Capital-to-output ratios

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The capital stock, K, is constructed with the perpetual inventory moethod from time series data on real investment from the Penn World Tables, using a deprecitiation rate of 0.06. Following standard practice (see, among others, Caselli, 2005; Caselli and Feyrer, 2007), the initial capital stock, K_0, is computed as $I_0/(g+\delta)$, where I_0 is the value of the investment series in the first year it is available, and g is the average geometric growth rate for the investment series between the first year with available data and 1971.

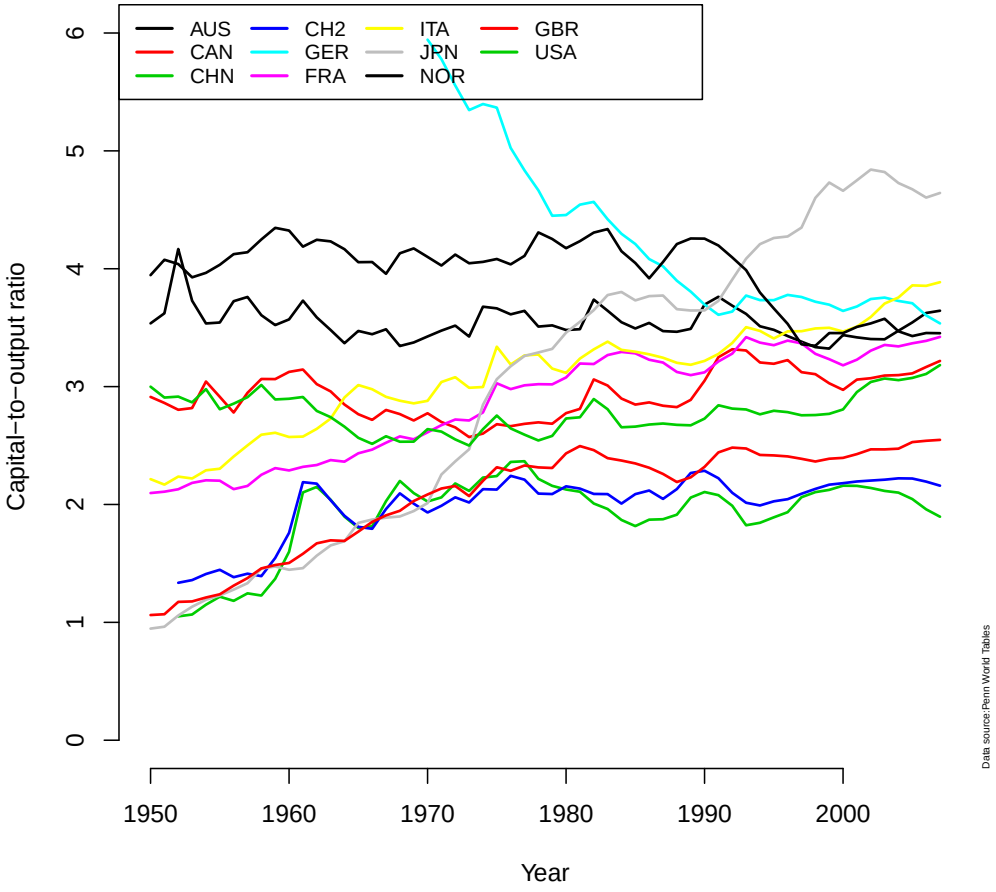

Figure 1: Capital-to-output ratios

References

Caselli, F. (2005). Accounting for cross-country income differences. In Aghion, P. and Durlauf, S., editors, *Handbook of Economic Growth*, pages 679–741. North Holland Press.

Caselli, F. and Feyrer, J. (2007). The marginal product of capital. *Quarterly Journal of Economics*, pages 535–568.

A File attachments

1. LaTeX source file for this document
2. BibTeX source file for this document
3. R script to download data, compute ratios and plot the figure

B R script

```
rm(list=ls())

setwd("/Users/espenhenriksen/documents/dropbox/research/global_
    economy/")

library(gtools)
library(gdata)

# structural parameters
delta <- 0.06

countries <- c("AUS","CAN","CHN","CH2","GER","FRA","ITA","JPN","
    NOR","GBR","USA")

# download data
download.file(url="http://pwt.econ.upenn.edu/php_site/pwt63/
    pwt63_nov182009version.zip",destfile="pwt63_nov182009version.
    zip",method="auto",quiet=TRUE)
pwt63 <- read.xls(unzip(zipfile = "pwt63_nov182009version.zip",
    files="pwt63_w_country_names.xls",list = FALSE), sheet=1,
    skip=0, header=TRUE)
```

```
subset <- {data.frame(country <- pwt63$country,
                      isocode <- pwt63$isocode,
                      year    <- pwt63$year,
                      rgdp    <- pwt63$rgdpl,
                      ki      <- pwt63$ki)}
# rgdp is real investment
# ki is investment share of real gdp

pwt.inv <- NULL
pwt.gdp <- NULL
for(i in 1:length(countries)){
  pwt.inv <- cbind(pwt.inv,subset[subset$isocode == countries[i
      ],]$rgdp*subset[subset$isocode == countries[i],]$ki/100)
  pwt.gdp <- cbind(pwt.gdp,subset[subset$isocode == countries[i
      ],]$rgdp)
}
dimnames(pwt.inv)[[2]] <- countries
pwt.inv <- ts(pwt.inv,start=1950,frequency=1)

first <- mat.or.vec(length(countries),1)
for(i in 1:length(countries)){
  j <- 1
  while(is.na(pwt.inv[j,i])){
    j <- j + 1
  }
  first[i] <- j
}
rm(i,j)

g <- mat.or.vec(length(countries),1)
for(i in 1:length(countries)){
  g[i] <- (pwt.inv[22,i]/pwt.inv[first[i],i])^(1/(22-first[i]))
}

K  <- mat.or.vec(dim(pwt.inv)[1]+1,dim(pwt.inv)[2])*NaN
KY <- mat.or.vec(dim(pwt.inv)[1],dim(pwt.inv)[2])*NaN
for(i in 1:dim(pwt.inv)[2]){
  for(j in first[i]:dim(pwt.inv)[1]){
    if(j == first[i]){
      K[j,i] <- pwt.inv[j,i]/((g[i]-1)+delta)
    }
    K[j+1,i] = (1-delta)*K[j,i] + pwt.inv[j,i]
    if(j <= dim(pwt.inv)[1]){
      KY[j,i] <- K[j,i]/pwt.gdp[j,i]
    }
```

```
  }
}

KY <- ts(KY, start=1950, frequency=1)

ts.plot(KY, gpars=list(xlab="Year", ylab="Capital-to-output ratio"
    , ylim=c(0,6), col=c(1:ncol(KY)), lwd = 1.75, axes=F))
axis(1, labels=dimnames(KY)[[1]], las=1)
axis(2)
legend("topleft", legend = countries, cex=.8, ncol=5, lwd=2.0, col=c
    (1:ncol(KY)))
mtext("Data source: Penn World Tables", side=4, line=-.2, cex=.4, adj
    =0)
dev.print(device=pdf, file="pwtKYratios.pdf")
```