Stockholm University

Department of Economics

Course name:	**Empirical Methods in Economics 2**
Course code:	**EC2404**
Examiner:	**Björn Tyrefors Hinnerich**
Number of credits:	**7,5 credits**
Date of exam:	**Friday October 31, 2014**
Examination time:	**3 hours [9.00-12.00]**

Write your identification number on each paper and cover sheet (the number stated in the upper right hand corner on your exam cover).

Use one cover sheet per question. Explain notions/concepts and symbols. If you think that a question is vaguely formulated, specify the conditions used for solving it. Only legible exams will be marked. **No aids are allowed.**

The exam consists of 6 questions: 4 short questions worth 10 points each and 2 long questions worth 30 points each - 100 points in total. For the grade E 45 points are required, for D 50 points, C 60 points, B 75 points and A 90 points.

Your results will be made available on your "My Studies" account **(**www.mitt.su.se), on Friday 21 November at the latest.

Good luck!

Part 1: Short questions (40 points)

On separate sheets of paper, answer the following four questions. Answer each question clearly and concisely. Only legible answers will be considered. If you think the question is vaguely formulated, specify the conditions used for solving it. Each question is worth 10 points. Good Luck!

1. Non-linear models (10 points)

A researcher is interested in estimating the effect of class size (X) on test scores (Y). She/he has found an experiment that randomizes class size (number of students per teacher). Both variables are continues.

(a) A log-linear specification gives an estimate of $\hat{\beta}$ = -0.01. Interpret the estimate

(b) A log-log specification gives an estimate of $\hat{\beta}$ = -0.2. Interpret the estimate

(c) A Linear-log specification gives an estimate of $\hat{\beta}$ = -20. Interpret the estimate

2. Binary dependent variable (10 points)

(a) Discuss the differences, positive and negative aspects, of using a linear probability model versus a probit/logit model.

3. Returns to education (10 points)

Earnings functions provide a measure of the returns to education. I.e. earnings can be explained by years of education. One threat to internal validity is unobserved ability.

(a) Discuss how unobserved ability could bias the effect of education on earnings. What is a likely direction of the bias?

(b) Some studies have looked at identical twins when estimating returns to education. Explain why these studies are more credible. What threats to internal validity remain?

4. Standard errors (10 points)

(a)Why do we use robust standard errors.

(b)Why do we use clustered standard errors

(c) If we instead of normal standard errors calculated either robust or clustered standard in a regression, would you expect your standards errors to rise or fall.

Part 2: Discussion questions (60 points)

On separate sheets of paper, answer the following four questions. Answer each question clearly and concisely. Only legible answers will be considered. If you think the question is vaguely formulated, specify the conditions used for solving it. Each question is worth 30 points.

1. Experiments (30 points)

Describe the differences between a randomized controlled experiment and a quasi/natural experiment. Also describe the different types of quasi-experiment approaches that you have learned during the course. Also discuss what these approaches solve in comparison to a "regression and control" framework.

2. Instrumental variables (30 points)

Discuss the IV-approach and assumptions for a valid instrument. Discuss the IV-approach in terms of reduced form and first stage. Intuitively, discuss the differences of LATE and ATE and give examples of when the $\widehat{\beta_{TSLS}}$ is an ATE. Where do credible instruments come from?