

14.27 Economics and E-commerce
Exam 2
Fall 2012

You will have approximately 85 minutes in which to complete this exam. The exam is out of 85 points to help you budget your time. Please keep answers concise.

Please sign below and return this copy of the exam. Your signature also serves to verify that you will not discuss the contents of this exam with anyone until the exam is returned.

Signature _____

Good luck!

1. (28 points) Short Answer

- a) Most search models, such as Diamond and Stahl, assume that the search costs are exogenously determined. We learned in class, though, that firms can and do take actions to make price search more difficult. Give three examples of such actions. Can technologies available to e-retail firms make these “obfuscation” techniques easier or cheaper to implement? Provide examples.
- b) Instead of selling advertising on their search results pages in the standard way---legions of executives negotiating rates with large advertisers and posting prices for the small advertisers---Google decided to auction off all of their “sponsored links.” They invented a new auction mechanism, a weighted generalized second price auction. Describe two novel features of the mechanism and how they contribute to its success.
- c) Privacy advocates worry about “behavioral targeting,” where advertisers obtain information about potential customers’ web browsing habits in order to serve them more effective display ads during their time on the internet. If privacy legislation prevented this type of customer tracking and, as a result, rendered internet ads less effective, name three likely results.
- d) Briefly describe the tax advantage enjoyed by mail-order businesses relative to brick and mortar ones and how this tax-advantaged status would be expected to have an impact on geographic distribution of mail order businesses. What if the tax-advantaged status disappears?

2. (16 points) Essay

General merchandisers, such as Sears and Montgomery Ward, saw the popularity of their mail order business peak in the 1920s. In the decades to follow, mail order was ceded mostly to specialty retailers. E-retail has ushered in the reemergence of mail order general merchandisers, such as Amazon. Why did general mail order decline relative to brick and mortar initially and why might e-retail enjoy

advantages over catalog retailers that will allow general merchandisers to survive online? Please craft your answer as an essay but include specifics to make your arguments.

3. (21 points)

Suppose a search engine wants to sell two advertising slots (call them slots 1 and 2) for a particular keyword. The search engine does not know how many advertisers might be willing to purchase the slots or what their valuations might be. In fact, there are two advertisers (A and B) who know of each other and know their own and each other's valuations per click, V_A and V_B , where $V_A > V_B$. Suppose also that the two advertisers' ads are of equal quality and that the slots are differentiated by click-through rates, C_1 and C_2 , where $C_1 > C_2$. C_1 and C_2 are known to everyone. Each advertiser can buy at most one slot.

- a) The search engine first decides to run sequential auctions, auctioning off slot 2 first and then slot 1. How much revenue will it raise?
- b) Then the search engine figures out that it might do better if it auctions the two slots simultaneously, giving slot 1 to the highest bidder and slot 2 to the second highest. Find an equilibrium where the search engine gets more revenue than in the sequential auction.
- c) How well would the search engine do relative to the answers in a) and b) if it ran sequential auctions first auctioning slot 1 then slot 2?

4. (20 points)

A company offering cloud storage has performed some market research and determined that its customers each have demand $Q=25-P$, where Q is the number of gigabytes of storage and P is the annual price in dollars. The cost of providing the storage is \$5 per gigabyte per year.

- a) What is the profit-maximizing price per gigabyte for the cloud storage company?

Suppose, instead, that it found that its American customers have a different demand than its European customers. In particular, customers who have made their purchases from a European IP address each have demand $Q=25-P$, but customers who have made their purchases from the US have demand $Q=20-P$.

- b) Assuming the cloud storage company could distinguish between European and US customers and offer a different price to the two groups, what would its profit maximizing P_E and P_{US} be?
- c) Suppose some blocking software started being used that made distinguishing between them impossible (but the company knew that approximately half of their customers came from Europe and half from the US). Could the company do better than offering the same per-gigabyte price to both groups? Demonstrate or explain.

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