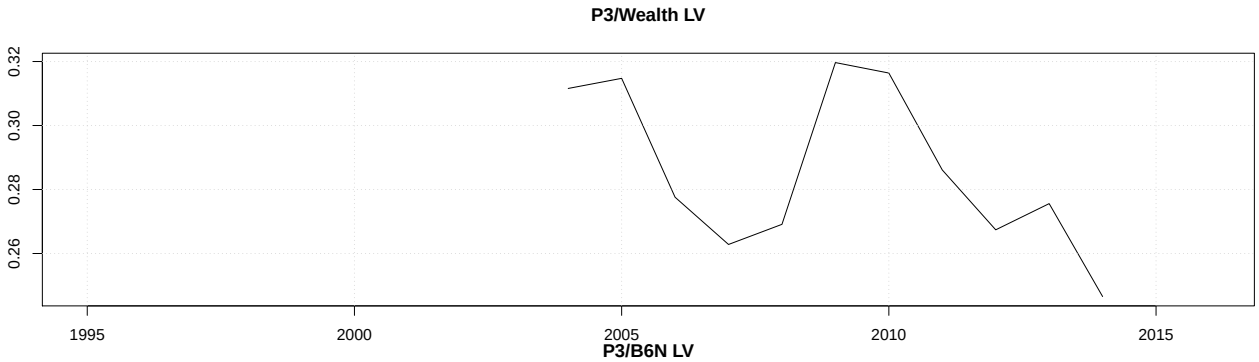

B6N/Wealth IT
0.176
0.174
0.172
0.170
0.168
1995
2000
2005
2010
2015

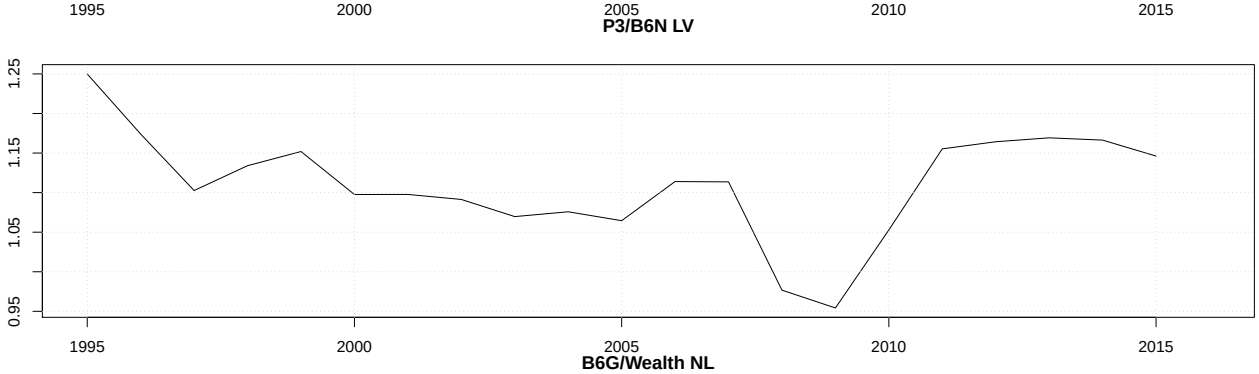

P3/Wealth IT
0.172
0.168
0.164
1995
2000
2005
2010
2015

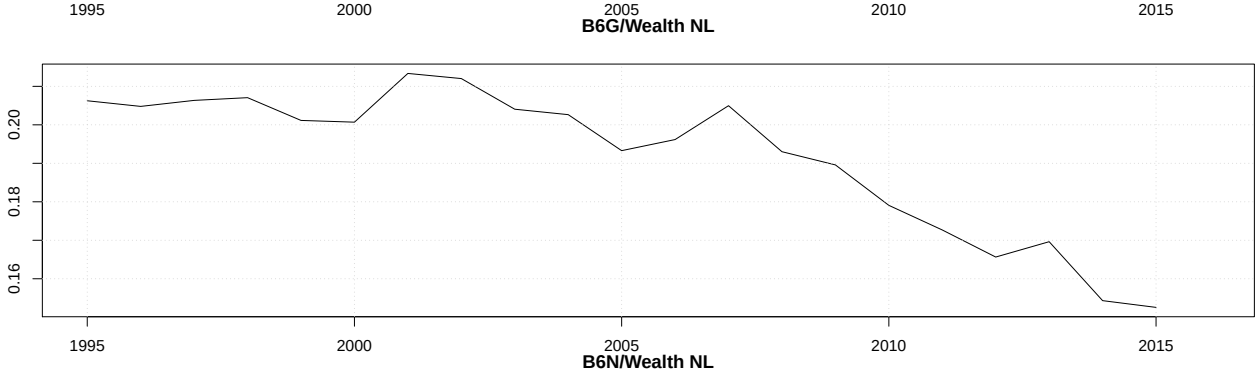

P3/B6N IT
0.96
0.92
0.88
0.84
1995
2000
2005
2010
2015

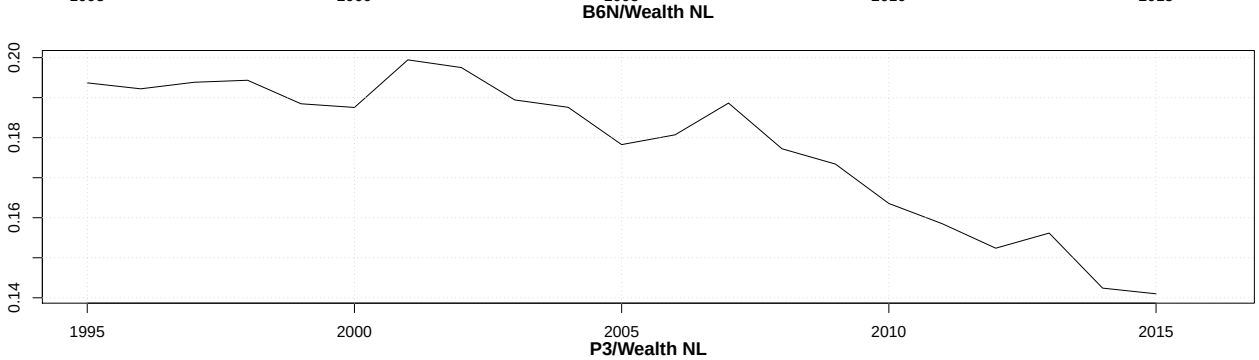

B6G/Wealth LV
0.36
0.32
0.28
0.24
1995
2000
2005
2010
2015

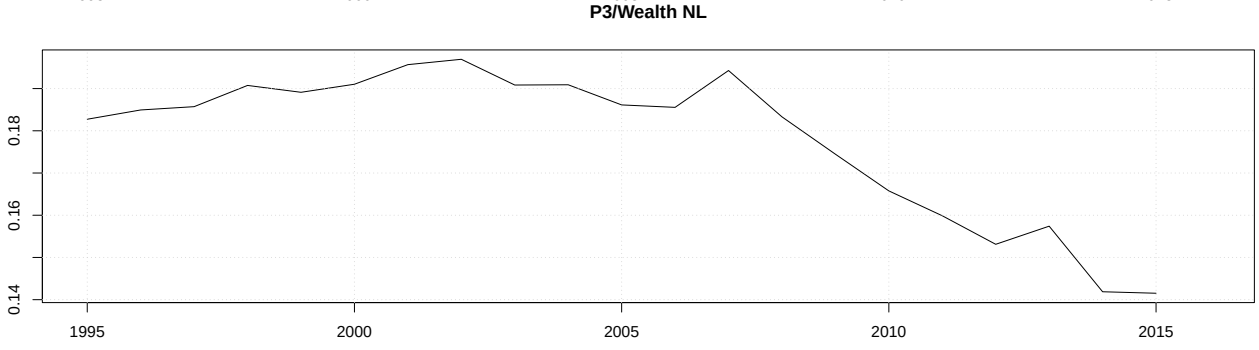

B6N/Wealth LV
0.30
0.26
0.22
1995
2000
2005
2010
2015

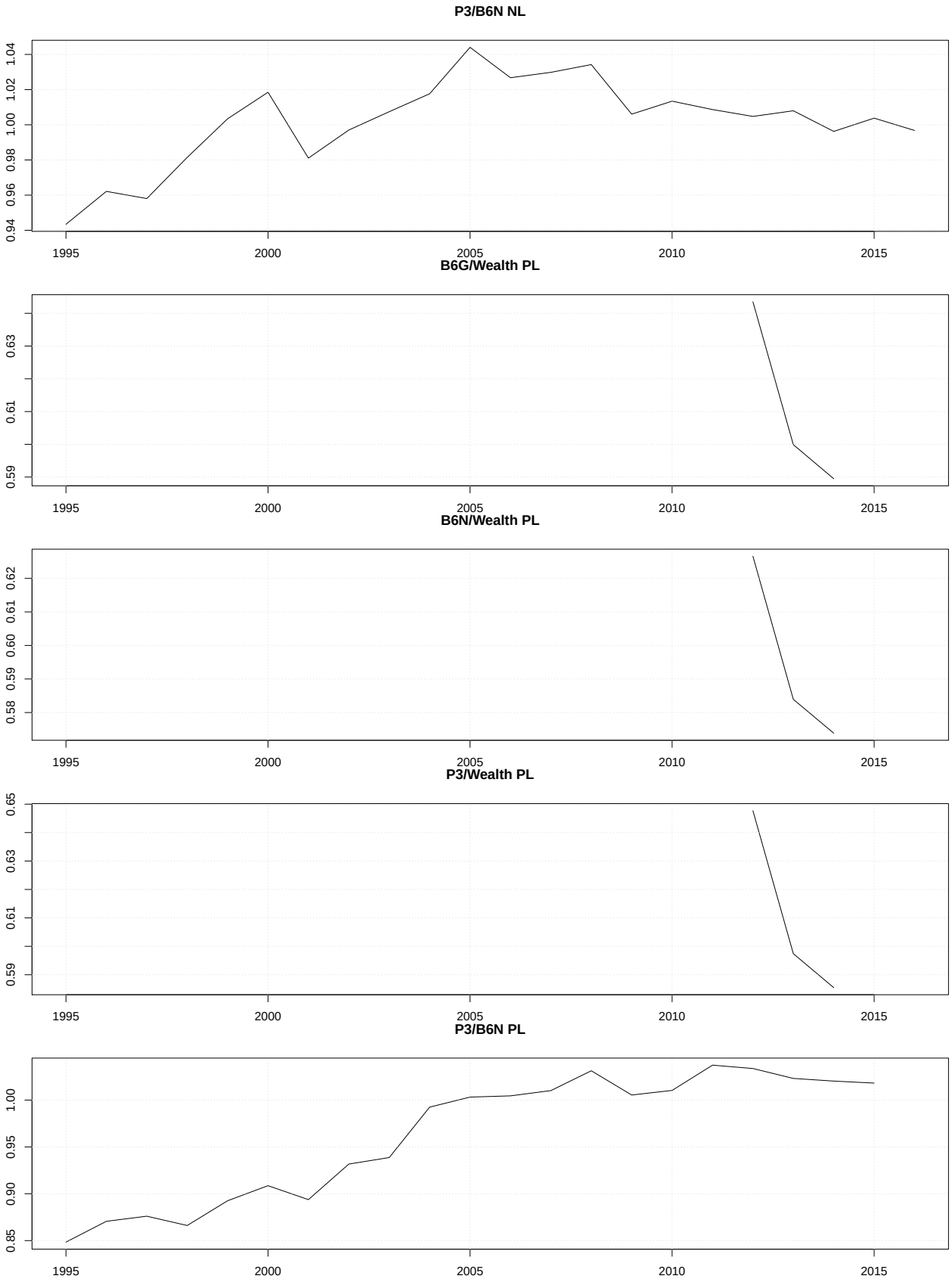

P3/Wealth LV
0.32
0.30
0.28
0.26
1995
2000
2005
2010
2015

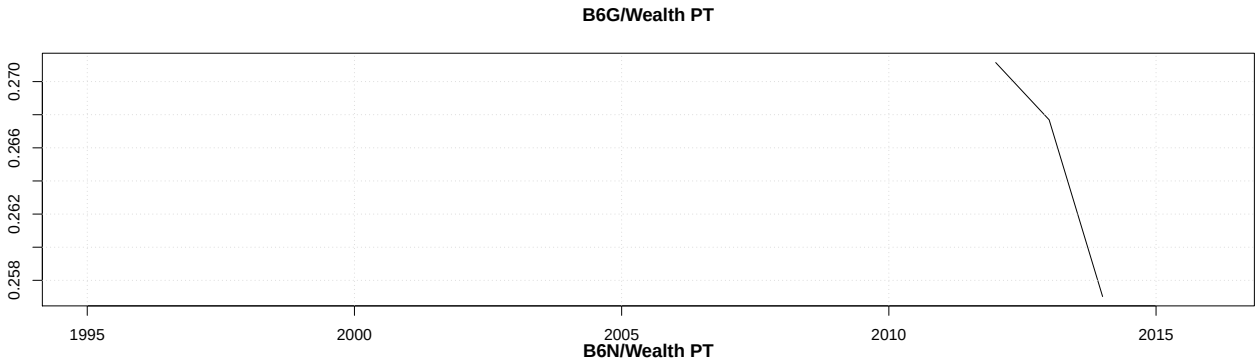

P3/B6N LV
1.25
1.15
1.05
0.95
1995
2000
2005
2010
2015

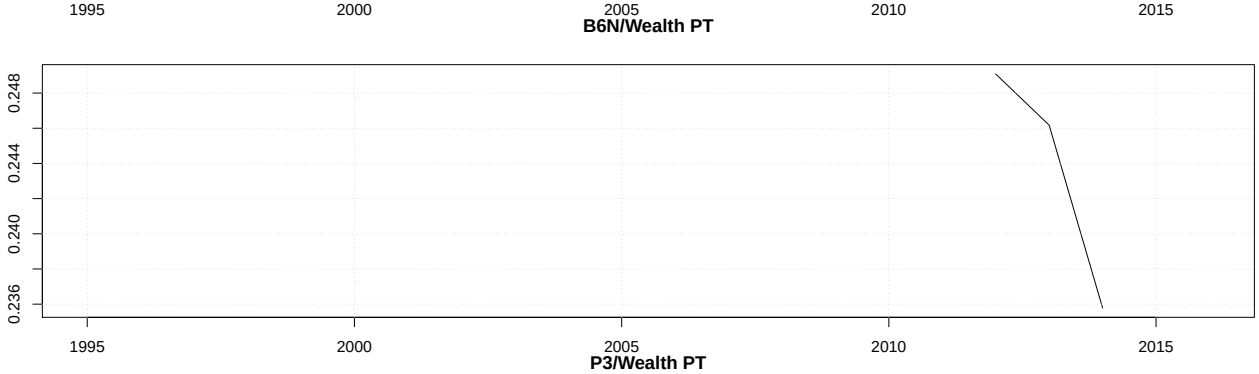

B6G/Wealth NL
0.20
0.18
0.16
1995
2000
2005
2010
2015

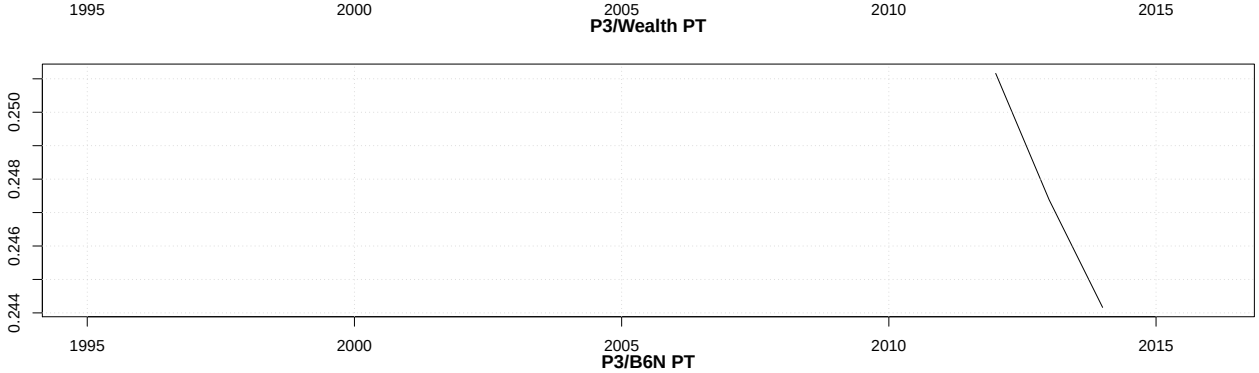

B6N/Wealth NL
0.20
0.18
0.16
0.14
1995
2000
2005
2010
2015

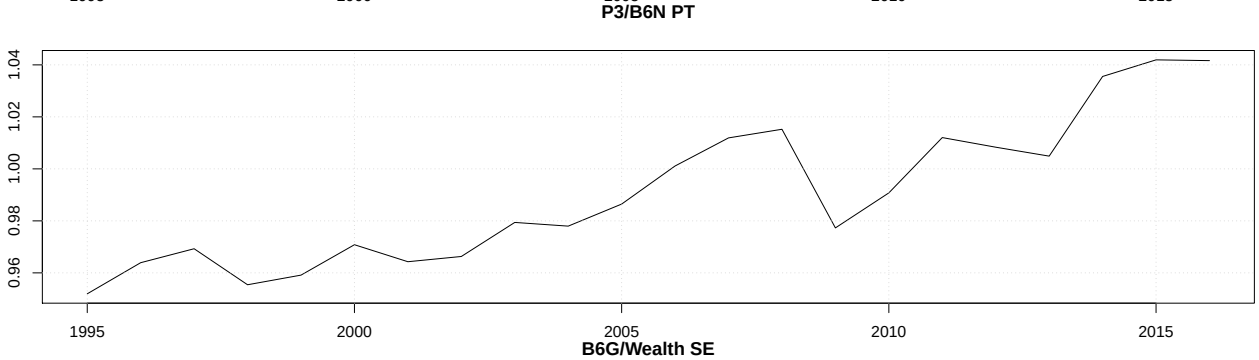

P3/Wealth NL
0.18
0.16
0.14
1995
2000
2005
2010
2015


P3/B6N NL
0.94
0.96
0.98
1.00
1.02
1.04
1995
2000
2005
2010
2015
B6G/Wealth PL
0.59
0.61
0.63
1995
2000
2005
2010
2015
B6N/Wealth PL
0.58
0.59
0.60
0.61
0.62
1995
2000
2005
2010
2015
P3/Wealth PL
0.59
0.61
0.63
0.65
1995
2000
2005
2010
2015
P3/B6N PL
0.85
0.90
0.95
1.00
1995
2000
2005
2010
2015

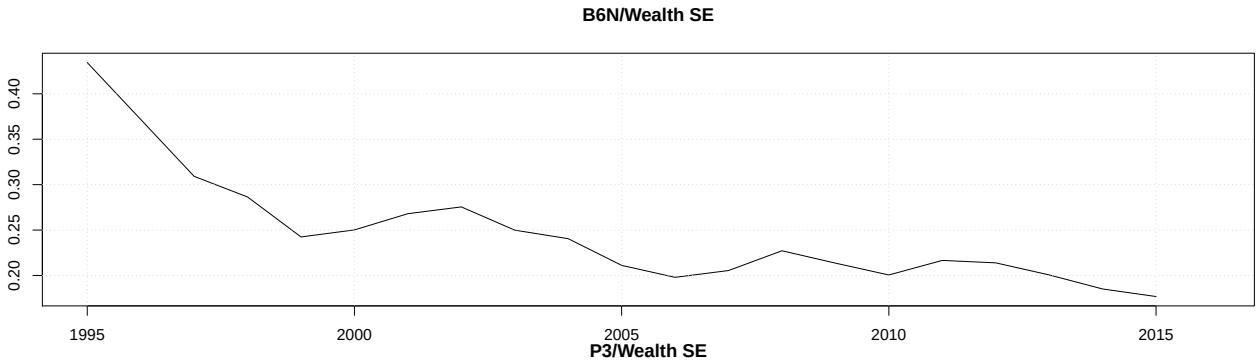

B6G/Wealth PT
0.270
0.266
0.262
0.258
1995
2000
2005
2010
2015

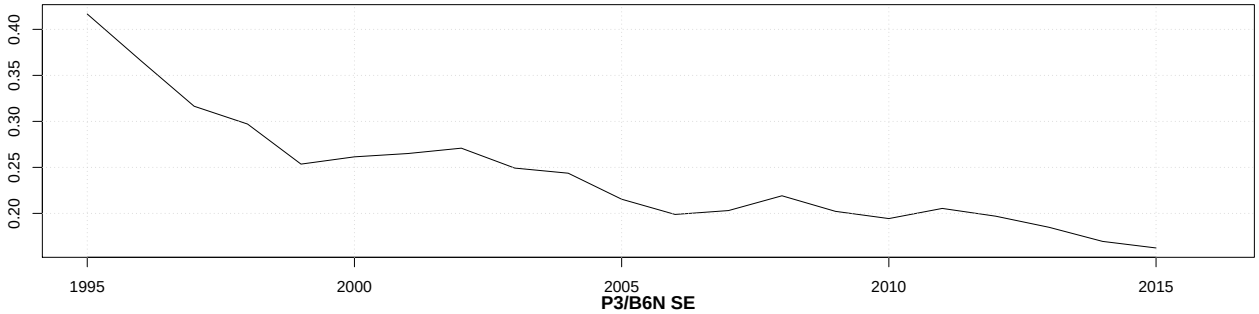

B6N/Wealth PT
0.248
0.244
0.240
0.236
1995
2000
2005
2010
2015

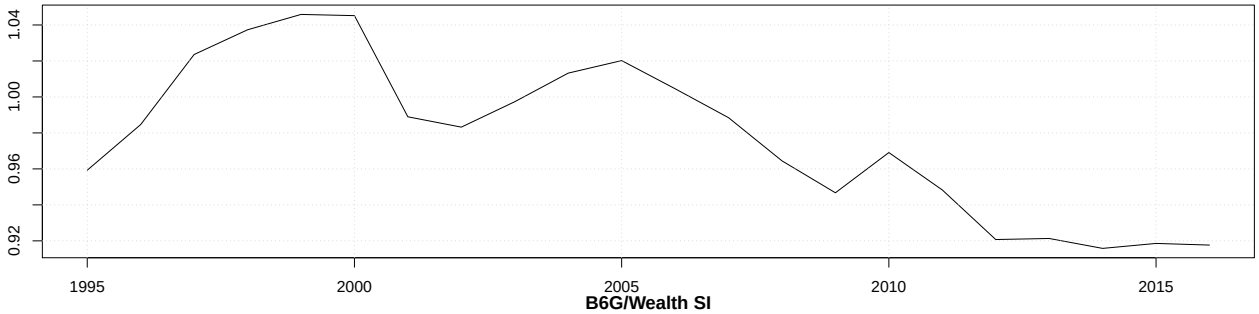

P3/Wealth PT
0.250
0.248
0.246
0.244
1995
2000
2005
2010
2015

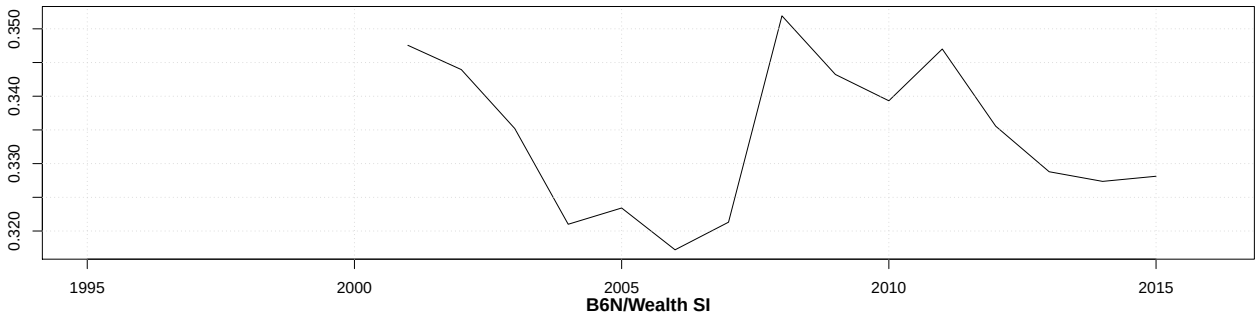

P3/B6N PT
1.04
1.02
1.00
0.98
0.96
1995
2000
2005
2010
2015

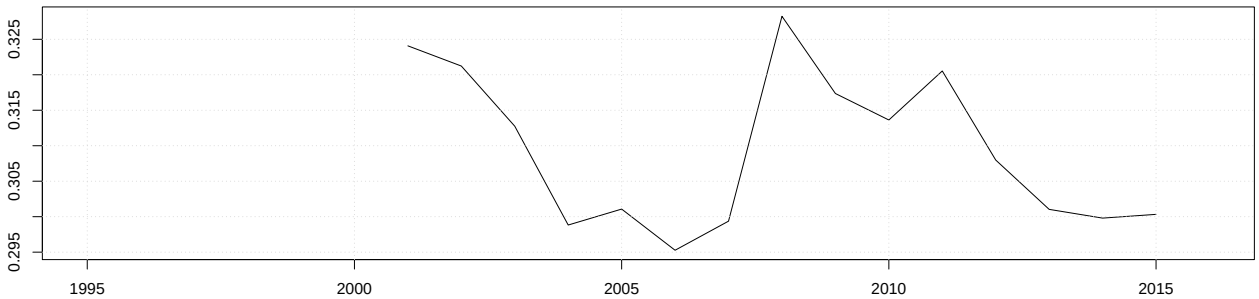

B6G/Wealth SE
0.45
0.40
0.35
0.30
0.25
0.20
1995
2000
2005
2010
2015

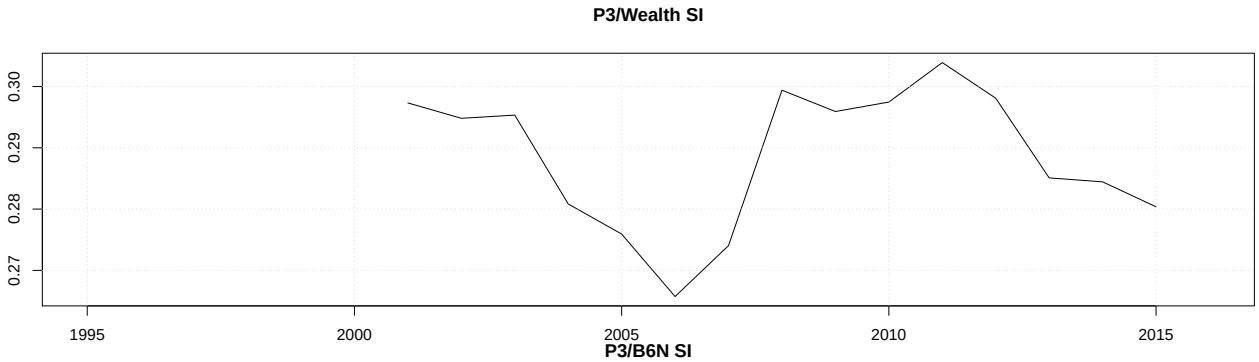

B6N/Wealth SE
0.20
0.25
0.30
0.35
0.40
1995
2000
2005
2010
2015

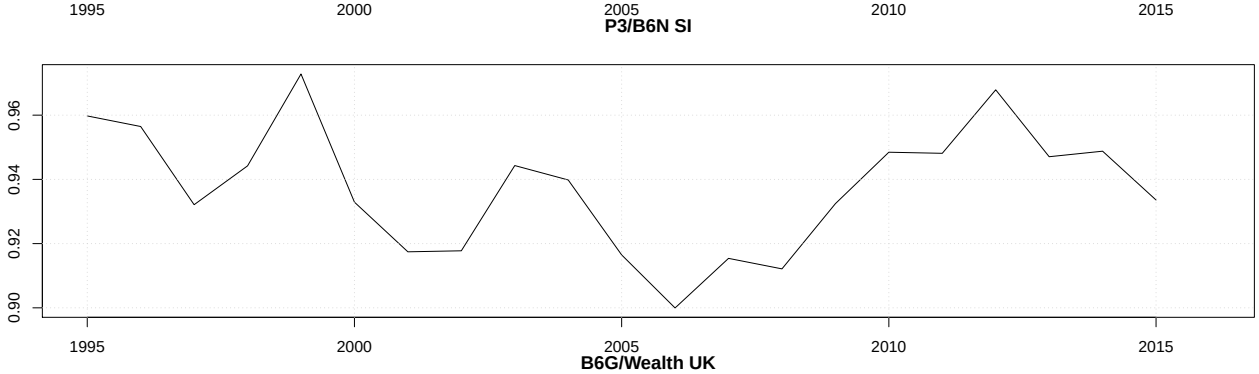

P3/Wealth SE
0.20
0.25
0.30
0.35
0.40
1995
2000
2005
2010
2015

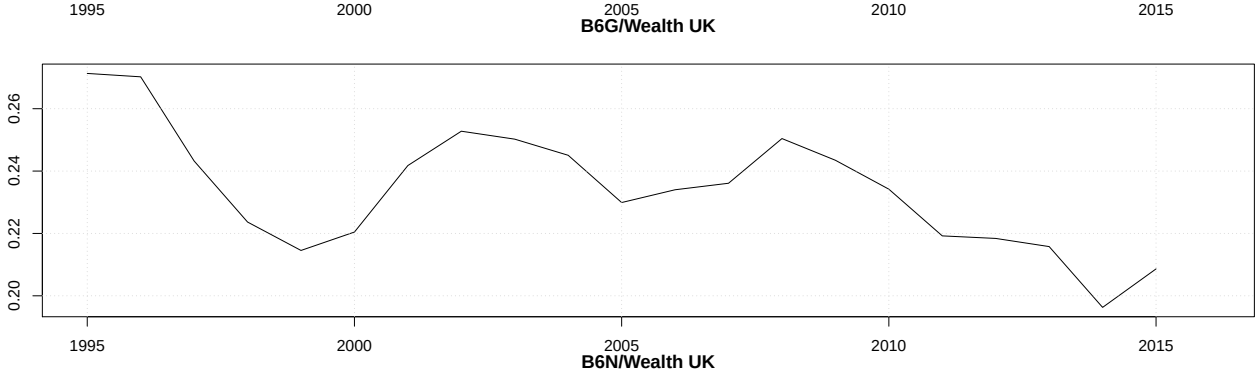

P3/B6N SE
0.92
0.96
1.00
1.04
1995
2000
2005
2010
2015

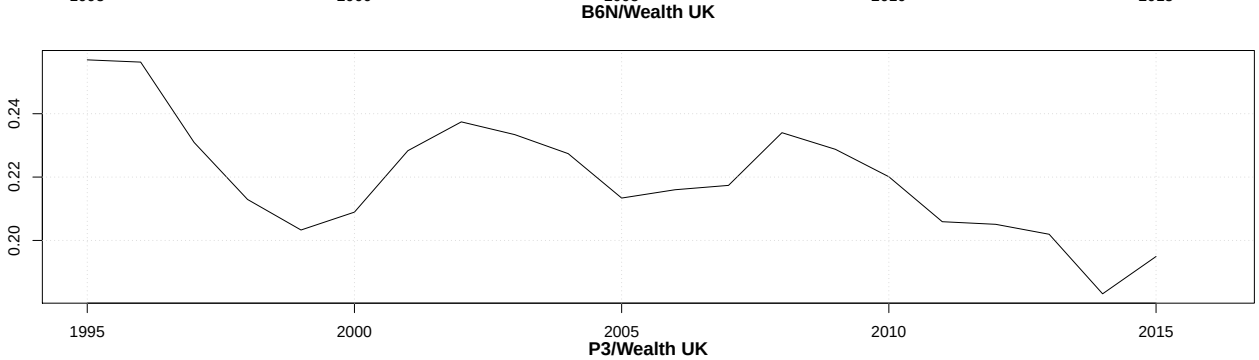

B6G/Wealth SI
0.320
0.330
0.340
0.350
1995
2000
2005
2010
2015

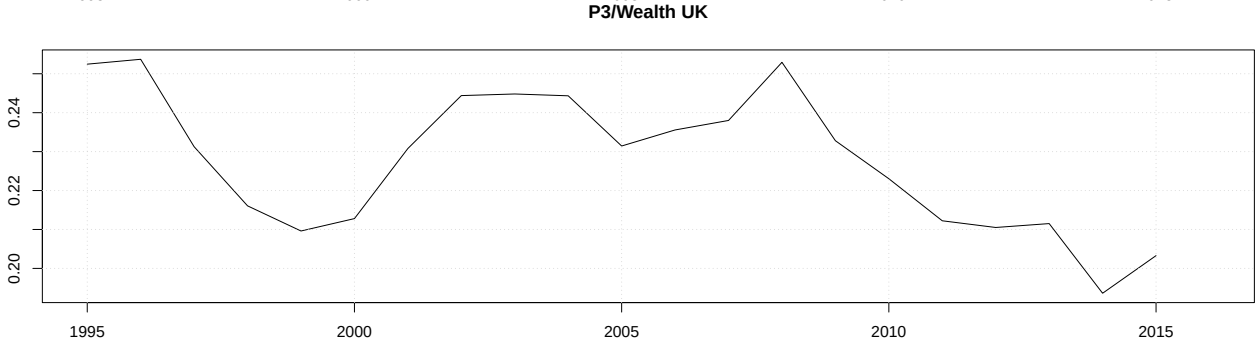

B6N/Wealth SI
0.295
0.305
0.315
0.325
1995
2000
2005
2010
2015

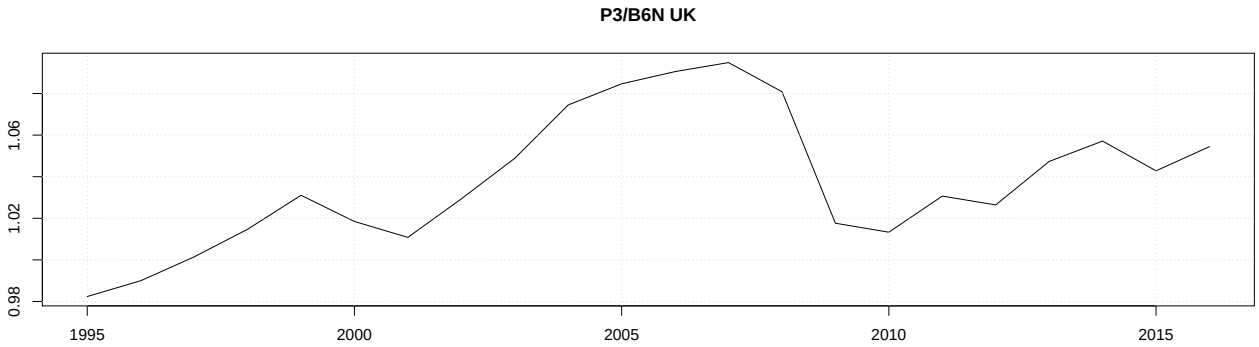

P3/Wealth SI
0.27
0.28
0.29
0.30
1995
2000
2005
2010
2015


P3/B6N SI
0.90
0.92
0.94
0.96
1995
2000
2005
2010
2015


B6G/Wealth UK
0.20
0.22
0.24
0.26
1995
2000
2005
2010
2015


B6N/Wealth UK
0.20
0.22
0.24
1995
2000
2005
2010
2015


P3/Wealth UK
0.20
0.22
0.24
1995
2000
2005
2010
2015



After running the code (all contained into the `Consumption function.R` file), you should have 17 jpegs created in your working directory.

Godley Stock-Flow norms

Your homework: I want you to compare Godley's stock flow norms (see his paper) for all the european countries for which there is enough data. Generate jpg and we will comment them in the next lecture.