



Stockholm  
University

Department of Economics

**Course name:** Labour Market Economics  
**Course code:** EC2102  
**Type of exam:** Main  
**Examiner:** Ines Helm and David Seim  
**Number of credits:** 7,5 credits  
**Date of exam:** Saturday 17<sup>th</sup> of February, 2018  
**Examination time:** 3 hours (09-12)

**Write your identification number on each answer 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.**

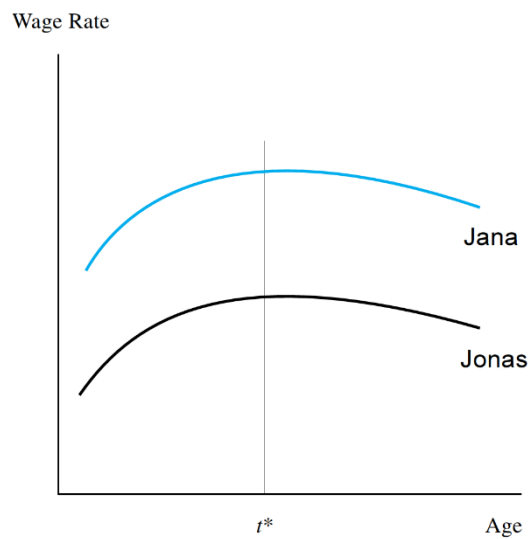
-----  
The exam consists of 6 questions. One can get 100 points in total.. For the grade E 40 points are required, for D 50 points, C 60 points, B 75 points and A 90 points.

-----  
Your results will be made available on your Ladok account ([www.student.ladok.se](http://www.student.ladok.se)) on the 9<sup>th</sup> of March at the latest.

-----  
**Good luck!**

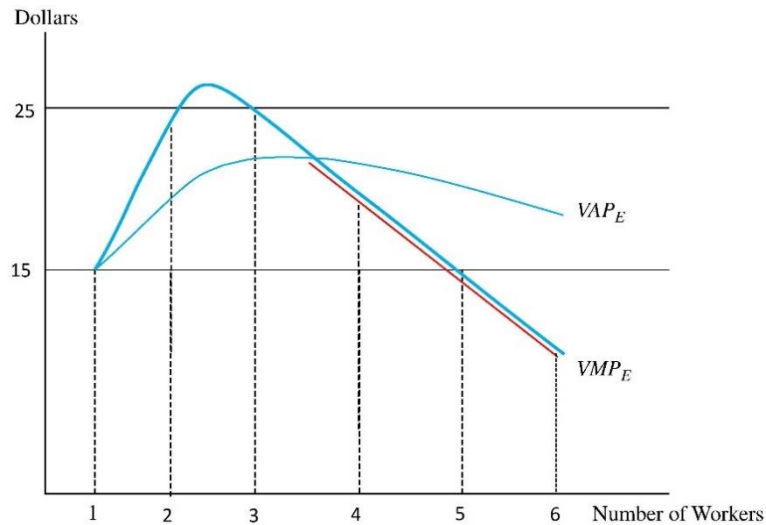
Q.1) (20 points) Assume that workers' wage-age profile is hump-shaped, i.e. wages tend to be low when workers are young, rise when they get older and peak at around age 50.

- a) How does a worker's labour supply (i.e. hours worked) respond to that wage-age pattern? Explain which role income and substitution effects play and draw a graph showing the pattern of hours worked over the life-cycle.
- b) Now, assume that wage-age profiles of two workers named Jana and Jonas look like the graph below. Is Jana working more or less hours than Jonas over the lifecycle? Again take into consideration both the income and substitution effect.



Q.2) (10 points) Ernst Fehr and Lorenz Goette tested the predictions of the life cycle model of labour supply by analysing the labour supply behaviour of bicycle messengers in a study titled "Do workers work more if wages are high?". Explain the approach Fehr and Goette are using and their findings. Do they find evidence for the predictions of the life cycle model of labour supply?

Q.3) (20 points) This question is about the short run labour demand decisions of competitive firms. Assume a firm's production function is such that the firm's Value of the Average Product of Labour ( $VAP_E$ ) and the Value of the Marginal Product of Labour ( $VMP_E$ ) can be described as in the graph below.



- What is the optimal hiring decision for the firm if wages are at 15 dollars? Why? Describe the optimal hiring conditions that need to be satisfied.
- Why is it not optimal for the firm to hire 2 workers if wages are at 15 dollars?
- Why is it not optimal for the firm to hire 6 workers if wages are at 15 dollars?
- How many workers would the firm decide to hire if wages were at 25 dollars? Why?

Q.4 (20 points) Consider an individual who chooses a job based on its wage, denoted by  $w$ , and riskiness,  $r$ . Her preferences are given by:  $U=u(w,r)$ , where  $u$  is increasing in  $w$  and decreasing in  $r$ . Assume also that a firm maximizes profits, given by  $\Pi = \pi(w,r)$ , where  $\pi$  increases in  $r$  and decreases in  $w$ .  $w$  and  $r$  are continuous.

- a) Draw an indifference curve of the individual that satisfies the preference-assumptions above. (7)
- b) In a separate figure, draw an iso-profit curve of the firm that satisfies the assumptions above. (7)
- c) Suppose we add two assumptions: (i) diminishing marginal utility of consumption, i.e. that  $u$  is increasing in  $w$  at a decreasing rate and (ii) diminishing returns to riskiness, i.e. that  $\pi$  increases in  $r$  at a decreasing rate.

Draw the resulting indifference and iso-profit curves in one diagram. Show how in equilibrium, wages and job risks move together. (6)

Q.5 (10 points) This question concerns empirical work.

- a) The LNU-dataset that we discussed in the lectures is a *random sample of the population*. Why is this important? (5)
- b) Explain the concept of a *randomized trial / randomized experiment*. (5)

Q.6 (20 points) Suppose that you are deciding whether to move to the United States or to stay in Sweden. Assume that (i) your decision is based only on wage differences; (ii) there are some fixed costs of moving and (iii) you live forever. The interest rate is given by  $r$  and wages in the US and Sweden are constant over time.

- a) Derive the condition under which you will move. (10)
- b) Suppose now that you are making this decision together with your partner and you act as one unit. For simplicity, assume away moving costs. Show the condition under which you will move. (3)
- c) Using a graph, illustrate and explain the concepts of a *tied stayer* and a *tied mover*. (7)