

**Economics 614: Macroeconomics II**

Spring 2005

Cornell University

**Problem Set #4**

Due: Wednesday, February 16

## 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)

$$\begin{aligned} Y_1 &= 3K_1^{-3/5}L_1^{2/5} \\ Y_2 &= 10K_2^{1/2}L_2^{1/2} \\ K &= 100, L = 15 \end{aligned}$$

(2)

$$\begin{aligned} Y_1 &= 7K_1^6L_1^4 \\ Y_2 &= 10K_2^6L_2^4 \\ K &= 30, L = 3 \end{aligned}$$

(3)

$$\begin{aligned} Y_1 &= K_1^{1/2}L_1^{1/2} \\ Y_2 &= K_2^{-3/5}L_2^{2/5} \\ K &= 12, L = 13 \end{aligned}$$

(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?