EC 102 – Spring 2015

Problem Session #2 (Chapter 8_Long Run Growth):

Krugman and Wells, Ch 8,

Q4, You are hired as an economic consultant to the countries of Albernia and Brittania...

a. The curve reflecting the relationship between physical capital per worker and output per worker is drawn holding human capital per worker and technology fixed. Both Albernia and Brittania experience diminishing returns to physical capital since in both countries equal successive increases in physical capital per worker—holding human capital per worker and technology constant—will result in smaller and smaller increases in real GDP per worker.

b. Albernia should increase its physical capital per worker to $30,000.

c. An increase in human capital per worker shifts the curve Productivity1 to Productivity2 and Albernia doubles real GDP per worker without a change in the physical capital per worker. On the accompanying diagram, Albernia would move from point A to point C. So your policy recommendation should be to increase the amount of human capital per worker.
Q9 Over the next 100 years, real GDP per capita in Groland is expected to grow at an...

If real GDP per capita in Groland grows at an average annual rate of 2.0%, real GDP per capita in 100 years will be $144,893 \([20,000 \times (1 + 0.02)^{100}]\). At an average annual rate of growth of 1.5%, real GDP per capita in Sloland in 100 years will be $88,641 \([20,000 \times (1 + 0.015)^{100}]\). Although both nations start with the same real GDP per capita today, the differential growth rates will result in living standards in Sloland that are 61.2% \((88,641/144,893 \times 100)\) of those in Groland.

Q12, Why would you expect real GDP per capita in California and Pennsylvania to exhibit...

According to the conditional convergence hypothesis, *other things equal*, countries with relatively low real GDP per capita tend to have higher rates of growth than countries with relatively high real GDP per capita. We can apply this hypothesis to regions as well. It is more likely that the factors that affect growth will be equal in California and Pennsylvania: both states have similar educational systems, infrastructure, rule of law, and so on. But that is not true of California and Baja California: in comparing them, the factors that affect growth are not likely to be equal. California and Baja California have very different educational systems, different infrastructures, and differences in how the rule of law is applied. So it is less likely that they will converge. For California and Baja California to converge in real GDP per capita, they would have to become more similar in the factors that affect growth.

A puzzle: The share of GDP devoted to investment was similar for the United States and South Korea over the last 40 years. However, South Korea had a 6 percent growth rate of average annual income, while the United States had only a 2 percent growth rate over that last 40 years. How can this be explained?

The most important factor is difference in marginal productivity of capital. Since South Korea has much lower capital stock compared to US, marginal productivity of capital is higher. Hence investing similar amounts as share of GDP brings a higher return in South Korea relative to US.