

Written Exam at the Department of Economics summer 2020- R

## **International Economics**

Final Exam

13 August 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 3 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 dispassion from the exam. In most cases, the student is also expelled from the university for one semester.

## Problem 1 (30 points)

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

1.1. Consider one country which trades with the rest of the world and is described by the two-factor model with capital and labor. Keep the world price fixed. Suppose there is a positive immigration inflow but that these immigrants are wealthy and bring with them more capital per person than the native population. This will decrease production of the capital-intensive good but keep the wage and return on capital constant.

1.2. The classical trade models (the Heckscher–Ohlin model and the Ricardian model) are well-suited to explain all three of the following facts: The increase in income inequality in the developed world, the decrease in the labor share in the developed world, the rise in income inequality in the developing world.

1.3. Brexit is expected to disproportionately affect low-wage workers

1.4. Imposing an import quota or imposing an import tariff are equivalent when markets are competitive and the home government sells the quota (and gets the revenue).

## Problem 2 (30 points)

Consider the Dornbusch, Fischer Samuelson (1977) model where home and foreign have labor supply of  $L$  and  $L^*$ , respectively and utility:

$$U = \int_0^1 \ln(c(z)) dz,$$

where  $c(z)$  is consumption of variety  $z \in [0, 1]$ . The labor requirement in home of producing variety  $z$  is given by  $a(z)$  with  $a^*(z)$  the corresponding function for foreign. Let  $A(z) = a^*(z)/a(z)$  be the function of comparative advantage with  $A'(z) > 0$ . Let  $w$  and  $w^*$  be the wages in home and foreign, respectively. Let  $p(z)$  be the equilibrium price of variety  $z$ .

Question 1. Interpret the slope of  $A(z)$

Question 2. Show that if there exists an intermediate variety  $z'$  then home will produce all varieties  $z > z'$  and that foreign will produce all varieties,  $z < z'$ .

Question 3.

Show that the equilibrium can be described by the two endogenous variables:  $(w/w^*)$  and  $z'$  and write the two equations that determine them.

Question 4.

Draw the equilibrium in  $(w/w^*, z')$  space.

Question 5.

Show that there are gains from trade

### Problem 3 (40 points)

Consider a Ricardian model with two countries, home and foreign (denoted \*), each with a representative agent with identical preferences:

$$u = \left( c_T^{\frac{\sigma-1}{\sigma}} + c_W^{\frac{\sigma-1}{\sigma}} \right)^{\frac{\sigma}{\sigma-1}},$$

where  $c_T$  is consumption of "textiles" and  $c_W$  is consumption of "wine". Home has population  $L$  and foreign  $L^*$ . Labor is the only factor of production. Home has linear production described by:

$$y_T = a_T L_T,$$

$$y_W = a_W L_W,$$

where  $a_T$  is units of pieces of textiles per unit of labor and  $L_T$  is the number of workers employed in textile production and correspondingly for the production of wine,  $y_W$ ,  $a_T, a_W > 0$  (Note  $a_T$  represents productivity, whereas in Problem 2  $a$  represented labor requirement, the inverse of productivity). Markets are perfectly competitive in both home and foreign. In foreign the production functions are:

$$y_T^* = a_T^* L_T^*,$$

$$y_W^* = a_W^* L_W^*,$$

which have analogous interpretation and  $a_T^*, a_W^* > 0$ .

We impose:

$$\frac{a_T}{a_T^*} > \frac{a_W}{a_W^*} \tag{1}$$

Question 1. What is the economic interpretation of (1)

Question 2. Set the price of wine to 1 and let  $p^A$  be the price of textiles (relative to wine) in home in autarky. Find the equilibrium price in autarky in home.

Question 3. Show that trade constitutes a Pareto improvement (i.e. there are gains from trade). A graphical argument only gives partial credit

Question 4. Consider an equilibrium in which there is perfect specialization: Suppose that home has a comparative advantage in textile production and that  $a_T L = a_W^* L^*$ . Suppose the productivity of home in textile production,  $a_T$ , increases: Under what conditions will that i) benefit home, ii) benefit foreign.

Question 5. Give an economic interpretation of your result from question 4.