

This exam is comprised of three sections. The first section is for material covered in 220A taught in the spring of 2013 by Ben Handel. The second covers material by Joseph Farrell taught in Fall 2012. The third section is for material covered in IO, 220C taught in the fall of 2012 by Denis Nekipelov.

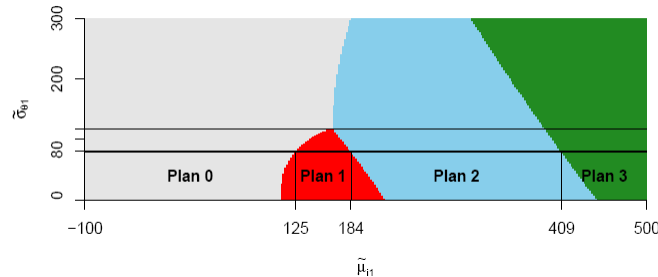
Each section is worth the same amount of points, 50 points. This means that the questions from IO 220A, in sum, count as much as those from 220B and count as much as those from IO 220C. Students need only answer questions from the classes that they actually took, since all 3 classes are not required for this field exam (only 2 are). However, students who took all 3 classes, and students who answer all 3 questions, will be formally evaluated based on their best two answers and thus get another crack at answering a question correctly.

Part 1

Question 1 (25 points)

In the Grubb and Osborne (2012) paper on cellular phone menu plan choice and design, the authors study micro-foundations of consumer choice and the implications of those micro-foundations for welfare and policy. Please answer the following questions about this paper and related work:

1. Describe the data set used by the authors in detail. Approximately how many consumers do the authors observe making choices? What types of consumers are they? How many choices does each consumer make on average? Broadly, what features of this dataset are compelling, and what features of the dataset are less desirable for the questions the authors are trying to answer? Why?
2. The figure on the next page describes identification of consumer beliefs about their



upcoming monthly cell phone plan minutes utilization. Use this figure to describe identification of the key belief parameters being estimated by the authors.

3. How does identification of beliefs in the Grubb and Osborne paper relate to identification of risk preferences in the structural literature on insurance choice, e.g. Handel (2013) or Cohen and Einav (2007)? Provide as much detail as possible to receive maximum credit, and explain what assumptions are necessary to justify the interpretations of these quantities in these papers. Write down two simple choice models to illustrate this comparison.
4. How do Grubb and Osborne deal with consumer inertia in their framework? How is their approach different than that in Handel (2013)?
5. Describe formally what Grubb and Osborne mean by “overconfidence”? What are the implications of overconfidence for consumer choices? What are the welfare consequences of debiasing consumers?

Question 2 (25 points)

The Crawford and Yurokoglou (2011) paper that we read in class studies the implications of a counterfactual regulatory change in the cable television sector. Please answer the following questions regarding this paper:

1. Draw a figure that describes the industry structure in the cable television market

studied by the authors. Who are the key actors / agents in this market and on what dimensions does competition occur? Don't forget to consider consumers in this diagram.

2. What is the central policy question being asked by the authors in this paper? Describe in detail the trade-offs inherent to the policy alternative being considered, relative to the status quo. What are the reasons why the alternative policy could be better than the status quo? Why might it be worse?
3. The authors arrive at a somewhat surprising result the the alternative policy change that they consider could actually make consumers worse off, contrary to popular opinion. What is the key ingredient / micro-foundation that the authors model that leads to this surprising result?
4. The authors develop a structural model to describe the behavior of all the actors in the vertical market. Describe the 3 main components of the model in detail, including the actors involved and key assumptions made. Most importantly, describe with an equation the protocol used to govern bargaining in the model. How exactly does bargaining occur between key actors?
5. What are the main conclusions of the paper for policy? Discuss in depth the trade-off between precise estimates and the credibility of estimates in the context of this paper. Give examples from the paper to highlight this tradeoff.
6. What assumptions used in this paper are similar to those used in BLP (1995) and other papers on differentiated product competition? In BLP (1995) what are the primary instruments used to identify demand parameters?

Part 2**Question 1** (50 points)

(a) Describe two analytical techniques used in prospective antitrust merger review. For each of the analytical techniques you describe, comment on how or whether using the ideas of that technique to put more “theoretical structure” on Kwoka’s analysis of merger retrospectives could have strengthened his analysis - or would it have imposed structure that is not necessarily valid and thus have weakened the analysis?

(b) What directions ought the merger retrospectives literature to take over the next five or ten years, to be as useful as possible in guiding good antitrust merger policy?

Part 3

Question 1 (50 points) A single indivisible object is allocated to one of N potential buyers via an auction. Each buyer $i = 1, \dots, N$, however, has two dimensions along which she evaluates the item (u_i, v_i) . E.g. if the auctioned object is a diamond, then these two dimensions can be the values of the weight and the purity of the auctioned stone. The pairs (u_i, v_i) are drawn i.i.d. from the joint distribution $F_{uv}(\cdot, \cdot)$ which is assumed to be commonly known to the buyers (but not known to the econometrician) and has support on $(-\infty, +\infty) \times (-\infty, +\infty)$. The valuations themselves are private information and they are not publicly observed by competing buyers.

If bidder i wins the auction and pays price p , her utility from winning is $v_i - p$ if $u_i \geq 0$ and it is $-p$ if $u_i < 0$. If bidder i does not win, her utility is zero. For instance, in the example where the auctioned item is a diamond, the buyers do not want to buy diamonds which purity is below a certain threshold.

Suppose that a standard second-price mechanism is used to auction the object: each buyer submits a single bid b_i . The winner is the buyer with the highest bid and the price is determined by the second highest bid. Suppose the econometrician observes all bids.

- (a) Characterize a symmetric Bayes-Nash equilibrium in this auction game and the equilibrium bidding strategy.
- (b) Prove that without further assumptions the distribution $F_{uv}(\cdot, \cdot)$ is not nonparametrically identified from the distribution of bids.
- (c) Prove that the distribution $F_{uv}(\cdot, \cdot)$ which has full support on $(-\infty, +\infty) \times (-\infty, +\infty)$ is identified from the distribution of bids if and only if $F_{uv}(\cdot, \cdot) = F_u(\cdot)F_v(\cdot)$.
- (d) Assuming that $F_{uv}(\cdot, \cdot) = F_u(\cdot)F_v(\cdot)$, propose an estimator for distributions $F_u(\cdot)$ and $F_v(\cdot)$ from the sample of bids $\{b_i\}_{i=1}^N$.