This exam is comprised of three sections. The first section is for material covered in IO, 220A taught in spring 2012 and spring 2013 by Ben Handel. The second covers material by Joseph Farrell taught in both Fall 2012 and Fall 2013. The third is from material covered by Denis Nekipelov in IO 220C. There are two questions in section one, worth a combined 60 points. There is one question in section two worth 40 points. There is one question in section three, worth 50 points. You only need to answer questions from classes that you actually enrolled in, though if you answer all three the top two scores from those three questions will be counted.

Part 1

Question 1 (30 points)

1. (10 points) What is the primary economic point made in Berry and Waldfogel (1999)? First describe this point in theory, then the industry they study. Write down an entry condition for an individual firm, a social welfare function for a planner / regulator, and describe optimal firm and regulator behaviors in the context of the main question they consider.

2. (10 points) Describe the primary differences between the Nevo paper on breakfast cereals and the BLP paper on automobile markets. How do the empirical methods used differ? How do the instruments used differ? Describe the instrumental variables used in each paper.

Write down a typical mixed logit utility specification. Describe why the mixed logit makes an advance over the work done in Bresnahan (1987) and write down the features of the model in Bresnahan (1987).

3. (10 points) Why do Crawford and Yurokoglu (2011) use a cable distributor / TV channel bargaining specification in their paper? Write down the bargaining model
they use and describe (i) the key parameters they recover from that model and (ii) how they use those parameters in their counterfactual analysis. What key "surprising" insight do they illustrate in their counterfactuals?
Question 2 (30 points)

1. (8 points) Write down a structural consumer choice model typical of the structural literature on health insurance choice. Use clear notation, and outline the micro-foundations that you include in the model. You must include at least 3 distinct micro-foundations. For each of these foundations describe how (i) an empirical paper in the literature identifies that quantity in data and (ii) what assumptions based on economic theory you would implement to estimate those foundations.

2. (10 points) The 2010 QJE paper by Einav, Finkelstein, and Cullen outlines a sufficient statistics approach to quantifying the welfare loss from adverse selection in a health insurance market. Describe the key quantities they need to measure to do this sufficient statistics welfare analysis. Describe how the authors identify these quantities in their data. Illustrate these quantities in a graph, and shade the area that represents the deadweight loss / welfare loss from adverse selection.

3. (7 points) In Handel (2012) the paper separately identifies inertia from other micro-foundations in a health insurance context. What data elements are necessary to identify inertia separately from other micro-foundations? Without that unique data structure, what is the main problem past researchers run into when trying to identify inertia / switching costs? Describe why inertia interacts with adverse selection, and why this interaction is economically meaningful. Use a graph to illustrate this point.

4. (5 points) Health insurance markets are heavily regulated: what typical U.S. regulation increases adverse selection in health insurance markets? Why is this same regulation not present in other insurance markets, such as auto insurance? What are several key features of health insurance markets that make them economically different than other insurance markets?
Part 2

Question 3 (40 points)

Identify at least one potential endogeneity issue in difference-in-differences horizontal merger retrospectives. Comment on how that potential issue is made more or less severe depending on the choice of comparison firms. Does that reinforce or go against what would otherwise be good choices for comparison firms, and why?
Part 3

Question 4 (50 points)

Consider the dynamic discrete choice problem where an economic agent can choose a binary action $a_t \in \{0, 1\}$ in each period $t = 1, \ldots, \infty$. There is a single state variable $X$ which is continuously normally (mean 0, variance $\sigma$) distributed with i.i.d. realizations. Suppose that the utility of the economic agent is such that $u(a, x) = \gamma + \delta x$ if $a = 1$ and $u(a, x) = 0$ otherwise. Note that this utility is not random (there is no error term). Suppose that the discount factor of the economic agent is $\beta$.

1. Derive the optimal strategy of the agent.

2. Quantitatively characterize the effect of an increase in the discount factor $\beta$ and an increase in the fixed part of the payoff $\gamma$ on the probability that the agent chooses $a = 1$ in a given period (where the expectation is taken over the distribution of $X$).

3. Suppose that the data sample is represented by $T$ realizations of the state variable and the action of the economic agent: $\{a_t, x_t\}_{t=1}^T$. Assuming that the discount factor is known and fixed, propose an estimation strategy for parameters $\gamma$ and $\delta$.

4. Derive the rate of convergence of your estimator for the utility parameters. What is the main difference between the properties that you found and the properties of the cost estimates in the model of Rust (1989)?