course summary

In this course, we study imperfect competition among firms, with an emphasis on empirical work. We learn how to implement empirical methods commonly used in Industrial Organization (IO), and how to read, and ultimately write, papers in empirical IO. Topics covered include demand estimation, auctions, price discrimination, bundling, asymmetric information and adverse selection, vertical control and contractual arrangements, and others as time allows. Each topic will be organized around recent empirical work. Throughout, we will consider the importance of identification in empirical studies. There will almost certainly be some important topics (e.g., estimating dynamic models) that we will not have time to cover in detail. I will introduce these topics through the course readings, and will provide lectures notes to students who are interested in pushing further on these topics. There is no required text. However, you should obtain a copy of The Theory of Industrial Organization by Jean Tirole as a reference for any models that are not familiar to you.

Course Requirements

1. A large portion of the class is discussion-based. You must read the papers announced before each class meeting and participate in the discussion of these papers.

2. One referee report will be assigned. You will need to complete the referee report along with a cover letter to the editor summarizing your analysis. One goal of the course is to teach you how to read papers for the purpose of providing constructive criticism. Thus, this assignment is usually completed after you have had a chance to read and discuss several papers. I will provide the paper and announce a due date for the report later in the course.

3. There will be three problem sets assigned. I will also provide you with a “Problem Set 0” to help you become proficient at coding in Matlab or a similar language before starting the graded problem sets. You may choose whether or not to turn this
You should expect to spend a lot of time on the problem sets in the beginning of the semester.

4. Each student will lead two in-class discussions of an empirical paper from the syllabus in the second half of the semester. Starred (*) papers are eligible for presentation, and you may sort yourselves among papers using any mechanism of your choosing.

A complete reading list follows the course outline. Papers for which you are expected to prepare discussion questions are listed separately in the course outline. The current list is my best expectation of the papers we will cover from the more extensive reading list that follows, but they may change as we go along.

**Course Outline**

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<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
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| 1    | Sept 3 | Introduction to Graduate Empirical IO  
Lecture Notes |
| 2    | Sept 8 | **Demand Estimation I**  
Lecture Notes (Early Approaches; Vertically-Differentiated Models of Demand) |
|      | Sept 10 | Application of a Vertically-Differentiated Demand Model  
Mortimer (2007) |
| 3    | Sept 15 | **Demand Estimation II**  
Lecture Notes (Logit and Nested-Logit Models of Demand, and Review of GMM) |
|      | Sept 17 | Application of a Nested-Logit Demand Model  
Goldberg (1995) |
| 4    | Sept 22 | **Demand Estimation III**  
Lecture Notes (Random Coefficients Models of Demand) |
|      | Sept 24 | Applications of Random-Coefficient Logit Demand Model  
Lecture Notes (Automobile Examples) |
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<th>Week</th>
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<th>Topic</th>
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<td><strong>Problem Set 1 Due, 5.00pm</strong></td>
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<td><strong>SEPT</strong></td>
<td>26</td>
<td><strong>ENTRY MODELS AS STATIC COMPARISONS OF INDUSTRY STRUCTURE</strong></td>
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<td>Lecture Notes</td>
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<td><strong>5</strong></td>
<td><strong>SEPT</strong></td>
<td><strong>ENTRY MODELS AS DISCRETE GAMES</strong></td>
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<td>29</td>
<td>Lecture Notes</td>
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<td><strong>Oct 1</strong></td>
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<td><strong>ENTRY MODELS AS DISCRETE GAMES</strong></td>
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<td>Lecture Notes</td>
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<td><strong>6</strong></td>
<td><strong>Oct 1</strong></td>
<td><strong>MOMENT INEQUALITIES</strong></td>
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<td>Lecture Notes</td>
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<td><strong>Oct 8</strong></td>
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<td><strong>SINGLE-AGENT DYNAMIC OPTIMIZATION MODELS</strong></td>
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<td>Lecture Notes on Rust (1987)</td>
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<td><strong>Oct 10</strong></td>
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<td><strong>Problem Set 2 Due, 5.00pm</strong></td>
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<td><strong>7</strong></td>
<td><strong>Oct 13</strong></td>
<td><strong>COLUMBUS DAY (NO MEETING)</strong></td>
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<td><strong>Oct 15</strong></td>
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<td><strong>APPLICATION OF A SINGLE-AGENT DYNAMIC MODEL - ADVERTISING</strong></td>
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<td></td>
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<td>Ackerberg (2003)*</td>
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<td><strong>8</strong></td>
<td><strong>Oct 20</strong></td>
<td><strong>NO MEETING</strong></td>
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<td><strong>Oct 22</strong></td>
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<td><strong>NEW ISSUES IN ADVERTISING–TBA</strong></td>
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<td><strong>Oct 25</strong></td>
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<td><strong>Problem Set 3 Due, 5.00pm</strong></td>
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<td><strong>9</strong></td>
<td><strong>Oct 27</strong></td>
<td><strong>U.S. MERGER POLICY</strong></td>
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<td>Lecture Notes</td>
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<td><strong>Oct 29</strong></td>
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<td><strong>APPLICATION OF U.S. MERGER POLICY</strong></td>
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<td><strong>10</strong></td>
<td><strong>Nov 3</strong></td>
<td><strong>RETAILING AND INVENTORIES I</strong></td>
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<td>Aguirregabiria (1999)*</td>
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<td><strong>Nov 5</strong></td>
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<td><strong>RETAILING AND INVENTORIES II</strong></td>
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<td>Hendel and Nevo (2006)*</td>
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<td>11</td>
<td>Nov 10</td>
<td>Retailing and Inventories III: Stock-out Events</td>
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<td>12</td>
<td>Nov 17</td>
<td>Auctions II (Collusion)</td>
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<td>Nov 19</td>
<td>Network Externalities</td>
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<td>13</td>
<td>Nov 24</td>
<td>Vertical Contracts</td>
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<td>Nov 26</td>
<td>Thanksgiving Break (No Meeting)</td>
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<td>14</td>
<td>Dec 1</td>
<td>Vertical Bundling</td>
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<td>Dec 3</td>
<td>Experiments in IO</td>
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<td>15</td>
<td>Dec 8</td>
<td>Health Economics I</td>
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<td>Dec 10</td>
<td>Health Economics II</td>
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**Important Topics we are missing:**


Horizontal Bundling: Crawford and Yurukoglu (2012)

Adverse Selection: Handel (2012)
Class Outline References


References

Auctions


**Price Discrimination**


**Networks and Network Externalities**


**Bundling**


**Boundaries of the Firm**


**Vertical Control and Contractual Agreements**


Retail and Inventories


Moral Hazard, Asymmetric Information in Insurance Markets


Advertising, Information Disclosure, Provision and Search


Discussion Questions for All Papers

1. What is the research question?

2. What are the goals of the paper? (Does the paper aim to develop methods, answer a policy question, test models, or measure an effect?)

3. Why is the paper important according to the author? Is the author right?

4. If the objective is a methodological advance, what is the problem that the author addresses? Why are existing techniques inadequate? How successful is the author’s approach? Could we use the approach elsewhere?

5. What is the theoretical foundation for the empirical work? How appropriate is the model for the applications? How tight is the relationship between the theoretical and empirical models?

6. For papers using structural empirical models:
   - Why does the author use a structural empirical model? Could any of the questions the author asks be addressed with other approaches? What is the source of identification? Could the model be generalized in any obvious ways?
   - Does the structural model seem to capture the key features of the market? What elements are missing from the model that might be important? Is it clear what the implications of ignoring these elements are for the estimate the author obtains?
   - Are there overidentifying restrictions of the model that could be tested? Can you think of alternative models of behavior for the market?

7. For papers not using structural empirical models:
   - Why does the author choose this particular model?
   - Does the author evaluate the model specification?
   - Are the interpretations of the estimates and/or hypothesis tests clear?
   - Are there parameters or distributions of interest that one could identify and estimate by imposing more structure from economic theory?

8. What are the data?

9. What are the key variables in the empirical model?
10. What is assumed to be exogenous and endogenous? How is the endogeneity addressed? Do you believe the solutions?

11. What variation in the data does the author rely on for identification of each element of the empirical model? What assumptions must be true about this variation for the author’s interpretation of the results to be correct? Are you worried about any of the assumptions?

12. Does the author make distributional assumptions? If so, are they important for identification? Does the author evaluate the robustness of the results to the assumption?

13. What are the conclusions of the author?

14. What alternative interpretations are plausible? Does the author test against any plausible alternatives, or provide any practical reason why they are less likely?