Annex

R-Code

```
#NZCFTA

rm(list=ls())

# importing the required library

library(rio)

# reading data from all sheets

nzcfta <- import_list("Universität/Bachelor/output.xlsx", rbind = TRUE)

#Taking out descriptions not needed for analysis

# delete headings

nzcfta_frame=nzcfta[-c(1,2,3,14,15)]

#rename columns for future cleaning

colnames(nzcfta_frame)[2]="test"

#deleting NA rows

dat = nzcfta_frame[rowSums(is.na(nzcfta_frame)) != ncol(nzcfta_frame), ]

#deleting Baseyear-heading rows

dat1<-subset(dat, test!="2008")

#filling in zeros

dat1[dat1 == "free"] <- 0

dat1[is.na(dat1)] <- 0

nzcfta_frame = dat1

#Renaming columns

colnames(nzcfta_frame)[1]="Baserate"

colnames(nzcfta_frame)[2]="Y + 1"

colnames(nzcfta_frame)[3]="Y + 2"

colnames(nzcfta_frame)[4]="Y + 3"

colnames(nzcfta_frame)[5]="Y + 4"
```

```
colnames(nzcfta_frame)[6]="Y + 5"



#plotting

nzcfta_frame=sapply(nzcfta_frame, as.numeric)

nzcfta_frame=as.data.frame(nzcfta_frame)

NZCFTA <- boxplot(nzcfta_frame$Baserate, nzcfta_frame$`Y + 1`, nzcfta_frame$`Y + 2`, nzcfta_frame$`Y + 3`, nzcfta_frame$`Y + 4`, nzcfta_frame$`Y + 5`,

        names = c("Baserate", "Y + 1","Y + 2","Y + 3", "Y + 4", "Y + 5"), ylab = "Tariffs in %", xlab = "Tariff development from baseyear until 5th year of implementation",

        main = "NZCFTA")


# ChAFTA

# importing the required library

library(readxl)

#fta einlesen

chafta_schedule_tariff <- read_excel("~/Universität/Bachelor/chafta-explanatory-schedule-of-chinese-tariff-commitments-non-official(1).xlsx")

chafta_frame <- chafta_schedule_tariff

#prepare data

chafta_frame=chafta_frame[-c(1,2,3),]

chafta_frame=chafta_frame[-c(1,2,4)]

cdata = chafta_frame[rowSums(is.na(chafta_frame)) != ncol(chafta_frame), ]

cdata = as.data.frame(cdata)

cdata[is.na(cdata)] <- 0

chafta_frame =cdata

#rename columns

colnames(chafta_frame)[1]="Baserate"

colnames(chafta_frame)[2]="Y + 1"

colnames(chafta_frame)[3]="Y + 2"

colnames(chafta_frame)[4]="Y + 3"
```

```
colnames(chafta_frame)[5]="Y + 4"

colnames(chafta_frame)[6]="Y + 5"

#plotting

chafta_frame=sapply(chafta_frame, as.numeric)

chafta_frame=as.data.frame(chafta_frame)

ChAFTA <- boxplot(chafta_frame$Baserate, chafta_frame$`Y + 1`, chafta_frame$`Y + 2`, chafta_frame$`Y + 3`, chafta_frame$`Y + 4`,chafta_frame$`Y + 5`,

    names = c("Baserate", "Y + 1","Y + 2","Y + 3", "Y + 4", "Y + 5"), ylab = "Tariffs in %", xlab = "Tariff development from baseyear until 5th year of implementation",

    main = "ChAFTA")



#RCEP

#importing required library

library(readxl)

# RCEP ASEAN

#fta einlesen

rcep_asean <- read_excel("~/Universität/Bachelor/recp-schedule-of-china-for-asean.xls")

ra_frame <- rcep_asean

#prepare data

ra_frame = ra_frame[-c(1,2,3),]

ra_frame = ra_frame[-c(1,2)]

ra_frame=ra_frame[rowSums(is.na(ra_frame)) != ncol(ra_frame), ]

#rename columns

colnames(ra_frame)[1]="Baserate"

colnames(ra_frame)[2]="Y + 1"

colnames(ra_frame)[3]="Y + 2"

colnames(ra_frame)[4]="Y + 3"

colnames(ra_frame)[5]="Y + 4"

colnames(ra_frame)[6]="Y + 5"
```

```
ra_frame=sapply(ra_frame, as.numeric)
ra_frame=as.data.frame(ra_frame)
#RCEP Australia
#fta einlesen
rcep_australia <- read_excel("~/Universität/Bachelor/recp-schedule-of-china-for-australia.xls",
                             col_names = FALSE)
raus_frame <- rcep_australia
#prepare data
raus_frame=raus_frame[-c(1,2,3,4),]
raus_frame=raus_frame[-c(1,2)]
raus_frame=raus_frame[rowSums(is.na(raus_frame)) != ncol(raus_frame), ]
#rename columns
colnames(raus_frame)[1]="Baserate"
colnames(raus_frame)[2]="Y + 1"
colnames(raus_frame)[3]="Y + 2"
colnames(raus_frame)[4]="Y + 3"
colnames(raus_frame)[5]="Y + 4"
colnames(raus_frame)[6]="Y + 5"
raus_frame=sapply(raus_frame, as.numeric)
raus_frame=as.data.frame(raus_frame)


#RCEP Japan
#fta einlesen
rcep_japan <- read_excel("~/Universität/Bachelor/recp-schedule-of-china-for-japan.xls")
rja_frame <- rcep_japan
#prepare data
rja_frame=rja_frame[-c(1,2,3),]
rja_frame=rja_frame[-c(1,2)]
rja_frame=rja_frame[rowSums(is.na(rja_frame)) != ncol(rja_frame), ]
#rename columns
```

```
colnames(rja_frame)[1]="Baserate"
colnames(rja_frame)[2]="Y + 1"
colnames(rja_frame)[3]="Y + 2"
colnames(rja_frame)[4]="Y + 3"
colnames(rja_frame)[5]="Y + 4"
colnames(rja_frame)[6]="Y + 5"
rja_frame=sapply(rja_frame, as.numeric)
rja_frame=as.data.frame(rja_frame)

#RCEP Korea
#fta einlesen
rcep_korea <- read_excel("~/Universität/Bachelor/recp-schedule-of-china-for-korea.xls")
rko_frame <- rcep_korea
#prepare data
rko_frame=rko_frame[-c(1,2,3),]
rko_frame=rko_frame[-c(1,2)]
rko_frame=rko_frame[rowSums(is.na(rko_frame)) != ncol(rko_frame), ]
#rename columns
colnames(rko_frame)[1]="Baserate"
colnames(rko_frame)[2]="Y + 1"
colnames(rko_frame)[3]="Y + 2"
colnames(rko_frame)[4]="Y + 3"
colnames(rko_frame)[5]="Y + 4"
colnames(rko_frame)[6]="Y + 5"
rko_frame=sapply(rko_frame, as.numeric)
rko_frame=as.data.frame(rko_frame)

#RCEP New Zealand
#fta einlesen
```

```
rcep_newzealand <- recp_schedule_of_china_for_nz <- read_excel("~/Universität/Bachelor/recp-schedule-of-china-for-nz.xls")

rnz_frame <- rcep_newzealand


#prepare data

rnz_frame=rnz_frame[-c(1,2,3),]

rnz_frame=rnz_frame[-c(1,2)]

rnz_frame=rnz_frame[rowSums(is.na(rnz_frame)) != ncol(rnz_frame), ]

#rename columns

colnames(rnz_frame)[1]="Baserate"

colnames(rnz_frame)[2]="Y + 1"

colnames(rnz_frame)[3]="Y + 2"

colnames(rnz_frame)[4]="Y + 3"

colnames(rnz_frame)[5]="Y + 4"

colnames(rnz_frame)[6]="Y + 5"

rnz_frame=sapply(rnz_frame, as.numeric)

rnz_frame=as.data.frame(rnz_frame)


#Boxplots

par(mfrow = c(2,3))

#importing required library

RCEP_ASEAN <- boxplot(ra_frame$Baserate*100, ra_frame$`Y + 1`*100, ra_frame$`Y + 2`*100, ra_frame$`Y + 3`*100, ra_frame$`Y + 4`*100,ra_frame$`Y + 5`*100,

                      names = c("Baserate", "Y + 1","Y + 2","Y + 3", "Y + 4", "Y + 5"), ylab = "Tariffs in %",

                    main = "RCEP ASEAN")

RCEP_AUSTRALIA <- boxplot(raus_frame$Baserate*100, raus_frame$`Y + 1`*100, raus_frame$`Y + 2`*100, raus_frame$`Y + 3`*100, raus_frame$`Y + 4`*100,raus_frame$`Y + 5`*100,

                      names = c("Baserate", "Y + 1","Y + 2","Y + 3", "Y + 4", "Y + 5"), ylab = "Tariffs in %",

                      main = "RCEP AUSTRLIA")

RCEP_JAPAN <- boxplot(rja_frame$Baserate* 100 , rja_frame$`Y + 1`* 100 , rja_frame$`Y + 2`* 100 , rja_frame$`Y + 3`* 100 , rja_frame$`Y + 4`* 100 ,rja_frame$`Y + 5`* 100,
```

```
        names = c("Baserate", "Y + 1","Y + 2","Y + 3", "Y + 4", "Y + 5"), ylab = "Tariffs in %",

        main = "RCEP JAPAN")

RCEP_KOREA <- boxplot(rko_frame$Baserate* 100 , rko_frame$`Y + 1`* 100 , rko_frame$`Y + 2`* 100 , rko_frame$`Y + 3`* 100 , rko_frame$`Y + 4`* 100 ,rko_frame$`Y + 5`* 100 ,

        names = c("Baserate", "Y + 1","Y + 2","Y + 3", "Y + 4", "Y + 5"), ylab = "Tariffs in %",

        main = "RCEP KOREA")

RCEP_NEWZEALAND <- boxplot(rnz_frame$Baserate* 100 , rnz_frame$`Y + 1`* 100 , rnz_frame$`Y + 2`* 100 , rnz_frame$`Y + 3`* 100 , rnz_frame$`Y + 4`* 100 ,rnz_frame$`Y + 5`* 100 ,

          names = c("Baserate", "Y + 1","Y + 2","Y + 3", "Y + 4", "Y + 5"), ylab = "Tariffs in %",

          main = "RCEP NEW ZEALAND")


#Main Table

#NZCFTA

nz1 = mean(nzcfta_frame[,1],na.rm = TRUE)

nz2 = mean(nzcfta_frame[,2],na.rm = TRUE)

nz3 = mean(nzcfta_frame[,3],na.rm = TRUE)

nz4 = mean(nzcfta_frame[,4],na.rm = TRUE)

nz5 = mean(nzcfta_frame[,5],na.rm = TRUE)

nz6 = mean(nzcfta_frame[,6],na.rm = TRUE)

NROW = rbind(nz1, nz2, nz3, nz4,nz5, nz6)


#ChAFTA

c1 = mean(chafta_frame[,1],na.rm = TRUE)/100

c2 = mean(chafta_frame[,2],na.rm = TRUE)/100

c3 = mean(chafta_frame[,3],na.rm = TRUE)/100

c4 = mean(chafta_frame[,4],na.rm = TRUE)/100

c5 = mean(chafta_frame[,5],na.rm = TRUE)/100

c6 = mean(chafta_frame[,6],na.rm = TRUE)/100

CROW = rbind(c1, c2, c3, c4, c5, c6)
```

```
#RCEP

#RCEP ASEAN

as1 = mean(ra_frame[,1],na.rm = TRUE)

as2 = mean(ra_frame[,2],na.rm = TRUE)

as3 = mean(ra_frame[,3],na.rm = TRUE)

as4 = mean(ra_frame[,4],na.rm = TRUE)

as5 = mean(ra_frame[,5],na.rm = TRUE)

as6 = mean(ra_frame[,6],na.rm = TRUE)

ASROW = rbind(as1, as2, as3, as4, as5, as6)

#RCEP AUSTRLIA

au1 = mean(raus_frame[,1],na.rm = TRUE)

au2 = mean(raus_frame[,2],na.rm = TRUE)

au3 = mean(raus_frame[,3],na.rm = TRUE)

au4 = mean(raus_frame[,4],na.rm = TRUE)

au5 = mean(raus_frame[,5],na.rm = TRUE)

au6 = mean(raus_frame[,6],na.rm = TRUE)

AUROW = rbind(au1, au2, au3, au4, au5, au6)

#RCEP JAPAN

ja1 = mean(rja_frame[,1],na.rm = TRUE)

ja2 = mean(rja_frame[,2],na.rm = TRUE)

ja3 = mean(rja_frame[,3],na.rm = TRUE)

ja4 = mean(rja_frame[,4],na.rm = TRUE)

ja5 = mean(rja_frame[,5],na.rm = TRUE)

ja6 = mean(rja_frame[,6],na.rm = TRUE)

JAROW = rbind(ja1, ja2, ja3, ja4, ja5, ja6)

#RCEP KOREA

ko1 = mean(rko_frame[,1],na.rm = TRUE)

ko2 = mean(rko_frame[,2],na.rm = TRUE)

ko3 = mean(rko_frame[,3],na.rm = TRUE)
```

```
ko4 = mean(rko_frame[,4],na.rm = TRUE)

ko5 = mean(rko_frame[,5],na.rm = TRUE)

ko6 = mean(rko_frame[,6],na.rm = TRUE)

KOROW = rbind(ko1, ko2, ko3, ko4, ko5, ko6)

#RCEP NEW ZEALAND

n1 = mean(rnz_frame[,1],na.rm = TRUE)

n2 = mean(rnz_frame[,2],na.rm = TRUE)

n3 = mean(rnz_frame[,3],na.rm = TRUE)

n4 = mean(rnz_frame[,4],na.rm = TRUE)

n5 = mean(rnz_frame[,5],na.rm = TRUE)

n6 = mean(rnz_frame[,6],na.rm = TRUE)

NROW = rbind(n1, n2, n3, n4, n5, n6)


#Joining rows to data frame

tabledat = cbind(NROW, CROW, ASROW, AUROW, JAROW, KOROW, NROW)

tabledat = data.frame(tabledat)

tabledat = as.data.frame(t(tabledat))

colnames(tabledat)[1]="Baserate"

colnames(tabledat)[2]="Y + 1"

colnames(tabledat)[3]="Y + 2"

colnames(tabledat)[4]="Y + 3"

colnames(tabledat)[5]="Y + 4"

colnames(tabledat)[6]="Y + 5"

rownames(tabledat)[1]="NZCFTA"

rownames(tabledat)[2]="ChAFTA"

rownames(tabledat)[3]="RCEP ASEAN"

rownames(tabledat)[4]="RCEP AUSTRALIA"

rownames(tabledat)[5]="RCEP JAPAN"

rownames(tabledat)[6]="RCEP KOREA"

rownames(tabledat)[7]="RCEP NEW ZEALAND"
```

```
#Compute growth rates

tabledat = as.data.frame(t(tabledat))

#NZCFTA

GrowNZ <- as.data.frame(tabledat[1])

GrowNZ$Growth = with(GrowNZ, ave(tabledat[,1],

        FUN=function(x) c(NA, diff(x)/x[-length(x)]) ))

View(GrowNZ)

AverageNZ = mean(GrowNZ$Growth, na.rm=TRUE)


#ChAFTA

GrowC <- as.data.frame(tabledat[2])

GrowC$Growth[1] = NA

GrowC$Growth[2] = tabledat$ChAFTA[2]/tabledat$ChAFTA[1]-1

GrowC$Growth[3] = tabledat$ChAFTA[3]/tabledat$ChAFTA[2]-1

GrowC$Growth[4] = tabledat$ChAFTA[4]/tabledat$ChAFTA[3]-1

GrowC$Growth[5] = tabledat$ChAFTA[5]/tabledat$ChAFTA[4]-1

GrowC$Growth[6] = tabledat$ChAFTA[6]/tabledat$ChAFTA[5]-1

View(GrowC)

AverageC = mean(GrowC$Growth, na.rm=TRUE)


#RCEP ASEAN

GrowAS <- as.data.frame(tabledat[3])

GrowAS$Growth[1] = NA

GrowAS$Growth[2] = tabledat$`RCEP ASEAN`[2]/tabledat$`RCEP ASEAN`[1]-1

GrowAS$Growth[3] = tabledat$`RCEP ASEAN`[3]/tabledat$`RCEP ASEAN`[2]-1

GrowAS$Growth[4] = tabledat$`RCEP ASEAN`[4]/tabledat$`RCEP ASEAN`[3]-1

GrowAS$Growth[5] = tabledat$`RCEP ASEAN`[5]/tabledat$`RCEP ASEAN`[4]-1

GrowAS$Growth[6] = tabledat$`RCEP ASEAN`[6]/tabledat$`RCEP ASEAN`[5]-1
```

```
View(GrowAS)

AverageAS = mean(GrowAS$Growth, na.rm=TRUE)


#RCEP AUSTRALIA

GrowAU <- as.data.frame(tabledat[4])

GrowAU$Growth[1] = NA

GrowAU$Growth[2] = tabledat$`RCEP AUSTRALIA`[2]/tabledat$`RCEP AUSTRALIA`[1]-1

GrowAU$Growth[3] = tabledat$`RCEP AUSTRALIA`[3]/tabledat$`RCEP AUSTRALIA`[2]-1

GrowAU$Growth[4] = tabledat$`RCEP AUSTRALIA`[4]/tabledat$`RCEP AUSTRALIA`[3]-1

GrowAU$Growth[5] = tabledat$`RCEP AUSTRALIA`[5]/tabledat$`RCEP AUSTRALIA`[4]-1

GrowAU$Growth[6] = tabledat$`RCEP AUSTRALIA`[6]/tabledat$`RCEP AUSTRALIA`[5]-1

View(GrowAU)

AverageAU = mean(GrowAU$Growth, na.rm=TRUE)


#RCEP JAPAN

GrowJA <- as.data.frame(tabledat[5])

GrowJA$Growth[1] = NA

GrowJA$Growth[2] = tabledat$`RCEP JAPAN`[2]/tabledat$`RCEP JAPAN`[1]-1

GrowJA$Growth[3] = tabledat$`RCEP JAPAN`[3]/tabledat$`RCEP JAPAN`[2]-1

GrowJA$Growth[4] = tabledat$`RCEP JAPAN`[4]/tabledat$`RCEP JAPAN`[3]-1

GrowJA$Growth[5] = tabledat$`RCEP JAPAN`[5]/tabledat$`RCEP JAPAN`[4]-1

GrowJA$Growth[6] = tabledat$`RCEP JAPAN`[6]/tabledat$`RCEP JAPAN`[5]-1

View(GrowJA)

AverageJA = mean(GrowJA$Growth, na.rm=TRUE)


#RCEP KOREA

GrowKO <- as.data.frame(tabledat[6])

GrowKO$Growth[1] = NA

GrowKO$Growth[2] = tabledat$`RCEP KOREA`[2]/tabledat$`RCEP KOREA`[1]-1
```

```
GrowKO$Growth[3] = tabledat$`RCEP KOREA`[3]/tabledat$`RCEP KOREA`[2]-1

GrowKO$Growth[4] = tabledat$`RCEP KOREA`[4]/tabledat$`RCEP KOREA`[3]-1

GrowKO$Growth[5] = tabledat$`RCEP KOREA`[5]/tabledat$`RCEP KOREA`[4]-1

GrowKO$Growth[6] = tabledat$`RCEP KOREA`[6]/tabledat$`RCEP KOREA`[5]-1

View(GrowKO)

AverageKO = mean(GrowKO$Growth, na.rm=TRUE)


#NEW ZEALAND

GrowN <- as.data.frame(tabledat[7])

GrowN$Growth[1] = NA

GrowN$Growth[2] = tabledat$`RCEP NEW ZEALAND`[2]/tabledat$`RCEP NEW ZEALAND`[1]-1

GrowN$Growth[3] = tabledat$`RCEP NEW ZEALAND`[3]/tabledat$`RCEP NEW ZEALAND`[2]-1

GrowN$Growth[4] = tabledat$`RCEP NEW ZEALAND`[4]/tabledat$`RCEP NEW ZEALAND`[3]-1

GrowN$Growth[5] = tabledat$`RCEP NEW ZEALAND`[5]/tabledat$`RCEP NEW ZEALAND`[4]-1

GrowN$Growth[6] = tabledat$`RCEP NEW ZEALAND`[6]/tabledat$`RCEP NEW ZEALAND`[5]-1

View(GrowN)

AverageN = mean(GrowN$Growth, na.rm=TRUE)


tabledat = as.data.frame(t(tabledat))

tabledat$AverageGrowth = c (AverageNZ,
AverageC,AverageAS,AverageAU,AverageJA,AverageKO,AverageN)

print(tabledat)
```

Console