

i Instructions

ECON3715/4715 – Labour Economics

This is some important information about the written exam in ECON3715/4715. Please read this carefully before you start answering the exam.

Date of exam: Tuesday, December 4, 2018

Time for exam: 09.00 a.m. – 12.00 noon

The problem set: The problem set consists of 5 problems, with 16 sub-questions. Each sub-question counts equally. When answering the questions on the exam you should be brief and to the point.

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 your desk. 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 sheets (task codes, candidate number etc.).

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.

Grades are given: Thursday 20 December 2018.

1(a) Question 1a)

In this question you have to indicate whether you think the statement is true or false and explain why. You do not get any points if you only state whether the statement is true or false.

(a) The intertemporal substitution of labor supply measures the change in hours worked from a permanent increase in wages.

Fill in your answer here and/or on sketching paper

Maximum marks: 0

1(b) Question 1b)

In this question you have to indicate whether you think the statement is true or false and explain why. You do not get any points if you only state whether the statement is true or false.

(b) A firm has more market power when slope of the labor supply curve facing a firm is higher.

Fill in your answer here and/or on sketching paper

Maximum marks: 0

1(c) Question 1c)

In this question you have to indicate whether you think the statement is true or false and explain why. You do not get any points if you only state whether the statement is true or false.

(c) Use the information to the left, showing the present value of lifetime productivity and the costs of schooling for high- and low-productivity workers to answer.

Type of Worker	Present Value of Lifetime Productivity	Cost of One Year of Schooling
low-productivity	450 000	20 000
high-productivity	600 000	10 000

If high-productivity workers obtain 7 years of schooling, a separating equilibrium occurs where every worker is paid his or her present value of lifetime productivity.

Fill in your answer here and/or on sketching paper

Maximum marks: 0

1(d) **Question 1d)**

In this question you have to indicate whether you think the statement is true or false and explain why. You do not get any points if you only state whether the statement is true or false.

(d) Consider two individuals with different discount rates who are otherwise identical. Both individuals are unemployed and searching for jobs. We expect the individual with a higher discount rate to have a longer unemployment duration.

Fill in your answer here and/or on sketching paper

Maximum marks: 0

- 2 Suppose that individuals select between working in sector A and working in sector B . An individual can only work in one of these two sectors. Individual i can produce X_i^s goods with unit price P^s and thus earn income $W_i^s = X_i^s P^s$ in sector $s = \{A, B\}$. Imagine that sectoral productivities are perfectly correlated for all individuals such that the following holds:

$$\log X_i^A = \phi \log X_i^B.$$

Suppose that individuals are income-maximizing, i.e., sector B is selected if $\log W_i^B > \log W_i^A$ and sector A is selected if otherwise.

(a) **Question 2a)**

Suppose $\phi \in (0, 1)$. Do workers with the highest productivity in sector B decide to work in sector B ? And do workers with the highest productivity in sector A decide to work in sector A ?

Fill in your answer here and/or on sketching paper

Maximum marks: 0

(b) **Question 2b)**

Discuss whether and if so how the results in (a) would change if $\phi > 1$.

Fill in your answer here and/or on sketching paper

Maximum marks: 0

(c) **Question 2c)**

Suppose that there is an exogenous increase in the market price P^A of good produced in sector A . How does this affect sector selection and the results in (a)?

Fill in your answer here and/or on sketching paper

Maximum marks: 0

(d) **Question 2d)**

Discuss how sector selection depends on the variance of log-productivities in (a) and (b). Explain the intuition behind this type of selection in the labor market.

Fill in your answer here and/or on sketching paper

Maximum marks: 0

- 3 This question is about: Aggarwal, R. K. and A. A. Samwick. (1999). The Other Side of the Trade-off: The Impact of Risk on Executive Compensation. *Journal of Political Economy* 170(1), 65-105.

(a) **Question 3a)**

Explain the source and the intuition behind the fundamental trade-off in a principal-agent model.

Fill in your answer here and/or on sketching paper

Maximum marks: 0

(b) **Question 3b)**

First, by solving a traditional principal-agent model where agents' compensation w depends on firm performance π , i.e., $w = \alpha_0 + \alpha_1 \pi$, the authors find the solution to the performance-pay related component of the optimal contract as follows:

$$\alpha_1^* = \frac{1}{1 + \gamma \sigma_\pi^2} \quad (1)$$

Note that γ is a positive constant which depends on agents' risk preferences and disutility of effort. The standard deviation of firm performance is denoted by σ_π .

Next, a relative performance evaluation scheme is considered, where agents' compensation also depends on industry performance κ , i.e., $w = \tilde{\alpha}_0 + \tilde{\alpha}_1 \pi + \tilde{\alpha}_2 \kappa$.

Suppose $\pi = \rho \frac{\sigma_\pi}{\sigma_\kappa} \kappa + \varepsilon$, where ε is an *idiosyncratic* firm-level performance shock such that $\text{cov}(\kappa, \varepsilon) = 0$. We denote the standard deviation of industry performance by σ_κ and the correlation of firm performance and industry performance by ρ .

The optimal performance-related components in this case are:

$$\begin{cases} \tilde{\alpha}_1^* = \frac{1}{1 + \gamma \sigma_\pi^2 (1 - \rho^2)} \\ \tilde{\alpha}_2^* = -\tilde{\alpha}_1^* \rho \frac{\sigma_\pi}{\sigma_\kappa} \end{cases} \quad (2)$$

Suppose $\rho > 0$. Explain the intuition behind $\tilde{\alpha}_1^* > \alpha_1^*$ and $\tilde{\alpha}_2^* < 0$.

Fill in your answer here and/or on sketching paper

Maximum marks: 0

i **Question 4**

This question is about: Fehr, E. and L. Goette. (2007). Do Workers Work More if Wages are High? Evidence from a Randomized Field Experiment. *American Economic Review* 97(1), 298-317. The authors conducted a randomized field experiment at a bicycle messenger service in Zurich, Switzerland. They randomly assigned bicycle messengers working at a company called Veloblitz, who were willing to participate in the experiment, to two groups. For group A, they implemented a 25-percent increase in the commission rate during the four weeks in September 2000. The messengers in group B were paid their normal commission rate during this time period. During the four weeks in November 2000 Group B received a 25-percent increase in the commission rate, while the members of group A received their normal commission

rate. Table 1 show the main results from this paper.

4(a) Question 4a)

Interpret the result in Part A of Table 1, column (4), row (1), which shows a point estimate of 3.99. Is this result consistent with the predictions of a standard neoclassical model of intertemporal labor supply? Explain why or why not.

Fill in your answer here and/or on sketching paper

Maximum marks: 0

4(b) Question 4b)

Interpret the result in Part B of Table 1, column (2), row (1), which shows a point estimate of -0.0601. Is this result consistent with the predictions of a standard neoclassical model of intertemporal labor supply? Explain why or why not.

Fill in your answer here and/or on sketching paper

Maximum marks: 0

4(c) Question 4c)

Is the result in Part B of Table 1, column (2), row (1), consistent with the predictions of a model with reference dependent preferences? Can an alternative neoclassical labor supply model explain this result? Explain why or why not.

Fill in your answer here and/or on sketching paper

Maximum marks: 0

- 5 This question is about: Ewens, M., B. Tomlin, and L. C. Wang. (2014). Statistical Discrimination or Prejudice? A Large Sample Field Experiment. *Review of Economics and Statistics* 96(1), 119-134.

(a) **Question 5a)**

Explain the sources of differential treatment of socio-economic groups in models of taste-based discrimination and models of statistical discrimination.

Fill in your answer here and/or on sketching paper

Maximum marks: 0

(b) **Question 5b)**

Consider a situation where applicants (e.g., job-seekers, renters, etc.) from two socio-economic groups, majority A and minority B, send applications to an evaluator (e.g., employer, landlord, etc.). Applicants can either send a positive signal, a negative signal, or no signal. The evaluator is from the majority group A. The average quality of group A applicants in the population is higher. Discuss (or illustrate) group differences in interview probabilities under the following two cases: i) the majority evaluator has no taste for discrimination, but predicts applicant quality based on received signals, and ii) the majority evaluator has a taste for discrimination against group B (out-group discrimination).

Fill in your answer here and/or on sketching paper

Maximum marks: 0

(c) **Question 5c)**

Consider a dataset consisting only of majority (group A) evaluators, where the researcher has randomly assigned applications across evaluators. Is it possible for the researcher to distinguish between taste-based and statistical discrimination? What if data on minority (group B) evaluators is also available? How does this depend on minority evaluators having out-group discrimination?

Fill in your answer here and/or on sketching paper

Maximum marks: 0

Question 11
Attached



Table 1. Results from Fehr and Goette (2007)

Part A

-MAIN EXPERIMENTAL RESULTS
(*OLS regressions*)

	Dependent variable: Shifts per four-week period		
	(4)	(5)	(6)
Observations are restricted to	Messengers participating in experiment	All messengers at Veloblitz	All messengers at Flash and Veloblitz
Treatment dummy	3.99*** (1.030)	4.08*** (0.942)	3.44** (1.610)
Dummy for nontreated at Veloblitz			-0.772 (1.520)
Treatment period 1	-1.28 (1.720)	-1.57 (1.210)	-0.74 (0.996)
Treatment period 2	-2.56 (1.860)	-2.63** (1.260)	-2.19** (1.090)
Individual fixed effects	Yes	Yes	Yes
<i>R</i> squared	0.694	0.74	0.695
<i>N</i>	124	190	386

Note: Robust standard errors, adjusted for clustering on messengers, are in parentheses.

*** Indicates significance at the 1-percent level.

** Indicates significance at the 5-percent level.

* Indicates significance at the 10-percent level.

Source: Own calculations.

Question 12
Attached



Table 1. Results from Fehr and Goette (2007)

Part B

THE IMPACT OF THE EXPERIMENT
ON LOG REVENUES PER DAY
(*Dependent variable: log (revenues per shift)*
during fixed shifts, OLS regressions)

	(1)	(2)
Treatment dummy	-0.0642** (0.030)	-0.0601** (0.030)
Gender (female = 1)	-0.0545 (0.052)	
Log(tenure)	0.105*** (0.016)	0.015 (0.062)
Day fixed effects	Yes	Yes
Individual fixed effects	No	Yes
R-Squared	0.149	0.258
N	1,137	1,137

Note: Robust standard errors, adjusted for clustering on messengers, are in parentheses.

*** Indicates significance at the 1-percent level.

** Indicates significance at the 5-percent level.

* Indicates significance at the 10-percent level.

Source: Own calculations.

Question 13
Attached



Table 1. Results from Fehr and Goette (2007)

Part B

THE IMPACT OF THE EXPERIMENT
ON LOG REVENUES PER DAY
(*Dependent variable: log (revenues per shift)*
during fixed shifts, OLS regressions)

	(1)	(2)
Treatment dummy	-0.0642** (0.030)	-0.0601** (0.030)
Gender (female = 1)	-0.0545 (0.052)	
Log(tenure)	0.105*** (0.016)	0.015 (0.062)
Day fixed effects	Yes	Yes
Individual fixed effects	No	Yes
R-Squared	0.149	0.258
N	1,137	1,137

Note: Robust standard errors, adjusted for clustering on messengers, are in parentheses.

*** Indicates significance at the 1-percent level.

** Indicates significance at the 5-percent level.

* Indicates significance at the 10-percent level.

Source: Own calculations.