Stockholm University

Department of Economics

Course name:	**Policy Analysis in Labour Econ.**
Course code:	**EC7414**
Examiner:	**Peter Fredriksson**
Number of credits:	**7.5 credits**
Date of exam:	**Thursday 29 October 2015**
Examination time:	**3 hours [09:00-12:00]**

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 4 questions. Each question is worth 20 points, 80 points in total. For the grade E 36 points are required, for D 40 points, C 48 points, B 60 points and A 72 points.

Your results will be made available on your "My Studies" account **(**www.mitt.su.se) on 19 November 2015 at the latest.

Good luck!

Question 1

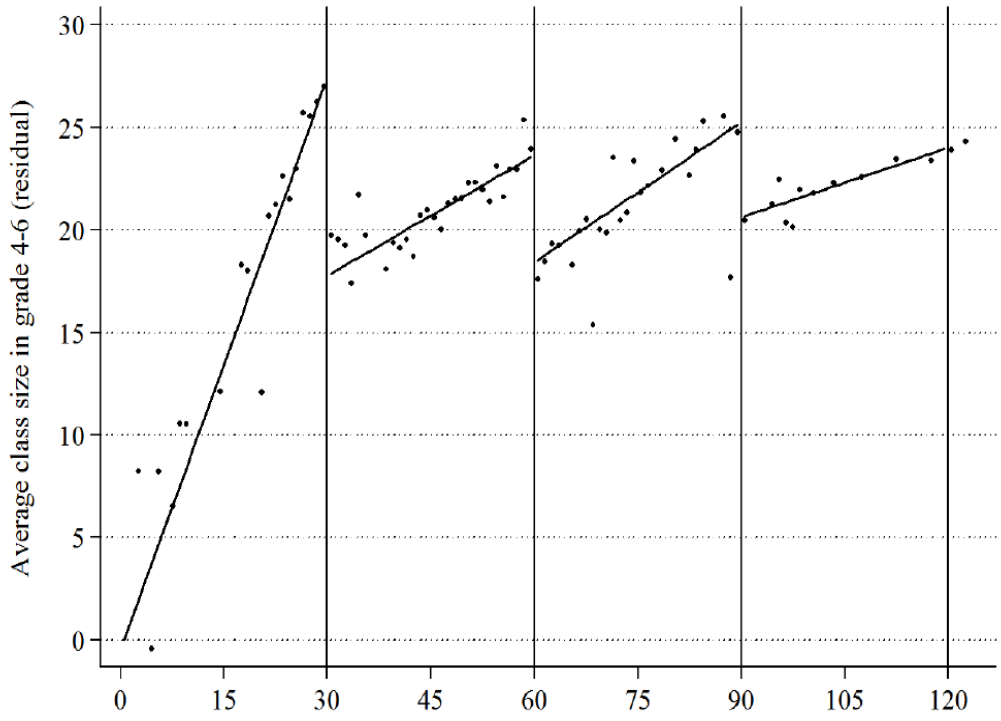
Suppose you are interested in estimating the causal effect of class size on pupil's test scores. You want to estimate the relationship:

$$Y_i = \beta_0 + \beta_1 CS_i + \beta_2 X_i + u_i$$

where *i* indexes individuals, *Y* denotes an individual's test score, *CS* class size, and *X* a set of control variables.

a) Consider estimating the above equation by OLS. Why is OLS likely to be biased? What is the likely sign of the bias?

b) A number of researchers have noted that maximum class size rules can be useful for identifying the causal effect of class size. In the Swedish context such a class size rule was in place prior to the early 1990s. The rule stipulated that new classes were formed when enrollment in a school and grade surpassed multiples of 30. The figure below comes from a paper by Fredriksson et al (2015). It shows the estimated class size rule using Swedish data.



Explain intuitively how the maximum class size rule may help you in estimating the causal effect of class size. What is the key "identifying assumption"? How would you test this identifying assumption?

c) A regression of children's (standardized) cognitive ability at age 13 on mother's years of schooling yields an estimate of 0.069 (standard error: 0.006). Does this imply that you must control for mother's years of schooling when estimating the effect of class size using the maximum class size rule? Why or why not?

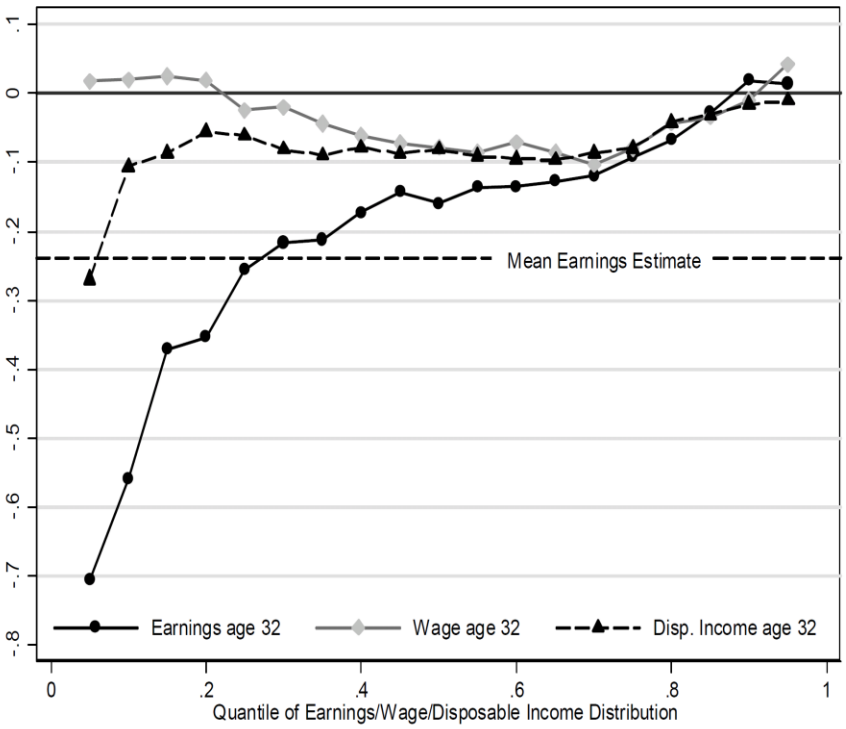
Question 2

a) Nilsson (2014) examines the long-run effects of a policy experiment in Sweden, which led to a large increase in the number of stores selling "Strong beer". Nilsson estimates the following equation with log earnings as the dependent variable:

$$Y_{r,t,m<21} = \alpha_0 + \beta_3 EXPOSURE_{3,r,t,m<21} + \theta_{r,t} + \theta_{r,m<21} + \theta_{t,m<21} + \varepsilon_{r,t,m<21}$$

What are $\theta_{r,t}$, $\theta_{r,m<21}$ and $\theta_{t,m<21}$, and why (provide examples) are they included in the regression specification?

b) Nilsson also estimates the corresponding Quantile regression version of the equation above for earnings, wages and disposable income. The estimated effects of the policy are presented in the figure below:



Provide a detailed account of the results shown in the figure, and the conclusions Nilsson draws from it.

Question 3

Kleven et al (2011) examine "the anatomy" of tax evasion. A standard model of tax evasion delivers the following optimality condition

$$p(e)(1+\theta)\big(1+\varepsilon(e)\big)=1$$

where $p(e)$ denotes the probability of getting caught when evasion is equal to e; θ the penalty if caught evading; and $\varepsilon(e)$ is the elasticity of the detection technology with respect to evasion, i.e.,

$$\varepsilon(e)\equiv\frac{p'(e)e}{p(e)}$$

a) Interpret the above optimality condition

b) A critique of the standard model is that the level of evasion typically observed in the data is too small to be consistent with the model (in the data, $p(e)$ and θ are typically small numbers). Explain how Kleven et al (2011) amend the standard model such that it is consistent with the facts.

c) To what extent is the evidence reported in Kleven et al (2011) consistent with the amended model? Substantiate your answer.

Question 4

Grönqvist (2012) estimate the following equation for sales of contraceptive pills:

$$Sales_{ct} = \beta Subsidy_{ct} + \mu_c + \mu_t + \rho(\mu_c \times t) + \varepsilon_{ct}$$

a) Interpret β. What's the identifying variation used by Grönqvist (2012)?

b) Grönqvist also runs a regression which explores the relationship between future subsidies and current sales. What is his motivation for estimating that model? Describe how a negative, zero, and positive estimate of a future subsidy on current sales should be interpreted and how these three scenarios (respectively) affect the interpretation of β in the equation above.