PUBP 620/LAW 328 - Regulation of Markets
College of William and Mary March 16, 2016
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Midterm Exam

You have two hours to complete this exam. The exam can be taken at any time on March 16th. Please include your start time and stop time on your exam. Completed exams should be emailed to me (jmparman@wm.edu) by midnight. Time taken to scan and email answers does not count against your two hours. You can combine graphs and written answers in a single file or use one file for written answers and a second for graphs. If you choose to use multiple files, please send them in a single email.

Answer all questions completely but concisely. Including additional incorrect information in an otherwise correct answer may result in the loss of points. As a rough guide, each five points on the exam typically requires about two sentences to correctly answer. The exam is open notes and open book. You may use your notes, the textbook and any of the materials posted on our course Blackboard site. Other materials are not permitted. Good luck!

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1. (25 points) Virginia legislators are debating whether to change the way that the state regulates the market for electricity. One advocate for traditional rate of return regulation for both generation and transmission of electricity makes the following statement:

   > "The bankruptcies of the California utility companies and California's rolling blackouts reveal that allowing competition for residential electricity customers and competition in the wholesale electricity markets is ultimately harmful to consumers."

   Explain whether you would agree or disagree with the statement. Your answer should draw both on the details of the California electricity crisis and on any relevant similarities or differences between Virginia and California. (Note that I do not expect you to have any specific knowledge about Virginia electricity markets or current Virginia regulations, I expect you to focus on more general features of Virginia relevant to electricity.)

2. (25 points) Consider the price caps approach to regulating natural monopolies discussed in class where prices are set according to the following formula:

$$\Delta p = \Delta_{\text{inflation}} + \Delta_{\text{cost passthroughs}} + \Delta_{\text{tech}} \tag{1}$$

where Δ_{tech} is the x-factor, the amount by which prices will steadily drop to account for improvements in technology. Consider price caps being used to regulate residential electricity rates. Explain how each issue described below would effect efficiency in the residential electricity market.

   (a) The regulator estimates the value for Δ_{tech} by measuring the rate of technological change in other electricity markets over the past two decades. These markets used traditional rate of return regulation.

   (b) New environmental regulations are put in place that make it more costly to mine coal.

   (c) When the regulatory body meets each year they decide to change Δ_{tech} given the rate of technological change witnessed over the previous year.

3. (25 points) Suppose that there are two textbook stores in Williamsburg. Each textbook store buys their supply of textbooks on the wholesale market. Textbooks on the wholesale market cost $50 each. The two textbook stores sell these textbooks in the retail market to William & Mary students. Students have a downward sloping, linear demand curve for textbooks.

   (a) Draw a graph showing the demand for textbooks, the marginal cost of textbooks, and the efficient quantity of textbooks.

   (b) On the same graph you drew in part (a), show the price a monopolist would charge for textbooks and the quantity of textbooks they would sell. Explain why this quantity differs from the efficient quantity you found in part (a).

   (c) Suppose that the two stores compete in the following way. They each place their textbook orders for the fall semester early in the summer. At the start of the fall semester, they then sell these textbooks to students. If they run out of textbooks, they cannot order any more. The price they can sell them for depends on what students are willing to pay for the total number of textbooks supplied (the combined number of textbooks sold by both stores). How will the equilibrium quantity of textbooks differ from the efficient quantity you found in part (a)? Explain why the equilibrium quantity differs from the efficient quantity.

   (d) How will the equilibrium quantity of textbooks differ from the monopoly quantity you found in part (b)? Explain why the equilibrium quantity differs from the monopoly quantity.

   (e) Suppose that William & Mary wants to make the textbook market more efficient. The College has two options. The first is to open a third competing bookstore that follows the same model of ordering textbooks in the summer to sell in the fall. Alternatively, the College can devote their efforts to negotiating with publishers to allow the bookstores to buy books at wholesale prices on demand. In other words, the two bookstores would not need to order their books in advance. Instead, they could post the prices they will sell books at and then order however many books customers demand at those prices. Which of these two approaches should the College take? Be certain to fully justify your answer.

4. (25 points) The federal government is considering using a prize rather than a patent to promote the creation of a more efficient rechargeable battery. The approach would be the following. Any company that wants to be in the running for the prize agrees that all technology developed during the research and development process will immediately be in the public domain. Whichever company is the first to create a battery that meets the government's high standards for capacity, low manufacturing cost, and quick recharging time wins the prize. The amount of the prize is set equal to the expected present value from the profits of a 20-year patent on the technology.

   (a) How will this prize change the incentives of firms to work on new battery technologies relative to the traditional patent system?

   (b) Will switching to the prize approach lead to a more efficient outcome in the rechargeable battery market?

   (c) Explain two potential drawbacks to this approach relative to the patent approach. These drawbacks should relate to efficiency or equity in the rechargeable battery market or to the costs of regulation.

   (d) Given the arguments made by Boldrin and Levine, would they support this prize approach over traditional patents? Would they support this prize approach over a system with no intellectual property rights at all? Be certain to justify your answers.