

This exam is comprised of two sections. The first section is for material covered in IO 220A taught in Spring 2014 or Spring 2015 by Ben Handel. The second covers material by Joseph Farrell taught in Fall 2013 or Fall 2014. There are two questions in section one, worth a combined 50 points. There is one question in section two worth 30 points. You should answer all questions.

Part 1

Question 1 (30 points)

In class we read and discussed a paper by Ali Hortacsu and Chad Syverson (2004) that studies consumer search costs. Answer the following questions related to this paper.

1. (5 points) Describe the industry the authors study. What descriptive facts and industry details make this a good environment to study search costs in? Describe the data that the authors use.
2. (10 points) Write down the search cost model the authors use, and explain how it connects to demand estimation. First, write down the general form of the model, without going into the specific derivation. Then, without doing the full derivation, describe the equations the authors use to identify the distribution of search costs in the population. Finally, write down the demand model equation that studies preferences for product specific attributes (such as longevity). How does this connect to the search cost model? What instruments do the authors use to identify these attribute preferences?
3. (5 points) How do the authors treat horizontal differentiation of products in their model? How does this differ from what is typically done in the literature? Why do they use this alternative treatment?

4. (10 points) In their search cost model, the authors assume that consumers have rational expectations over the distribution of prices in the market. Write down, *in detail*, an alternative search model that doesn't place such a strong information structure on consumer behavior. Why is your model more flexible, and what typical behavioral traits (such as those studied in Grubb and Osborne (2015)) can be included in your framework that can't be included in the Hortacsu-Syverson framework? Describe two empirical strategies for identifying your model, relating those strategies to papers discussed in class.

Question 2 (20 points)

This will be a four-part question asking you about different aspects of papers that we read and discussed in class.

1. (5 points) Describe the bargaining framework that Crawford and Yurokoglu (2012) use (write down an example equation) and discuss why they need to incorporate that into their analysis. What cost-related assumption allows them to pin down the bargaining parameters? Give an example of another industry where you would want to employ a similar model.
2. (5 points) Handel, Hendel, and Whinston (2015) discusses an economic tradeoff that arises in the context of regulating health insurance markets. Define and discuss the economic phenomena on each side of this tradeoff. Why does this tradeoff matter in the markets these authors study, relative to other markets with asymmetric information, such as the market for car insurance?
3. (5 points) Hendel and Nevo (2006) study dynamic demand for storable products in the laundry detergent market. Discuss how modeling dynamic demand, as opposed to static demand, impacts own-price and cross-price elasticities. Do this both theoretically, and empirically in the context of their results. Finally, discuss the descriptive patterns in the data that allow them to identify price elasticity separately from storage costs?
4. (5 points) Nevo (2000) studies differentiated product demand and mergers in the ready-to-eat cereal industry. Describe what differentiates the data he uses from the data used in BLP (1995). Next, discuss how those data allow him to use a different empirical strategy to deal with price endogeneity. What are the two different strategies used by these two papers to deal with this endogeneity? Finally, describe the hypothesis Nevo tests, and what he concludes.

Part 2**Question 3** (30 points)

In textbook treatments of imperfectly competitive differentiated-product markets, rival sellers design their products and choose prices, and then consumers choose and pay.

In such a market, suppose that two single-product rival firms merge. Suppose that the merger will not affect product design, but could affect pricing. Explain the concept of diversion ratio that is relevant here, and briefly explain how it is used in calibrating the incentive to raise prices following the merger.

In US markets for hospital services for privately insured patients, briefly explain Vistnes concept of two-stage competition, and discuss who chooses and who pays for those services. Compared to the simple textbook differentiated-product market, discuss how demand elasticity works in such a market. In your answer, you should recognize that traditionally insurers have not presented their patients with direct price incentives to use one in-network hospital rather than another (steering), but that they could (and sometimes do) do so.

What concept of diversion ratio is relevant to price-setting by merging hospitals in this context? Explain how it is similar to, but different from, the concept you explained earlier.