Written Exam for the B.Sc. in Economics winter 2013-14

Microeconomics A, 2nd Year

Final Exam

21 February 2014

(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.

This exam question consists of 3 pages in total

Problem 1

Consider the following claim:

"Assume we have a consumer who consumes two goods and whose preferences can be represented by the utility function $u(x_1,x_2)$. Also, assume that the price system is (p_1,p_2), and the consumer has the exogenous money income I.

Now, the solution to the consumer's utility maximization problem can be found by simply solving the following system of two equations with two unknowns (x_1 and x_2):

$$[\partial u(x_1,x_2)/\partial x_1]/\ [\partial u(x_1,x_2)/\partial x_2] = p_1/p_2$$
$$p_1 \cdot x_1 + p_2 \cdot x_2 = I$$

Solve these, and we have found the unique consumption plan which maximizes utility".

- Please comment on the claim above.

Problem 2

Peter consumes beer (commodity 1) and sandwiches (commodity 2), both in continuous quantities. Peter has preferences which can be represented by the utility function $u(x_1,x_2) = x_1^{½} \cdot x_2^{½}$. It can be shown that Peter has the Marshall demand function $x(p,I) = (½I/p_1, ½I/p_2)$ and the Hicksian (compensated) demand function $h(p,u) = (up_1^{-½}p_2^{½}, up_1^{½}p_2^{-½})$.

Peter is on a stipend, giving him an exogenous money income of 120. Currently, the price of beer is 1, and the price of sandwiches is 1.

Consider the following two Slutsky equations, $u = u(x(p,I))$:

$$\partial x_1(p,I)/\partial p_1 = \partial h_1(p,u)/\partial p_1 - [\partial x_1(p,I)/\partial I] \cdot x_1(p,I)$$

$$\partial x_2(p,I)/\partial p_1 = \partial h_2(p,u)/\partial p_1 - [\partial x_2(p,I)/\partial I] \cdot x_1(p,I)$$

- Verify that these two equations to hold true at price system $p = (1,1)$ and income $I = 120$.

Problem 3

Anne consumes food (commodity 1) and clothing (commodity 2), both in continuous quantities. She has the utility function $u(x_1,x_2) = x_1 \cdot x_2^2$. She is on a stipend, giving her the income $I = 90$, and currently the price system is (1,1).

- a) Identity Anne's utility maximizing consumption plan

The government levies a unit tax of 1 on clothing, hence changing the price system to (1,2)

- b) Identity Anne's consumption after the unit tax has been introduced
- c) How much tax revenue is raised from Anne?

- d) What would happen if the government, instead of introducing the unit tax, and keeping the price system at (1,1), asked Anne to pay a lump-sum tax corresponding to the revenue amount found in c?

Problem 4:

Consider an exchange economy with the two consumers, Arnie and Bernie. There are two commodities: Commodity 1 is food, commodity 2 is drinks, and both commodities can be consumed in continuous quantities.

Arnie has the utility function $u_A(x_{1A},x_{2A}) = \ln(x_{1A}) + x_{2A}$, and Bernie has $u_B(x_{1B},x_{2B}) = \ln(x_{1B}) + x_{2B}$.

The economy has the initial endowment (e_1, e_2), with both e_1 and e_2 being strictly positive.

- a) Identify the efficient (Pareto Optimal) allocations in this Edgeworth economy and illustrate these in an Edgeworth Box
- b) If you have identified an efficient allocation in which Arnie has a strictly positive consumption of food but zero consumption of drinks, identify a price system that can implement this allocation in a market equilibrium with income transfers.

Problem 5:

Comment on the following claims:

- a) "For a firm operating in a market characterized by perfect competition, the firm's short-run supply curve will be equal to its short-run marginal-cost curve"
- b) "For a firm operating in a market characterized by perfect competition, the firm's demand for labor will increase in the long run, if the price of capital increases (all other prices and costs remaining the same as before)"

Problem 6:

Comment on the following claim:

"When the interest rate decreases, the reward for saving is weakened, so every rational consumer will want to decrease his or her savings".

Mtn, 22 December 2013