

Eco 362: Economic Growth  
Fall 2013  
Solutions for Problem Set 3

Note: all Weil question numbers refer to the 3rd edition textbook.

Question 1: Chapter 6, Q2

Question 2: In Weil Chapter 6, page 167, the author makes the following claim: "For developing countries, this calculation yields human capital's share of national income as 40% and for advanced countries it yields 45%". Using the data Table 6.2 and the returns to education (page 162 in the textbook), show how the author arrived at these numbers.

Question 3: State the assumption of the Mankiw, Romer and Weil model of incorporating human capital into the basic Solow model. Derive the important equations. Note: the purpose of this question is so that you have the equations. You still need to be able to explain the predictions and work with the model as we discussed in class.

Question 3: Consider the Solow model with exogenous technical progress where the production function is given by  $Y_t = K_t^\alpha (e_t L_t)^{1-\alpha}$ ,  $0 < \alpha < 1$ ,

- a) Derive the equation for the evolution of  $k_t = \frac{K_t}{e_t L_t}$
- b) Derive the steady state of  $k$
- c) What is the growth rate of per capita income and total GDP?
- d) Discuss the effects on the economy of a **one time, permanent** increase in the **growth rate of productivity** ( $\hat{e}$ ) **rate**. Discuss the effects on  $y, Y$  graphically and in words.