

Economics 613: Macroeconomics I

Fall 2006

Cornell University

Problem Set #5

Due: Friday, September 22

Two-sector model

1. For each of the following:

(a) draw the Harrod-Johnson diagram, and

(b) calculate the incomplete specialization output price ratios, \bar{p} and \underline{p} , and indicate what happens to these as k (the overall capital intensity) is varied.

(i)

$$\begin{aligned} Y_1 &= K_1^{1/2} L_1^{1/2} \\ Y_2 &= K_2^{3/4} L_2^{1/4} \\ K &= 16, L = 16 \end{aligned}$$

(ii)

$$\begin{aligned} Y_1 &= 6K_1^{1/2} L_1^{1/2} \\ Y_2 &= 12K_2^{1/2} L_2^{1/2} \\ K &= 50, L = 10 \end{aligned}$$

(iii)

$$\begin{aligned} Y_1 &= 5K_1^{4/5} L_1^{1/5} \\ Y_2 &= 10K_2^{1/2} L_2^{1/2} \\ K &= 80, L = 10 \end{aligned}$$

(iv)

$$\begin{aligned} Y_1 &= 4K_1^{1/4} L_1^{3/4} \\ Y_2 &= 4K_2^{1/4} L_2^{3/4} \\ K &= 25, L = 25 \end{aligned}$$

2. Describe the role of capital intensities in the 2-sector model. When is $\underline{p} < \bar{p}$? When is $\underline{p} > \bar{p}$? When is $\underline{p} = \bar{p}$?

3. If two countries have the same output price ratio, do they have the same factor price ratio?