

## Midterm Exam

5 points for each question, 30 points total. –1 for messiness.

1. *Fraud*. There are firms that provide specialized Fraud prevention services to other firms. For example Fraud Solutions' website says "Fraud Solutions is a boutique services firm providing a customized portfolio of unique enterprise fraud risk management consulting, fraud strategy, research and fraud training services to clients around the globe. More specifically, Fraud Solutions provides a comprehensive suite of fraud services to companies in order to help them identify, combat, and reduce the amount of fraud and financial crime being committed against their businesses, products, and services." Of course, this problem doesn't really pertain to the finances of this company, so let's call our pretend firm "FS" and let's call the output of the company a "Lessfraud."
  - (a) Suppose there is a business-to-business market for Lessfrauds, and FS is the only firm in the market (monopoly). Demand is downward-sloping, and marginal cost is constant. Draw the market diagram for Lessfrauds and show the monopoly profit-maximizing quantity and price. Is there deadweight loss? Explain and show.
  - (b) Now draw a third monopoly diagram, but this time draw in an average cost curve in such a way that FS does not earn a net profit even at the profit maximizing price. Remember to draw your AC curve in a way that is consistent with the constant MC curve. Label operating profit and net loss.
  - (c) Based on part (b), FS is going to go out of business in the long run unless there is some intervention. One intervention

would be for the government to provide a lump-sum subsidy to make up for the loss. Assuming the government can condition the subsidy on FS producing at any price-quantity point along the demand curve, what would be the lowest-possible subsidy? What would be the subsidy that would maximize social welfare?<sup>1</sup>

- (d) A different solution to part (b) would be for the client firms to form a consortium to own and support FS. In this case, the consortium would simply dictate the price-quantity point. What point would they choose, and how much would it cost the consortium to maintain FS?
- (e) Suppose both options (c) and (d) are on the table. Using the logic of the Wilson Matrix, which one do you think is more likely to emerge from the political process? (Write a paragraph or two; there is not a unique correct answer, but show that you understand the Wilson Matrix.)
- (f) Go back to the monopoly diagram, and forget about the fixed cost issue. It turns out that the demand, i.e. the marginal private benefit, of companies that buy Lessfrauds is only part of the story. Since fraud harms lots of people beyond FS's clients, there is a marginal external benefit from each Less-fraud produced. Draw a new diagram showing marginal private and marginal social benefits, and deadweight loss.
- (g) Bonus question, + up to 2 points. Graph the lump sum subsidy and price/quantity point needed to produce the social optimum in part (e).

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<sup>1</sup>Two real-world issues that you don't need to consider in your answer but are important: (1) It probably makes sense to have the government simply contract with the firm rather than actually creating a subsidy program. (2) When we say "maximize social welfare" here, we mean it only in a partial equilibrium context. These funds come from somewhere, and there could be distortions in how the funds are raised.