Written Exam for the B.Sc. in Economics 2010-I

Microeconomics 2

Final Exam

18 January 2010

(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
Explain why *framing* may be a problem in neoclassical microeconomics. You should illustrate this by examples.

Question 2
Jenny enjoys baking cakes. Her preferences for baking, x_b (the amount of cakes), and other consumption, x_j, can be represented by the utility function: $u(x_b, x_j) = x_b(x_j)^{½}$. There is a cost of buying ingredients for the cakes of p_b and the price on other consumption is normalised to 1. Jenny has an income of M_j.

a) Formulate Jenny's problem and find the optimal amount of baking and other consumption.

Jenny's sister, Francine is on a diet trying to loose weight, and she is therefore not too happy about Jenny's baking. Francine has a utility function $u_f(x_b, x_f) = x_f - \ln x_b$, where she takes the amount of cakes, x_b for given and where x_f is her consumption of other goods. Her income is M_f. Jenny and Francine's mother cares about both girls and therefore tries to balance diet and baking.

b) How many cakes should their mother allow Jenny to bake? Explain why this quantity differs from your answer in a)
c) If the two girls did not have a mother to decide how many cakes Jenny may bake, and Jenny had always been allowed to bake, what could Francine then do to influence Jenny's choice?

Jenny and Francine also have a brother George, who is the grateful consumer of Jenny's cakes. His utility function is $u(x_b, x_g) = x_g + \ln x_b$

d) What is the optimal amount of cakes that the mother should set now? Explain the difference between the answers in the sub questions – especially explain why the outcome that would result from the option(s) Francine has in (c) may have a special aspect in the problem we now consider.

Question 3
Comment on the statement:
It is always optimal for a government to use regulation policies to tackle market imperfections. For example to levy a Pigou tax to set the optimal level of externalities.

Argue why you agree or disagree with the above statement.

Question 4
Consider a venture fund that wants to invest in interesting new projects by means of loans. A potential new borrower is considering two projects; a risky project (A) with a low probability (π_A) of success, but with a high return if it succeeds; the other project (B) has a higher probability ($\pi_B > \pi_A$) of success, but the return if successful is smaller ($R_B < R_A$).

a) Explain why there may be a conflict between the borrower and the venture fund. What do we call this type of conflict?
b) What may the venture fund do to avoid the conflict? Is it always beneficial for the venture fund to do this? Describe a condition in relation to the sketched model that would ensure this.
c) The venture fund has many potential borrowers, but limited resources. Does the limitation have any implication for the rent and loans that the fund provides?

Question 5

Steven has a firm that is clearing snow under winter conditions for private customers. The costs of clearing snow are $1/4x^2$. We let x represent the number of hours that are used for clearing snow. More hours mean a better quality. In the area where Steven is supplying his service, there are two types of customers. The wealthy house owners with a demand function of $p_h(x_h) = Max\ \{\ 200 - 1/4x_h,\ 0\ \}$, and a group of tenants, who rent their semi-detached houses with a demand function $p_r(x_r) = Max\ \{\ 120 - x_r,\ 0\ \}$.

a) If Steven can price discriminate of degree three, what prices should he set towards the two groups of customers?
b) Which group pays the higher price and what is the intuition behind this? (Hint: consider the elasticities)

Question 6

Consider an Edgeworth economy with two consumers A and B. Their total endowments are (15,5) and the utility functions are

$u_A(x_{1A}, x_{2A}) = 5 \cdot x_{1A} + x_{2A}$ and
$u_B(x_{1B}, x_{2B}) = x_{1B} + 5 \cdot x_{2B}$.

a) What are the utility possibilities for this economy (Hint: consider the Pareto optimal allocations)
b) Describe a social welfare function that is increasing in both agents' utilities, but where utility is maximised in one of the extremes (e.g. either where A has everything or where B has everything)
c) Are the equitable allocations the same as the Pareto optimal allocations in the economy? – discuss similarities and differences