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Department of Economics 14.49 Spring, 2002

Problem Set 4
Problems Due in Class on Tuesday, May 7

Q1. Over the next 5 years, analysts expect a significant fraction of households to switch from dial-up internet connections using regular telephone lines running at 56K bps to cable modem or DSL lines.

a) Carefully explain three separate reasons why we might expect this switch to increase sales of items from business to consumers over the web. Illustrate your reasons with examples.

b) Give examples of two products or services whose sales should not be affected by this switch. Explain your reasoning.

c) Your Uncle Lou says: "I read that real estate agents are using the internet to sell homes. That is just more hype. Nobody is going to buy a home without walking through it, checking its condition, seeing what the neighborhood looks like – that sort of thing. The internet is not going to change the way people by homes." Explain the points (if any) where you disagree with Lou and the points (if any) where you agree with Lou.

Q2. Consider the following model of job search. Workers "search" by picking balls randomly from an urn. Each ball has a number x written on it, where x indicates the monetary value of the job ("the wage"). The variable x is distributed uniformly on the interval [0,1]. Each draw from the urn costs c. Suppose the worker is limited to a maximum of two draws (for algebraic convenience, not for realism).

a) Suppose the cost is 1/5. How many draws will the worker make?

b) Now suppose that Al Gore invents monster.com, revolutionizing the process of job search, and reducing the cost of a draw from the urn to 1/7. How many balls does the worker pick now?

c) Thinking about the problem economically rather than probabilistically, what else might change as a result of c dropping? Put another way, the above solution was in "partial equilibrium". How might employers search and hiring strategies have to change in general equilibrium? (Suppose that the numbers of job opening and searching workers are of the same order of magnitude.)

Q3. Consider two branches of McDonalds. One is in Central Square, 8 blocks up Massachusetts Avenue from MIT. The other is one of five rest stops on the northbound side of the New Jersey Turnpike, a limited access toll road that runs from the Delaware border to the George Washington Bridge.

a) Assuming both stores can set their own prices (i.e. no price regulation by the Turnpike Authority), which McDonalds would you predict has greater market power to set its prices. Explain your reasoning.

b) Since web sites have no physical location factors, does it follow that all web retailers have equal market power? Review the evidence on this point. If you don't believe that all web retailers have equal market power, briefly discuss three factors that might cause one web retailer to have more market power than another.

Q4. The growth accounts used by Oliner and Sichel (and many other economists) are developed from a model in which GDP is produced according to a Cobb-Douglass production function.

a) Suppose that the Oliner and Sichel results had shown that computer hardware and software had contributed very little to the recent acceleration in productivity growth. Would that evidence, by itself, be sufficient for you to accept the conclusion? Explain your reasoning. If not, what additional evidence would you require to accept the conclusion?

b) In fact, the Oliner and Sichel results show that computer hardware and software have contributed substantially to the recent acceleration in productivity growth. Is this evidence, by itself, sufficient to accept the conclusion? Explain your reasoning. If it is insufficient, what additional evidence do you require to accept the conclusion?