QUESTIONS - CHAPTER 10 INTRA-INDUSTRY TRADE

Question 10.1
Chapter 10 introduces the Constant-Elasticity-of-Substitution (CES) utility function. It provided the breakthrough for intra-industry trade theory. Suppose that a consumer with this type of utility function (see equation 10.2) consumes three goods: coffee, tea, and milk.

10.1A Use a numerical example to show that if \( \rho = 1 \) the consumer is indifferent to consuming three units of coffee or three units of a mix of the goods.

10.1B Use a numerical example to show that if \( 0 < \rho < 1 \), the consumer prefers to purchase a combination of goods.

For the rest of this question we assume that each good is consumed in the same quantity. Section 10.3 then rewrites the utility function to distinguish between a love-of-variety effect and a claim on real resources (see equation 10.2'). Suppose that \( \rho = 0.5 \) and assume that one unit of each good is consumed.

10.1C Rewrite the utility function for coffee, tea, and milk to mimic equation (10.2'). How large is the claim on real resources? How large is the love-of-variety effect?

10.1D Use an example to illustrate how the love-of-variety effect represents a multiplier-like role in the utility function (use equation 10.2').

Question 10.2
"One definition of an economist is somebody who sees something happen in practice and wonders if it will work in theory."

10.2A How does this joke relate to the theory of intra-industry trade?

Though the theory of intra-industry trade was an important breakthrough, much remains to be done. Several economists take issue with the parameter \( \varepsilon \) in the model.

10.2B Give two reasons why economists might be concerned about this parameter.

The merits of globalization are subject to fierce debates. One of the issues that anti-globalization advocates raise is the perceived decrease in the amount of variety in the world. Everybody buys the same brands and shops at the same stores.

10.2C What can the theory of intra-industry trade say about this issue?

Question 10.3
China and Australia both produce fireworks. The demand and supply structure in both economies is given by the Dixit-Stiglitz model, with an elasticity of substitution equal to 2 in both countries. Since continually firing the same crackers is quite boring, there is a love-of-variety effect for all consumers. The fireworks market is much larger in China than in Australia. In both countries the marginal labour input requirement is 1 and the fixed labour input per variety is 2.5. The Chinese labour employment in the fireworks industry is 10 million people. The Australian labour employment in the fireworks industry is 10 thousand people.

10.3A How many varieties will be supplied to the Australian and Chinese market in the autarky equilibrium?

10.3B How many varieties will be consumed in each country in the free trade equilibrium?

10.3C Does international trade increase the production efficiency in the two countries? Does international trade increase output?

10.3D What is the domestic market share of Australian producers if international trade is allowed?

10.3E Who benefits and who loses from international trade in this model? Are the benefits equally shared between Australia and China?

10.3F Describe how the Ethier interpretation would alter the analysis of international trade of fireworks. How does it affect the benefits of international trade, in comparison with the Krugman interpretation?

Question 10.4

Suppose we live in a Dixit-Stiglitz world as described in chapter 10 with three car producers, called Ferrari, Lamborghini, and Porsche, and the following parameters:

\[ p_{Porsche} = 10; \quad p_{Lamborghini} = 5; \quad p_{Ferrari} = 10 \]

\[ \rho = 0.5; \quad I = 100; \quad P = 2.5 \]

Suppose that the producers have a fixed labour input of 5 and a variable labour input of 1. They face a wage rate of 1 and the labour force consists of 50 workers.

10.4A Is the model currently in equilibrium?

10.4B How many cars are produced in equilibrium by a single car manufacturer? How much labour is used to produce this output?
10.4C How many car varieties will be sold in equilibrium in this market? What will be the output of the three car manufacturers if new producers can enter the market?

10.4D The monopolistic competition analysis in this question is subject to one of the theoretical problems mentioned in the book. What is this problem?

**Question 10.5**

The intra-industry trade model can be interpreted in two ways: the Krugman and Ethier interpretations.

10.5A Which interpretation of the model have we used in question 10.4?

10.5B What are the main differences between the Krugman interpretation and the Ethier interpretation?

10.5C What is the result of an increase in the extent of the market in the Ethier interpretation?

10.5D What was the main motivation for Ethier to re-interpret the Krugman intra-industry trade model?

**Question 10.6**

Locate the article by Roy J. Ruffin of the Federal Reserve Bank of Dallas, called “The nature and significance of intra-industry trade”. The article starts with an overview of classical trade theory.

10.6A What is the impact of trade on the income distribution in the US according to Heckscher Ohlin trade theory? What does the empirical evidence suggest on this issue?

10.6B Which four reasons does the article offer to show that intra-industry trade is much more beneficial than inter-industry trade?

10.6C Does the US-Mexico trade example support the conclusions of 10.6B? Explain.

**Question 10.7**

The Excel file for question 10.7 contains import and export data for ten sectors for the NAFTA and the EU in 2010.

10.7A Calculate the Grubel-Lloyd index for all sectors in the dataset.

10.7B Which sector fits the predictions of the neo-classical trade model best? Why?
10.7C Which interpretation of the intra-industry trade model (Krugman or Ethier) do you prefer to explain intra-industry trade for crude materials? Why?