Written Exam for the B.Sc. in Economics 2009-II-R

Micro Economics 1

Final Exam

12. August 2009

(3-hour closed book exam)

Please note that the language used in your exam paper must correspond to the language of the title for which you registered during exam registration. I.e. if you registered for the English title of the course, you must write your exam paper in English. Likewise, if you registered for the Danish title of the course or if you registered for the English title which was followed by “eksamen på dansk” in brackets, you must write your exam paper in Danish.

If you are in doubt about which title you registered for, please see the print of your exam registration from the students’ self-service system.

Question 1
Jessica has preferences for lipstick and fashion magazines, which can both be consumed in continuous amounts. Her preferences for these two goods can be represented by the utility function $u(x_1, x_2) = \frac{1}{4}x_1 + \ln(x_2)$, where good 1 is lipstick and good 2 is magazines.

a) Find the income elasticities for each of the two goods

Jessica's budget for these two goods is 5000 kr. each year. A fashion magazine can be bought for 30 kr. And lipstick can be bought for 75 kr. The government (which is male dominated!) has realised that fashion magazines are an un-necessary luxury good. Hence it has decided that this should be taxed by 20 kr.

b) Find the Equivalent Variation (EV) and the Compensated Variation (CV) following this change in prices.
c) Illustrate the change in Jessica's Consumer's Surplus graphically and find what it is?
d) Discuss the statement: *Íf the government returns the revenue from the imposed tax to the consumers as a lump sum subsidy, then the impact on Jessica's welfare is 0.*

Question 2
Explain how the *Mean-Variance* model can be used to choose optimal portfolio's.

Question 3
Consider an economy with two consumer goods. We also have two consumers Adrian and Benjamin. Consumption possibilities for both is the positive domain $\mathbf{R}_+^2$ and their preferences can both be represented by the utility function $u(x_1, x_2) = \ln x_1 + \ln x_2$.
The endowments in this economy are ω^A = (30, 8), and ω^B = (12, 6).

a) Find the Walras equilibrium in this economy using the price on good 2 as numeraire.
b) Can the allocation where Adrain and Benjamin have equal amounts of each of the two goods be implemented as a Walras equilibrium with transfers? If yes, then explain why and find such an equilibrium; if not, then argue why not.

There is also a firm producing good 2 from good 1, which can be described by the production function $y = q$, where q is the amount of good 1 (input) and y is the produced amount of good 2 (output). We assume that Adrian and Benjamin each own 50% of the shares in the firm.

c) Find the Walras equilibrium in this new economy with production. You must provide equilibrium prices, allocations and production. Comment on the consumers' income and utilities and compare with the situation without production
d) Is the equilibrium in c) Pareto optimal? Explain why/why not. Can we ensure an equilibrium as the one in question b) by changing the ownership between Adrian and Benjamin?

Question 4
Describe the principles of the Weak and Strong Axiom of Revealed preferences and give examples, where these are not satisfied.

Question 5

A consumer has preferences that can be represented by the utility function $u(x_1, x_2) = x_1^{3/2} + x_2$.

Let the optimal choice before the price change be x^*. Consider a Hicks Compensation. Explain why this compensation is equal to $\boldsymbol{px}^*$. Is this always the case? Explain