

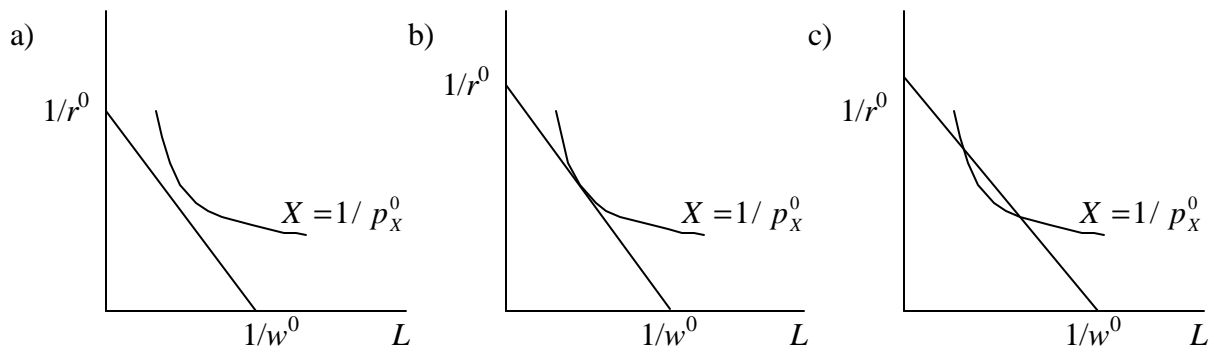
## Problem Set 2

### The Heckscher-Ohlin Model

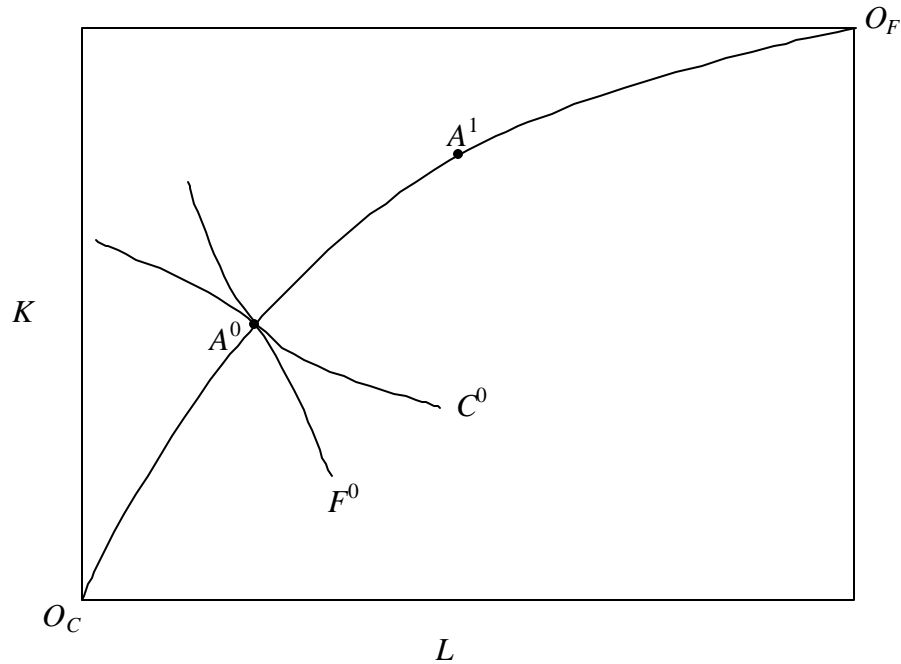
1. Which of the following characterize the Heckscher-Ohlin Model?
 

<ol style="list-style-type: none"> <li>a. Perfect mobility of factors across industries</li> <li>b. Perfect mobility of factors across countries</li> <li>c. Constant returns to scale</li> <li>d. The law of diminishing returns</li> <li>e. Identical technologies across industries</li> </ol>	<ol style="list-style-type: none"> <li>f. Identical technologies across countries</li> <li>g. Monopolistic competition</li> <li>h. Perfect competition</li> <li>i. Full employment</li> <li>j. Balanced trade</li> <li>k. Factor intensity reversals</li> <li>l. Identical homothetic preferences</li> </ol>
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2. Suppose that the price of a good,  $X$ , is  $p_X^0$  and that potential producers of that good in a country face factor prices  $w^0$  and  $r^0$ . The three figures below show three ways that these prices might appear in an isoquant-isocost diagram. What can you say, in each case, about what will happen in the  $X$  industry in this country? That is, will the good be produced, can these prices constitute an equilibrium, and if so, what technique of production will be used to produce  $X$ ?

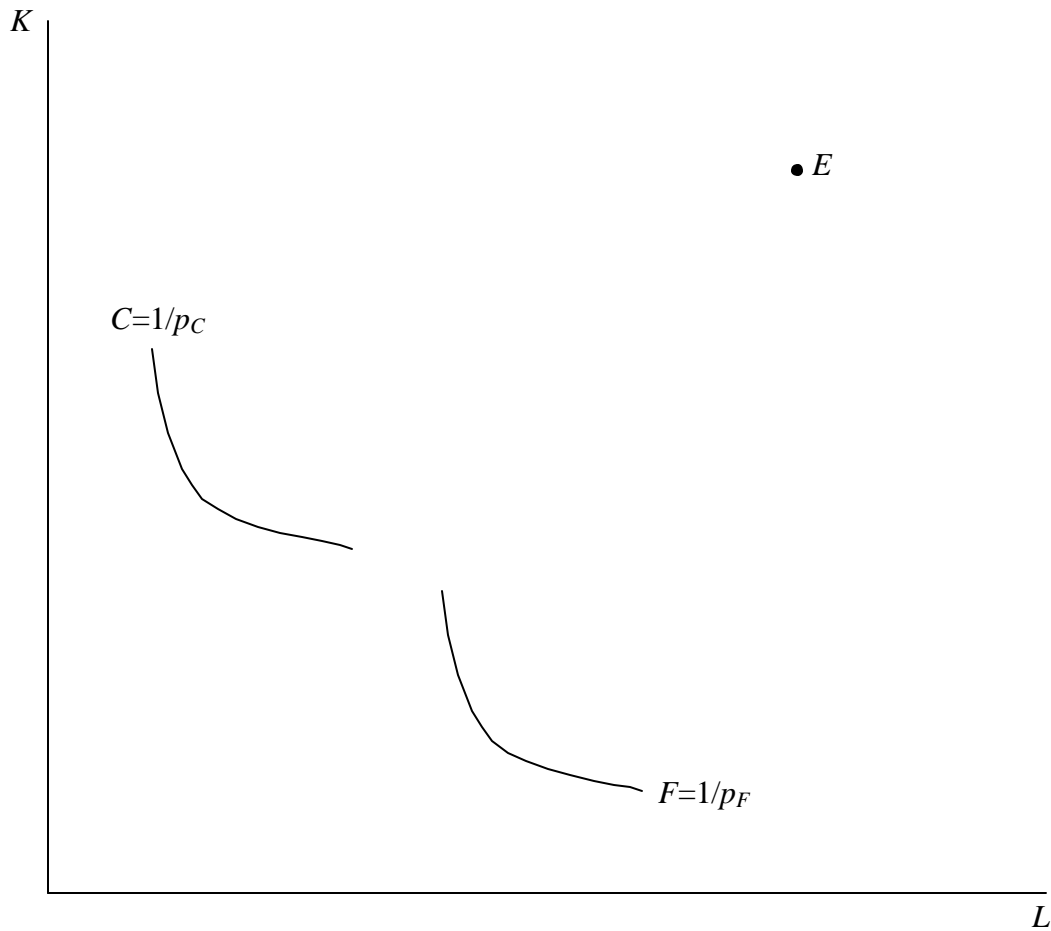


3. The Edgeworth Box below shows the contract curve of a country as well as a particular allocation,  $A^0$ , along that contract curve at which the country would produce, given certain prices,  $p_C^0$  and  $p_F^0$ . Its outputs at  $A^0$  are  $C^0$  and  $F^0$ .



- What is the wage-rental ratio,  $w^0/r^0$ , in this initial equilibrium? Are you able to determine the factor prices,  $w^0$  and  $r^0$ , individually?
- Identify in the figure the allocations of labor and capital to each of the industries,  $K_C^0$ ,  $L_C^0$ ,  $K_F^0$ , and  $L_F^0$ , as well as their ratios,  $k_C^0 = K_C^0 / L_C^0$  and  $k_F^0 = K_F^0 / L_F^0$ .
- Now consider the different allocation, also along the contract curve, shown as  $A^1$ . In order for the country to produce there, how would prices have to differ from  $p_C^0$  and  $p_F^0$ ?
- How do the factor allocations you looked at in part (b), and their ratios, differ at  $A^1$  from what they were at  $A^0$ ?
- Using the full employment conditions for the two factors, show that the capital-labor ratio of the country as a whole,  $k = K/L$ , is a weighted average of the ratios in the two sectors,  $k_C$  and  $k_F$ .
- In part (d), you should have found that both ratios,  $k_C$  and  $k_F$ , fell in going from  $A^0$  to  $A^1$ . Does this mean, in view of the result in part (e), that  $k$  has fallen also? Why or why not?
- Draw isoquants for both industries through point  $A^1$ . Now identify the wage-rental ratio,  $w^1/r^1$ , as you did in part (a). How does it compare to  $w^0/r^0$ ?

4. Starting from the unit-value isoquants shown below and using the factor endowments at point  $E$ , carefully construct the rest of the pieces of the Lerner diagram for this economy. Suppose that this country spends half of its income on Cloth and half on Food. What does it export and what does it import?



5. Use the HO Model with capital-intensive cloth and labor-intensive food to answer, for a small-open economy that is (and remains) diversified:
- If the labor force increases, what happens to the wage of labor and to labor's share of national income?
  - If the world price of cloth falls, what happens to the real rental on capital and to the output of food?
  - Suppose that technology improves in this country only, permitting it to produce more cloth with the same amounts of factors. What happens to its output of cloth and its real wage of labor?