

14.27 Exam 2 Solutions

11/19/2014

1 T,F,U

a)

U/F. As argued by Goldfarb and Tucker, regulations of this sort will reduce the effectiveness of advertising. This will lead to worse matching between individuals and ads, which decreases consumer utility. Furthermore, this depresses ad prices, reducing the profitability of websites, and in particular of general interest websites with a broad audience. If websites disappear due to reduced revenues, the effect on consumers will be negative.

b)

T. This is the case because in both settings winners do not pay their bid, but the second highest bid. As a result, they have an incentive to bid their valuation.

c)

F. We saw that the revenue of online stores would fall by roughly 24% if the tax advantaged status is repealed, which is not a small amount.

d)

F. The difference is in the information the firm has regarding consumer valuations and the degree to which it has the ability to charge different prices to different consumers. Also, under first degree PD firms have the greatest ability to charge differential prices.

e)

U. The revenue equivalence theorem shows this is true, but with risk aversion, bidders will bid lower in first price sealed bid auctions than in dutch auctions.

f)

T. E-retailers may have the ability to track consumers' online behavior, gaining information about their valuations that brick and mortar stores do not have. Furthermore, it is more difficult to see the price others consumers are paying in an online setting.

2

a)

These facts are precisely the motivation for theoretical models of price search, as without search costs it is difficult to predict equilibrium price dispersion. Thus, a model such as the Stahl's in fact predicts both price dispersion and sales at prices other than the lowest price in homogenous goods markets.

b)

One could interpret this as geographic price discrimination, with sellers charging lower prices to individuals in remote locations than to those who live in urban areas. For example, if customers who live in remote areas have lower willingness to pay for certain goods, then not charging them their full shipping cost may be a way to entice sales from this segment of the market without sacrificing rents in urban areas. Whether this is done for this motive or for other reasons is open to interpretation.

c)

Low quality advertisers drive away consumers, and this reduces the value of the advertisement for other advertisers. This is the negative externality. A seller of advertising would internalize this externality whenever consumers are sufficiently sensitive to low quality ads such that other advertisers are driven away.

3

a)

Solving by backwards induction, regardless of who wins the first auction, we have that the remaining bidder will be bidding by itself in the second auction. As a result, the price of slot 1 (which is auctioned in the second auction) will be 0 ($p_1 = 0$), and the profit from this slot for bidders will be $V_j C_1$, where V_j is the valuation of the remaining firm.

Knowing this, in the first period firms would like to bid so as to be indifferent between winning the first auction or the second auction. However, since $C_1 > C_2$, this would require negative bids, with companies being paid to take the slot

being auctioned off first. Restricting to non-negative bids, $p_2 = 0$, and as a result the revenue raised under this scheme will be 0.

b)

No, in this case revenue will be strictly positive. As before, in the second period the price will be 0 ($p_2 = 0$), and the remaining firm will get a profit of $V_j C_2$. In the first period, firm j will bid so that $V_j C_1 - b_j = V_j C_2 \Rightarrow b_j = V_j (C_1 - C_2)$. As a result, Firm A will win the auction in the first period, paying a price of $p_1 = V_B (C_1 - C_2)$. This is also the revenue raised by the seller.

Intuitively, the fact that the seller is auctioning off the most valuable good first creates incentives to bid in the first auction, as winning it is more profitable than getting the second slot for free.

c)

Assume that bids are weighted by quality Q_j , and that $Q_B > Q_A = 1$. If firm j wins, it pays $\frac{b_j Q_{-j}}{Q_j}$. In a second price sealed bid auction, a firm will bid its valuation, which implies that:

$V_j (C_1 - C_2) - \frac{b_j Q_{-j}}{Q_j} = 0 \Rightarrow b_j = \frac{Q_j}{Q_{-j}} V_j (C_1 - C_2)$, or $b_A = \frac{V_A}{Q_B} (C_1 - C_2)$ and $b_B = Q_B V_B (C_1 - C_2)$.

Firm B wins if $Q_B^2 V_B (C_1 - C_2) > \frac{V_A}{Q_B} (C_1 - C_2) \Leftrightarrow Q_B^3 > \frac{V_A}{V_B}$. In this case, revenue is $\frac{V_A}{Q_B^2} (C_1 - C_2)$. For revenue to increase, it must be that $\frac{V_A}{Q_B^2} (C_1 - C_2) > V_B (C_1 - C_2) \Leftrightarrow \frac{V_A}{V_B} > Q_B^2$. Therefore, any case where $\left(\frac{V_A}{V_B}\right)^{\frac{1}{2}} > Q_B > \left(\frac{V_A}{V_B}\right)^{\frac{1}{3}}$ works.

Firm A wins if $Q_B^3 \leq \frac{V_A}{V_B}$. In this case, revenue is $Q_B^2 V_B (C_1 - C_2)$. For revenue to increase, it must be that $Q_B^2 V_B (C_1 - C_2) > V_B (C_1 - C_2) \Leftrightarrow Q_B > 1$. Therefore, any case where $\left(\frac{V_A}{V_B}\right)^{\frac{1}{3}} > Q_B > 1$ also works.

4

There is no “correct” answer here, but a good answer will cover the following topics:

- Using auctions as a way to set prices without knowing buyers’ valuations.
- Quality weighting advertisements.
- Selling advertisements simultaneously, and not sequentially.
- Defining an ad slot (both geographically and through tracking).

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