

Professor Karl Shell
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Economics 614: Macroeconomics II

Spring 2004

Cornell University

Problem Set #3

Due: Friday, February 13

1 Two sector model.

I. 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.

(1)

$$\begin{aligned} Y_1 &= 3K_1^{-3/4}L_1^{1/4} \\ Y_2 &= 10K_2^{1/2}L_2^{1/2} \\ K &= 100, L = 15 \end{aligned}$$

(2)

$$\begin{aligned} Y_1 &= 7K_1^7L_1^3 \\ Y_2 &= 10K_2^7L_2^3 \\ K &= 30, L = 3 \end{aligned}$$

(3)

$$\begin{aligned} Y_1 &= K_1^{1/2}L_1^{1/2} \\ Y_2 &= K_2^{-3/4}L_2^{1/4} \\ K &= 12, L = 13 \end{aligned}$$

(4)

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

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

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