ECON-A4000 - Economics of Global Challenges

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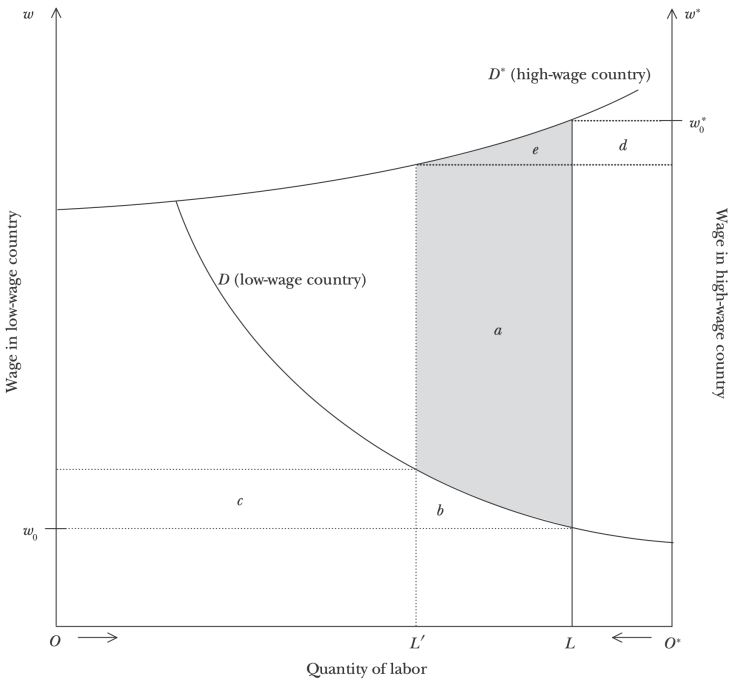
Return method: through mycourses by the deadline

Problem Set 3: Question 3



The above figure should be familiar to you from lecture 10 (and the reading). We discussed during the lecture that the relative abundance of capital and labor in the two locations can justify the moving decisions (=migration). This production function should be familiar to you from lecture 9:

$$Y = AK^{\alpha}L^{1-\alpha}.$$

We want to use this Cobb-Douglas production to understand the demands for labor in the two locations.

1. Matti S. discussed the marginal product of labor, MPL. This connects to lecture 10 because in fact

$$MPL = \frac{dY}{dL} = (1-\alpha)AK^{\alpha}L^{-\alpha}$$

which is just the derivative of the production function. In any given location, MPL defines the demand for labor L holding capital K as given.

   - To identify the reasons for differences in the labor demand in the two locations in the Figure above, let us assume first that technology otherwise is the same in both locations: $\alpha = 1/3$ and $A = 1$. Using the expression for MPL, you should now be able to explain fundamental reason for the situation described in the Figure, i.e., what causes the differences in the labor demand in the two locations?
   - Consider next a situation in which the causal reason that you identified in the previous item is assumed to be absent. Could the differences in technologies lead to similar labor demand differences?

2. Consider then the following scenario. The labor market between the two regions is initially in equilibrium (i.e., no more migration in this equilibrium). Then, one of the regions ´grows´ through capital investments so that there is more K in this region. What happens to migration in response? What is the new equilibrium in this labor market? You may draw a figure.