Written Exam for the B.Sc. in Economics summer 2011

Mikro B

Final Exam

10 June 2011

(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.

Problem 1

Consider a beer shop which has constant marginal costs of 2 $ of providing customers with beer. The shop faces two customers:
A youngster whose demand function for beer is $D_y(p) = \max \{ 10 – p, 0 \}$, with p being the price per beer, and an older customer whose demand function is $D_o(p) = \max \{ 8 – p, 0 \}$.
The shop owner decides to create two different packages, each containing a number of beers, and charging an amount for the whole package, hence using second-degree price discrimination.

- Show that in order to maximize profits, the package aimed at the older customer should contain four beers
- Which amounts, S_y and S_o, should the shop charge for the two packages, and what will maximum profits be?

Problem 2

A coffee plantation, producing for a perfect competition market, has the cost function $TC(y) = y^3/3 – 6y^2 + 46y + 100$, with y being the daily output measured in tons, and all amounts being measured in 1.000 DKK.

- Show that the marginal costs at y = 8 are 14
- Which quantity y is it (short-term) profit-maximizing for the plantation to supply when the market price is 14 (14,000 DKK per ton of coffee, or 14 DKK per kilo)?

Problem 3

Consider a market with perfect competition. The demand side is characterized by a stable (long-term) downward-sloping demand curve. On the supply side there is a large number of identical (potential) suppliers, all with the same production technology, having the same minimum efficient scale (production size at which long-term average costs are minimized). There is free entry and exit for suppliers.

- Is it fair to claim that should the government decide to introduce a 1 $ tax on this good, then in the long run, the price paid by consumers would increase by 1 $ (all other things being equal, of course)?
- What would happen on the supply side, should such a 1 $ tax be introduced?

Problem 4

Consider an economy with two agents, Andy and Bridget. Initially, Andy has an endowment $\omega_A > 0$ of the private good, and similarly Bridget has $\omega_B > 0$. A public good can be produced, as one unit of the private good can be transformed into one unit of the public good. Andy's preferences can be represented by the utility function $u_A(G,x_A) = G^a \cdot x_A^{(1-a)}$, and Bridget's preferences by $u_B(G,x_B) = G^b \cdot x_A^{(1-b)}$, with $0 < b < a < 1$, G being the non-negative quantity of the public good.

- Give the first order condition for G being the efficient (Pareto-Optimal) level of the public good
- Discuss the statement: "There is clearly a unique quantity of the public good which is efficient (Pareto Optimal) for this economy, irrespective of how much Andy owns, and how much Bridget owns"

Problem 5

Kenneth Arrow set up the challenge of finding a way of aggregating individual preferences (rankings of alternative states, or allocations, for society) into social preferences, in a way that obeyed three conditions:

- When all individual preferences are total preorders (total, reflexive, and transitive), the resulting social preferences should be so, too
- The Pareto Principle (when every individual prefers x over y, so should society)
- "Independence of irrelevant alternatives" (society's ranking of x vs. y should depend only on how individuals rank x vs. y).

- Verify that choosing one specific individual's preferences to be that of society will honor those three conditions

Problem 6

Stiglitz and others have argued that credit rationing may be explained by moral hazard when there is asymmetric information.

- Present the main elements in this line of argument