

i Candidate instructions

ECON4415

This is some important information about the postponed exam in ECON4415. Please read this carefully before you start answering the exam.

Date of exam: Friday, January 10, 2020

Time for exam: 09.00 a.m - 12.00 noon (3 hours)

The problem set: The problem set consists of 4 questions with several subquestions. They will count as indicated.

Sketches: You may use sketches on all questions. You are to use the sketching sheets handed to you. You can use more than one sketching sheet per question. See instructions for filling out sketching sheets on "Scantron information" below. It is very important that you make sure to allocate time to fill in the headings (the code for each problem, candidate number, course code, date etc.) on the sheets that you will use to add to your answer. You will find the code for each problem under the problem text. You will NOT be given extra time to fill out the "general information" on the sketching.

Access: You will not have access to your exam right after submission. The reason is that the sketches with equations and graphs must be scanned in to your exam. You will get access to your exam within 2-3 days.

Resources allowed: No written or printed resources - or calculator - is allowed (except if you have been granted use of a dictionary from the Faculty of Social Sciences).

Grading: The grades given: A-F, with A as the best and E as the weakest passing grade. F is fail.

1 Question 1 (30 points)

Brexit - consequences for trade and income distribution

In June 2016, a majority of the British population voted to leave the EU. Three years later, negotiations are still ongoing. Discuss the consequences for UK production, international trade, welfare, and income distribution if the country chooses to exit the EU. Your discussion should be drawing on international trade theory, and you should elaborate on two scenarios:

a. A soft Brexit: a scenario in which the UK introduces immigration restrictions but keeps preferential access to the EU single market for goods i.e., tariffs are zero between the UK and the EU for goods and services.

b. A hard Brexit: a scenario in which UK leaves the EU without a new trade deal, and trades under World Trade Organization (WTO) rules, and does not get any preferential access to the EU countries (the EU imposes positive tariffs on UK exports, and UK imposes positive tariffs on imports from EU).

Fill in your answer here and/or on sketching paper

Maximum marks: 30

2 Question 2 (20 points)

a. State the Stolper-Samuelson theorem.

b. Explain the process of structural change underlying the Stolper-Samuelson theorem. Use a graphical approach to support your answer.

Fill in your answer here and/or on sketching paper

Maximum marks: 20

3 Question 3 (40 points)

Krugman Model

Consider a country H where each firm has monopoly power over a single variety x_j . A firm pays a fixed cost f and a variable cost b , so it hires labor according to $l_j = f + bx_j$

Suppose the representative consumer has L_H units of labor for which he receives a wage w . The consumer has utility over N differentiated goods given by (note that $\sigma > 1$):

$$U = \left[\sum_{j=1}^N q_j^{\frac{\sigma-1}{\sigma}} \right]^{\frac{\sigma}{\sigma-1}}$$

Solving the utility maximization problem yields the demand for each variety j :

$$q_j = \frac{p_j^{-\sigma}}{P^{1-\sigma}} w L_H.$$

a. Show that the aggregate price index P is given by $P^{1-\sigma} = \sum_{j=1}^N p_j^{1-\sigma}$.

b. How does the price aggregator P change with an increase in N and p_j of a given variety j , respectively? What is the intuition for each of them?

Each firm choose the optimal price to maximize its profit. A firm's optimization problem is given by:

$$\max_{p_j} \pi_j = p_j q_j - b q_j w - w f,$$

where q_j satisfies the demand function we derived before. Solving the firm's optimization problem gives us the price for each variety: $p_j = \frac{\sigma b w}{\sigma - 1}$.

c. Show, using the general equilibrium conditions of the model, that the equilibrium number of varieties N equals $N = \frac{L_H}{\sigma f}$.

d. Given $N = \frac{L_H}{\sigma f}$, how does the equilibrium number of varieties N change with an increase in L_H , σ and f , respectively? What is the intuition for each of them?

e. Assume that country H can trade with country F without incurring any transportation costs. The two countries are identical. Trade is balanced. Compute the imports and exports of Home.

Fill in your answer here and/or on sketching paper

Maximum marks: 40

Table 3
Effects of tariffs on log output per plant ($\ln q$)

	Sample:				
	All	Imp. Com.	IC+Free	IC+Fixed	All
Canadian Tariff	1.134 ^a (0.368)	1.247 ^a (0.411)	0.279 (0.455)	3.824 ^a (0.925)	4.928 ^a (1.135)
U.S. Tariff	-1.638 ^a (0.596)	-2.227 ^a (0.716)	-0.937 (0.828)	-5.632 ^a (1.403)	-6.371 ^a (2.078)
Cdn. Tariff × Turnover					-17.952 ^a (5.489)
U.S. Tariff × Turnover					20.131 ^c (10.289)
1994	0.179 ^a (0.020)	0.172 ^a (0.022)	0.117 ^a (0.025)	0.301 ^a (0.040)	0.186 ^a (0.021)
R^2 (within)	0.175	0.173	0.129	0.338	0.191
Root MSE	0.149	0.152	0.149	0.154	0.149
No. of Obs.	1828	1628	1183	445	1693

Note: Fixed industry year effects are not reported except for 1994 which approximates the percent change from 1988. Standard errors in parentheses. ^a, ^b, ^c indicate significance in a two-tail test at the 1, 5 and 10 percent levels.

4 Question 4 (10 points)

Gravity Model

Head and Ries (1999) analyse the effects of tariffs based on a model of trade and imperfect competition, using to so-called gravity equation. To the left, you find their results.

Focus on the effect of Canadian Tariff and U.S. Tariff on log output per Canadian plant with all observations (first column, row 1-2). The tariffs is measured in fractional terms. For instance, if the tariff is 50% on leather shoes, it is measured as 0.5 (not logged).

- Write down the formula of gravity equation. What is the expected sign of each explanatory variable?
- Does the gravity equation explain real-world trade well? Discuss the evidence.
- Interpret the point estimates on the interaction terms; i.e., Canadian Tariff x Turnover (-17.952) and U.S. Tariff x Turnover (-20.131). Do the sign and magnitude make sense? Explain briefly.

Fill in your answer here and/or on sketching paper

Maximum marks: 10

