

ECO 206Y (Summer 2002)

Short Practice Exam

Reminder: your final is on Tuesday, August 13, 2002.

1. Explain, using a diagram why a risk-averse individual, choosing between two prospects with the same expected value, prefers the prospect with the smaller spread in outcomes.

Draw a concave utility function and two gambles on the graph with the same expected value. Let gamble 1 involve wealth levels w_1 and w_2 and gamble 2 involve wealth levels w_3 and w_4 , with $w_1 < w_3 < w_4 < w_2$, but where $E(\text{gamble}_1) = E(\text{gamble}_2)$. The line that connects $U(w_3)$ and $U(w_4)$ is everywhere above the line defined by $U(w_1)$ and $U(w_2)$.

2. You are fortunate enough to be a contestant on “Let’s Make a Deal”. Monty makes the following proposition to you. You can take \$2000 and let that be that, or you can forgo the \$2000 to play a game where you choose between prizes that are hidden behind curtains number 1 and 2. Behind one of the curtains is a luxury watch valued at \$4000 and behind the other is a washing machine valued at \$500. If your initial wealth is \$1000 and you have a utility function of the form $U(w) = 1 - 1000/w$, then what must be the probability of winning the watch that makes you indifferent between walking off with the sure \$2000 or taking the gamble between the two curtains?

Indifference requires that $U(2000 + 1000) = p[U(4000 + 1000)] + (1-p)[U(500 + 1000)]$. Since you know the form for U you can solve for p .

3. A monopolist has a (total) revenue function given by $R(y) = 100y - y^2$. The (total) cost function is $C(y) = 10 + 6y$. The monopolist is currently producing an output $y = 50$. Is this level of output consistent with profit maximization? If no, what might the monopolist be pursuing?

Not consistent with profit maximization. Output is consistent with total revenue maximization, $MR(y = 50) = 0$.

4. “The professor” runs a factory that produces coconut-powered radios on Gilligan’s Island. On the island his company (“Dura-coco-cell”) is the sole supplier of this good. On the world market, however, his firm faces a perfectly elastic demand. (Suppose for now that the castaways have the option of trading with the rest of the world.) That is, the professor’s company is a monopolist in his domestic market but a perfect competitor on the world market. If the marginal cost of production decreases what are the consequences for total production. Also, what will happen to the quantity sold on Gilligan’s Island?

Increase total quantity produced, but output sold on Gilligan's Island will not change. (Since firm allocates according to equating MR in both markets and world market MR is constant.)

5. Suppose there are two restaurants competing in a market for roasted tarantulas. Now imagine that the city passes a bylaw that prohibits restaurants from advertising. Show, using a game-theoretic model, how this policy might actually result in higher equilibrium profits for the two restaurants.

Use a prisoners' dilemma argument.

6. Suppose that a firm operating in Kapuskasing, Ontario ("Moosehead Gliders") is a monopolist in the local market for toboggans and is a monopsonist in the local labour market. Show that the output level of toboggans is inefficiently low and that employment is also inefficiently low. Can you suggest a policy or combination of policies that might lead to a more efficient outcome?

Draw appropriate diagrams (MRP = marginal factor cost). A minimum wage will lead to more employment and thus output.

7. Comment on the following statement: "If there is a sales tax on good 1 but not on other goods, then too few resources will be allocated to the production of good 1 from an efficiency point of view."

Tax creates a wedge. Agents set MRS = price ratio (now with tax on good 1), hence MRS > MRT implies that too little of good 1 produced.

8. Define an externality. Does the assignment of property rights provide a solution to the resource allocation problems posed by externalities? What theorem are you invoking?

The utility of one agent is directly affected by another agent's actions (even as the action is not taken directly with respect to that agent). Under certain conditions we can invoke the Coase Theorem.

9. Suppose that there are two firms competing in a market for cheesecake: "Mum's Best" and "Just Like Mum Use to Make" (firms 1 and 2, respectively). Each producer makes cheesecakes with their own "secret recipe handed down over the generations"; i.e. their products are differentiated.

Suppose that the demand by firm 1 can be described by $p_1 = 100 - y_1 - y_2/4$, while firm 2's inverse demand is $p_2 = 75 - 2y_2 - y_1/3$. The marginal cost of production for firm 1 is 10, while that for firm 2

is 9. Suppose that the two firms engage in Cournot competition. Find the equilibrium quantities and prices.

Write out each firm's profit function. Take FOC and then solve for the system of reaction functions. Then plug back in to get output and price. The only difference here is that firms do not share the same demand functions. That is, solve for

$$R(y_2) = y_1 = 45 - (1/8)y_2 \text{ and } R(y_1) = y_2 = (66/4) - (1/12)y_1.$$