2.

(a)

```
suppressMessages(library(dplyr))
pwt <- read.csv("~/Documents/2017-18/ECON241/Problem_Sets/ps2/pwt_and_bl_excerpt.csv")
pwt <- pwt %>% mutate(humancap = ifelse(yr_sch <= 4, 1*1.134^(yr_sch),
                                        ifelse(yr_sch <= 8, 1*(1.134^4)*1.101^(yr_sch-4),
                                               1*(1.134^4)*(1.101^4)*1.068^(yr_sch-8))),
                      gdpPercap = rgdpna/emp)
```

(b)

```
US_Korea <- pwt %>% filter(country %in% c("United States", "Republic of Korea"))
predict1 <- US_Korea[1,10]/US_Korea[2,10]
actual1 <- US_Korea[1,11]/US_Korea[2,11]
```

Predicted income ratio $(\frac{h\ Korea}{h\ US}) = 0.9283559$
Actual income ratio $(\frac{y\ Korea}{y\ US}) = 0.5902894$

(c)

```
US_Korea <- US_Korea %>% mutate(capPercap = rkna/emp,
                                savingsRate = (delta+n)*capPercap/gdpPercap)
predict2 <- (US_Korea[1,13]/US_Korea[2,13])^(1/2)
```

Assuming $\alpha = \frac{1}{3}$, predicted income ratio $(\sqrt{\frac{\frac{\gamma\ Korea}{\delta+n}}{\frac{\gamma\ US}{\delta+n}}}) = 1.3854727$

(d)

```
predict3 <- predict1*predict2
```

Predicted income ratio $(\frac{h\ Korea}{h\ US} \times \sqrt{\frac{\frac{\gamma\ Korea}{\delta+n}}{\frac{\gamma\ US}{\delta+n}}}) = 1.2862117$

(e)

We may assume that there is a huge discrepancy in productivity between the two countries.