Final Exam ECON3715/4715 – Labour Economics Autumn 2023 (Postponed)

This exam has 4 questions, with 13 sub-questions. Each sub-question counts equally. When answering the questions on the exam you should be brief and to the point! Make sure to write clearly. Difficult to decipher answers will not be counted!

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1. 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) If the price of an input factor j rises, the demand curve for a complementary input factor i shifts down.

   (b) A profit maximizing firm chooses an optimal mix of labor and capital inputs at given prices. If the firm minimized costs, then it would choose the same input mix as under profit maximization, if the optimal level of output is produced.

   (c) In a hedonic wage function, the coefficient on a risk factor shows the compensating differential required for an average worker to accept this risk factor.

   (d) Consider a setting with information asymmetry and statistical discrimination. There are two groups of job applicants, A and B, where the average productivity of group B is higher than that of group A. Since the average applicant is acceptable, employers will spend less resources in screening group A applicants.

2. Incentive Pay and Efficiency Wages.

   (a) Explain the trade-off between incentives and insurance in a principal-agent model with risk averse agents.

   (b) Explain the relationship between efficiency wages and equilibrium unemployment in a model where monitoring workers is costly for firms and workers may shirk.

3. This question is about labor supply and the paper by 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.

(a) Consider a static labor supply model. Illustrate the income and substitution effects associated with a wage increase in a consumption-leisure diagram.

(b) Fehr and Goette (2007) consider a field experiment where one group of workers is randomly assigned a higher wage and the authors study the impacts on their labor supply decisions. To explain their findings, they use the equation:

$$v(e_t) = \lambda w_t e_t - g(e_t), \tag{1}$$

where λ is the lifetime marginal utility of income, wage w_t, labor supply e_t, and discounted disutility of work $g(e_t)$, with $g' > 0$, $g'' > 0$. Interpret equation (1) and explain how this equation relates to the intertemporal labor supply model.

(c) The authors also consider an alternative model with nonseparable utility:

$$v(e_t, e_{t-1}) = \lambda w_t e_t - g(e_t(1 + \alpha e_{t-1})), \tag{2}$$

where e_{t-1} is labor supply in period $t-1$ and $\alpha > 0$. Assume there are only two future time periods (period 1 and period 2), $e_0 = 0$, and ignore discounting, so the two-period utility function is given by $U = v(e_1, 0) + v(e_2, e_1)$. Derive the first-order conditions with respect to e_2 and e_1, and provide an interpretation.

(d) The authors further consider a model with reference dependent utility as follows:

$$v(e_t) = \begin{cases} \lambda (w_t e_t - \tilde{y}) - g(e_t) & \text{if } w_t e_t \geq \tilde{y} \\ \gamma \lambda (w_t e_t - \tilde{y}) - g(e_t) & \text{if } w_t e_t < \tilde{y} \end{cases}, \tag{3}$$

where $\tilde{y}$ is an income target and γ is a measure of loss aversion. Interpret equation (3) and discuss the marginal effects of a wage increase in this model.

4. This question is about: Parey, M., Ruhose, J, Waldinger, F., and N. Netz. (2017). The Selection of High-Skilled Emigrants. Review of Economics and Statistics 99(5): 776–792. The authors estimate the following model:

$$\log w_{0i} = X_i \beta_0 + \epsilon_{0i} \tag{4}$$

where w_{0i} are wages of individual i if they remain in Germany to work and X_i are this individual's observed characteristics. The authors denote ϵ_{0i} the "unobserved" component of wages, and $\theta_{0i} \equiv X_i \beta_0$ the "observed" component of wages.

(a) Let $E[\theta_{0i}] = \mu_0$ and $E[\epsilon_{0i}] = 0$. Discuss how $E[\theta_{0i}|migrate = 1]$ relates to μ_0 when workers are positively selected into emigration.

(b) The authors use the fitted values of β_0 (denote them $\hat{\beta}_0$) from equation (4) to

construct the following object for Germans who emigrated to other countries:

$$\hat{\theta}_{0i} = X_i \hat{\beta}_0$$

Interpret $\hat{\theta}_{0i}$ and discuss why this can be a "potential outcome".

(c) The authors show that $\hat{\theta}_{0i}$ tends to be higher for emigrants, the more unequal is the country to which they emigrated. Interpret this result.