Stockholm University

Department of Economics

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| **Course name:** | **Labour Economics and Wage-Setting Theory** |
| **Course code:** | **EC7212** |
| **Examiner:** | **Lars Calmfors** |
| **Number of credits:** | **7,5 credits** |
| **Date of exam:** | **Sunday, April 23 rd, 2017** |
| **Examination time:** | **13:00 -16:00 (3 hours)** |

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

**Use one 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.**

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The exam consists of 4 questions. Each question is worth maximum 25 points. In sum maximum 100 points can be achieved in the exam. **Those who choose not to answer Question 4 can count the points achieved on the assignment instead**. **Those who choose to answer Question 4 can count the higher of the points achieved on the assignment and those achieved on the question.** When deciding what to do you should consider that spending time on Question 4 reduces the time that can be spent on the other questions and thus probably the number of points that can be achieved from them. For the grade E 45 points are required, for D 50 points, C 60 points, B 75 points and A 90 points.

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Your results will be made available on your "My Studies" account **(**www.mitt.su.se) on May 15th at the latest.

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**Good luck!**

**Question 1 (maximum 25 points)**

The Mortensen-Pissarides matching model has become a work horse in modern labour economics.

(a) Derive the equation for the Beveridge curve under the assumption that there is growth of the labour force. (Maximum 7 points)
(b) Derive the labour demand equation relating labour market tightness to the wage and other factors. Give an intuitive explanation of the equation. (Maximum 7 points)
(c) Analyse mathematically as well as diagrammatically how labour market tightness, unemployment and vacancies are affected by an increase in the cost of a vacancy. You may assume that the wage is held fixed. (Maximum 6 points)
(d) Analyse mathematically as well as diagrammatically how labour market tightness, unemployment and vacancies are affected by an increase in the growth rate of the labour force. You may again assume that the wage is held fixed. (Maximum 5 points).

**Question 2 (maximum 25 points)**

Assume that there is weakly efficient bargaining between a firm and a local trade union.

(a) Derive the indifference curves for the trade union and draw them. (Maximum 6 points)
(b) Derive the isoprofit curves for the firm and draw them. (Maximum 6 points)
(c) Assume there is a Nash bargaining solution. Show the first-order conditions for the determination of the wage and employment. Use these first-order conditions to derive the contract curve. Show mathematically that it is defined by the tangency points between the union's indifference curves and the firm's isoprofit curves. (Maximum 8 points)
(d) What can be said about the relationship between employment under weakly efficient bargaining and employment under the right-to-manage assumption. (Maximum 5 points)

**Question 3 (25 points)**

In the course we have discussed papers using natural experiments to analyse the effects of various policies and developments on employment and wages. We have discussed the effects on employment of the earned income tax credit in Sweden, the effects on youth employment of the earlier reduction of payroll taxes (employer contributions) in Sweden, and the effects on native workers´ wages of immigration of low-skilled workers in Denmark. Discuss the results in the studies presented in the course, the methods used and how convincing you find them.

**Question 4 (maximum 25 points)**

***Only those who want to try to raise their grade relative to the assignment should answer this question.***

(a) Explain what is meant by the concept of duration dependence of unemployment. What should we expect theoretically if the unemployment benefit declines over time? (Maximum 6 points)
(b) Derive theoretically an equation showing how the conditional probability of exiting from unemployment (the hazard function) depends on the unconditional probability of exiting from unemployment and the survival function. (Maximum 7 points)
(c) Formulate and explain the proportional hazard function. (Maximum 7 points)

(d) Give some example of how natural experiments have been used to analyse the effects of unemployment benefits on the duration of unemployment. (Maximum 5 points)