

Final Exam
Intermediate Microeconomics
Fall 2014
December 16, 2014

Name: _____

Instructions

1. Answer all questions.
2. The exam will be graded out of 100 points. Points for each section are as indicated on the exam.
3. Write legibly. Illegible exams cannot be graded.
4. Do your best to fit all your answers on the front side of the exam. If you need to use the back of a page, indicate that clearly.
5. Label all figures as needed.
6. Make sure you **explain** your answers as needed. When appropriate, you should also explain any assumptions that you make to arrive at your answer.
7. Be concise.
8. The final page is intentionally left blank for extra work. If you do extra work on this page that you would like to be counted, you must note it clearly near the question you are answering.
9. Put your name on each page.

A. Ripped From the Headlines (18 points)

1 (12). Tax incidence

See the article from the *Washington Post* at the end of the exam.

(a) Who bears the statutory burden of this new tax?

(b) Who do protesters think will bear the economic burden of this new tax?

(c) According to the article, whose demand is more inelastic: mobile or home/business internet users?

(d) What does this suggest about which group (mobile vs. home/business users) is more likely to bear the economic burden of the tax?

2 (6). Insurance

See the article excerpt from the *Wall Street Journal* at the end of the exam.

(a) If MetLife is exiting the long-term care market, what can we infer about MetLife's economic profits in this industry in the long run?

(b) Were MetLife's premiums actuarially fair? Why or why not?

B. Short Answer Questions (37 points)

1 (4). Name two factors that can shift the supply curve.

2 (4). Draw a picture of the long run supply curve. Why does it look this way?

3 (5). Name an impure public good, and explain why it is an impure public good.

4 (3). Define a natural monopoly.

5 (3). Relate the decreasing marginal utility of consumption to the demand by a consumer who is not risk averse for insurance.

6 (4). Do we expect overprovision, underprovision, or the optimal level of provision of public goods? Why?

7 (5). Suppose that a firm is currently producing such that $MR < MC$. What would happen to total revenue, total cost, and profit if the firm produced one fewer unit of output?

8 (4). What is the moral hazard problem inherent in government provision of relief after disasters?

9 (5). Name two barriers to entry that can create market power.

C. Calculation Questions (45 points)

1 (15). Market Demand

Suppose the Mr. 1 has a demand for falafel of $Q = 12 - 3P$, and Mr. 2 has a demand of $Q = 24 - 2P$.

(a) Draw Mr. 1's and Mr. 2's demand on the same graph. Label axes and intercepts.

(b) What is total market demand for falafel? Write the equation and draw a graph (separate graph from (a), please).

(c) Assume that the demand curves above are now for a public good, which we'll call fireworks for the purposes of this question. What is the total market demand for fireworks? Write the equation and draw a graph (separate graph from (b), please).

2 (14). Monopoly production

A monopoly is considering spending fixed costs of \$100,000 to develop a new drug in period 1 that will be sold in period 2. The demand curve in period 2 is $Q = 100 - P$ (**where Q is measured in hundreds of pills** and P is the price per pill) and marginal cost is constant at \$4. The drug will be granted patent protection in period 2, and there are no fixed costs of production in period 2.

(a) How many pills will the monopolist sell in period 2?

(b) What price will the monopolist charge in period 2?

(c) Should the monopolist invest in the drug? (Think about what are the monopolist's profits over both periods are.)

(d) What is consumer surplus?

3 (16). Externalities

Recreation centers offer a place for young people to play sports and do other activities at a marginal cost of $MC = 0.25Q$, where Q is the number of entrants in recreational activities. The inverse demand curve for recreation centers is given by $P = 10 - 0.25Q$, where P is the price of entry and Q measures entrants. Recreation centers create positive externalities because they help get young people off the street and engaged in more productive activities. The external marginal benefits are $EMB = 1 + 0.06Q$.

(a) Without government intervention, what is the number of people who use the recreation centers?

(b) Derive the social demand curve (same as the the social marginal benefit curve) for recreation centers.

(c) What is the socially optimal number of entrants?

(d) Explain how the government could use a price-based intervention to achieve the socially optimal number of entrants.

Articles

1. Tax incidence and internet

“Hungary’s crazy-expensive internet,” *Washington Post*
October 28, 2014

We’ve seen protests over the price of bread and protests over the price of milk, but we might want to prepare ourselves for something new: protests over the price of a gigabyte, like we’re seeing in Hungary, where thousands have marched through downtown Budapest to protest a proposed tax on Internet use and have even taken to throwing old computers at government buildings.

The Internet tax is part of Prime Minister Viktor Orbán’s 2015 budget proposal, and it would add a surcharge of 150 forints – about 60 cents – to the cost of every gigabyte uploaded and downloaded in Hungary. Orbán, head of the conservative Fidesz Party, has tried selling the tax as a reasonable one. It will, his government has pointed out, be charged not directly to end users – you and me – but to Internet service providers. And those companies, the government has pointed out, are highly profitable. The tax follows along the lines of an existing, less-controversial tariff on telephone services. And the Orbán government is playing up the idea that the accumulated funds, which would add up to billions of forints, could go to building out broadband access in rural Hungary. Already, after initial protests this week, the Orbán government began what one European Commission spokesperson called “polishing it a bit,” adding a monthly cap on the proposed tax that is rumored to be 1,000 forints (\$4 U.S.).

Hungarians, through, are already paying quite a high price for Internet access, at least compared to other Europeans, and are concerned that ISPs will pass on the cost of the tax to them. Data from the Finland-based telecom analyst firm Rewheel, which pushes for competitive broadband markets, says the price per incremental gigabyte in Hungary is up to \$13. Compare that to Finland, where the price hovers around \$0.25.

But the real worry is that even a small increase in Internet costs would be enough to keep some Hungarians from using the Internet more. Pál Zarándy is a senior partner at Rewheel. One concern, as Zarándy sees it, is that Orbán’s plan will matter more for mobile broadband usage than it does for fixed broadband use. That’s because consumers connecting to the Internet from their home or business will find it harder to curtail their Internet usage and avoid hitting the cap. They’ll grumble, pay it and be done.

Mobile broadband users, though, are younger and more likely to closely track how much data they are using. According to a Rewheel analysis, mobile data consumption in Hungary is less than a fifth of a gigabyte per month per person, among the lowest in Europe, compared to 1 GB in Estonia and 1.5 GB in Sweden, Europe’s mobile-data-hungriest country. Mobile

broadband growth is a sign of young people getting online: According to data from the Pew Research Internet Project, 79 percent of those 18 to 24 in the United States say that they have a smartphone, while that number drops to 18 percent of those older than 65. One in four Hungarians is under 25. Mobile data is likely key to that country's Internet future.

2. Insurance

“MetLife Steps Back From Long-Term Care Market,” *Wall Street Journal*
November 12, 2010

MetLife Inc. said it will halt sales of long-term-care insurance, a type of coverage that repeatedly has flummoxed insurers and forced some to pay significantly more in claims than they expected.

MetLife is among the bigger sellers of the coverage, with about 600,000 policyholders, or about 8%, among the eight million who have long-term-care insurance in the U.S., according to the company and an industry trade association.

MetLife joins a parade of insurers that have exited the business rather than try to fight for customers in the small market. Many life insurers, having suffered losses in the financial crisis, have been rethinking product lines from long-term care to retirement offerings to reduce their exposure to volatile markets.

In addition, they said, customers have held on to the policies at a rate many insurers didn't expect. Those lower lapse rates in the first years of the policy translate into more people filing claims years later.

“In any environment, it's expensive for the companies that sell it, and it has tremendous future risks associated with it,” he said. “The current economic situation makes this an especially difficult business right now.”

Allianz SE and Minnesota Life Insurance Co., a subsidiary of Securian Financial Group Inc., are among the companies that halted sales of long-term-care insurance in the last two years. Cutting off new sales doesn't affect existing customers as long as they keep paying premiums.

Policies sold years ago still are creating problems for some companies. CNO Financial Group Inc., formerly Conseco Inc., spun off a long-term-care company with more than 140,000 customers to an independent trust in 2008 to cap its losses after plowing more than \$1 billion into the unit that sold the policies.

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