

Written Exam at the Department of Economics summer 2020

International Economics

Final Exam

2 June 2020

(3-hour open book exam)

Answers only in English.

The paper must be uploaded as one PDF document. The PDF document must be named with exam number only (e.g. '127.pdf') and uploaded to Digital Exam.

This exam question consists of 2 pages in total

This exam has been changed from a written Peter Bangsvej exam to a take-home exam with helping aids. Please read the following text carefully in order to avoid exam cheating.

Be careful not to cheat at exams!

You cheat at an exam, if you during the exam:

- Copy other people's texts without making use of quotation marks and source referencing, so that it may appear to be your own text. This also applies to text from old grading instructions.
- Make your exam answers available for other students to use during the exam
- Communicate with or otherwise receive help from other people
- Use the ideas or thoughts of others without making use of source referencing, so it may appear to be your own idea or your thoughts
- Use parts of a paper/exam answer that you have submitted before and received a passed grade for without making use of source referencing (self plagiarism)

You can read more about the rules on exam cheating on the study information pages in KUnet and in the common part of the curriculum section 4.12.

Exam cheating is always sanctioned with a warning and dispeiling from the exam. In most cases, the student is also expelled from the university for one semester.

Problem 1 (40 per cent)

True, false, uncertain. Explain your answer! You can at most get half points for a correct answer without explanation.

1. The HO model is consistent with the rise in the skill premium in the United States since 1980.
2. Exporters are more productive than non-exporters. This is entirely due to more productive firms choosing to become exporters.
3. The infant-industry argument is theoretically coherent but empirically dubious.
4. Subsidizing exports is never an optimal government strategy

Problem 2 (60 per cent).

Consider a Krugman model of a single economy with only one factor of production, labor. Total stock of labor is L . There is a representative agent with utility:

$$U = \left(\sum_{i=1}^N c_i^{\frac{\sigma-1}{\sigma}} \right)^{\frac{\sigma}{\sigma-1}},$$

where N is the number of products in the economy, c_i is consumption of good i and $\sigma > 1$.

Each product can be produced by a single monopolist. The labor cost of producing $y > 0$ units is

$$l = \alpha + \beta y,$$

where $\alpha, \beta > 0$ and unit labor costs required for producing zero units is zero. We denote by w the wage, i.e. factor payments to one unit of labor. The labor cost of producing is identical for all firms.

Question 1. Derive the demand curve for a single variety, i taking total income wL as given. Show that it equals:

$$c_i = \frac{wL}{P} \left(\frac{p_i}{P} \right)^{-\sigma},$$

where P is the ideal price index defined as:

$$P^{1-\sigma} = \sum_{i=1}^N p_i^{1-\sigma}$$

Hint: Utility is ordinal. Hence, it is possible (though not required) to maximize $\sum_{i=1}^N c_i^{\frac{\sigma-1}{\sigma}}$ instead.

A given firm takes this demand function as given but can choose p_i .

Question 2. Solve for the firm's optimal price.

Let there be free entry such that equilibrium profits equal zero for each firm.

Question 3. What is equilibrium production for each firm?

Question 4. How does equilibrium production depend on α , β and σ ? Give economic intuition for each.

Question 5. Find the equilibrium number of firms.

Question 6. Derive the utility of a representative agent as a function only of exogenous parameters.

Question 7. So far, we have been talking about a closed model. How would I conclude anything about the gains from trade in this model? What would be the source of these gains?

Question 8. Name an additional source of gains from trade from Krugman's original article. What would I need to change in this model to get that source of gains from trade?

These days, it is often argued that the Covid-19 pandemic implies that we should scale back globalization and potentially protect our markets more. Now consider two equally sized countries, each with a population of 1, called A and B . They can each set a tariff, τ^A and τ^B . These are gross tariffs so when $\tau^A = 1$ there is no tariff and when $\tau^A > 1$ the government collects $\tau^A - 1$ in tariffs. We will only consider equilibria in which both countries set the same tariff: $\tau = \tau^A = \tau^B$. We will examine the effects of tariffs. (Note, whatever change to the model you suggested in Question 8 is *not* relevant here)

Question 9. Show that utility of a representative agent, when both countries set a tariff of $\tau \geq 1$ is:

$$U^{\frac{\sigma-1}{\sigma}} = \frac{\sigma-1}{\sigma} \frac{1}{\beta} \frac{[1 + \tau^{\sigma-1}]}{\tau^{\sigma} + 1},$$

and that production per firm is:

$$y = \frac{\alpha}{\beta}(\sigma - 1).$$

Question 10. Show that world welfare is highest when $\tau = 1$ (don't worry about second order conditions)

Question 11. How do tariffs distort international trade? Give an economic interpretation of the margin(s) of distortion.