

## Exercises 2

**Problem 1:** Suppose that the production functions of sector 1 and 2 are  $Q_1 = K_1^{0.3}L_1^{0.7}$  and  $Q_2 = K_2^{0.6}L_2^{0.4}$ , respectively.

- Determine formally which of the two goods is capital intensive, that is, uses the higher capital/labor ratio for a given relative factor price.
- Derive the corresponding unit cost functions and explain why unit costs equal output prices. Then use these equalities to express factor prices as functions of output prices.
- Using your results from b), explain factor price equalization and verify the Stolper-Samuelson result.

**Problem 2:** A country's output vector is  $X = (2, 2, 1)$ , the world's output vector is  $X^w = (55, 100, 110)$ , the price vector is  $p = (4, 4, 3)$ , and the commonly used input output coefficients are

$$\begin{pmatrix} 1 & 2 & 1 \\ 1 & 1 & 1 \\ 2 & 1 & 1 \end{pmatrix}$$

where the first row describes labor coefficients, the second row describes land coefficients, and the third row describes capital coefficients. All countries have identical homothetic preferences and balanced trade.

- Describe the country's pattern of commodity trade.
- Describe its pattern of trade in factor content.
- What are the equilibrium factor prices?

**Problem 3:** Carry out the empirical exercises that you find at the end of chapter 2 in the Feenstra book. You can download the data and stata do files at this URL:

[www.econ.ucdavis.edu/faculty/fzfeens/empirical/Chapter-2.zip](http://www.econ.ucdavis.edu/faculty/fzfeens/empirical/Chapter-2.zip)