

The Economics of Internet Search

E512 – Fall 2013

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Course Description

OVERVIEW

This class will explore the economics of the internet search business. The class will consist of lectures, guest speakers, and short student presentations. The course will begin with an overview of internet search, including the technology and engineering as well as the role of search for consumers, in society and the internet industry. We will then study search as a platform market, considering the interaction between the different sides of the market (users, advertisers, and publishers) as well as competition across platforms on different sides of the market. The advertising marketplace will receive special focus, including the design of the auction. We will also study the role of search in the internet ecosystem, examining recent trends towards vertical integration and its impact on the development of independent internet products and services. Finally we will address search as a data-driven business. Throughout, the course will draw parallels to other internet platform businesses, using search as an in-depth case study through which broader themes can be understood.

Each lecture includes several assigned readings, including cases, news articles, web pages, and videos. Reading prior to class will be essential. Many concepts and industry examples relevant to search are not well covered in cases or textbooks, so students will need to educate themselves about the search industry through the collection of assignments, and be prepared to rely on conceptual frameworks presented in class that are at the frontier of the academic literature. The professor will also draw from her extensive industry experience to summarize information that is in the public domain but not well organized in existing books or articles. There will be a small number of guest speakers. The class will not require number-crunching or mathematical problem sets, but the logic behind the frameworks will be based on rigorous economic theory, much of which has been developed within the last 10 years. The syllabus includes supplemental reading for students interested in seeing the original research behind the concepts.

BACKGROUND ON INSTRUCTOR

Professor Athey's research focuses on the economics of the internet, online advertising, internet search, the news media, and market design. For the last six years she has worked as a high level advisor to Microsoft, serving as chief economist for several years. Her consulting work focused on all aspects of internet search and online advertising, but also covered other platform businesses including cloud computing. She is also actively involved in policy debates around the impact of the

internet on the news media, antitrust issues around internet search, and privacy issues on the internet. Both her research and consulting make use of “big data,” including data about internet search and web browsing, and it brings together economic theory and statistical tools from machine learning and econometrics.

COURSE OPERATIONS

In order to achieve the course objectives, you will be required to:

- Prepare cases and readings and participate in class discussion.
- Prepare one written assignment.

Class Discussion

The classes will begin by discussing the conceptual framework and additional industry facts in a lecture-style format, and in a few cases guest speakers will deliver a presentation. In the second part of the class, we will have a structured discussion based on the readings and lecture.

Cases will be used primarily to learn about industry facts, but won't in general be used in a “standard” case discussion format where the class focuses primarily on the problem presented in the case. So preparation should focus on the background rather than being ready to argue a position about the case problem.

Academic articles will also be used. Most of the articles have little mathematics or statistics in them, but students should not be concerned about technical material, but rather focus on the ideas and background information presented.

Criteria that are useful in measuring effective class participation include:

- (1) Is the participant a good listener?
- (2) Are the points that are made relevant to the discussion? Are they linked to the comments of others?
- (3) Do the comments show evidence of having completed assigned reading and putting the discussion in the context of conceptual frameworks emphasized in class?
- (4) Is there willingness to test new ideas, or are all comments "safe" (for example, repetition of case facts without analysis and conclusions, or just reiterating similar points made by others earlier)? A thoughtful question can be an important contribution.
- (5) Do comments lead to a clearer statement of the concepts being covered and the problems being addressed?

In considering class discussion, I emphasize three points. The first is that well posed questions are not only a legitimate way to interact but should be an important part of our discussions. The second is that in most of the issues we discuss, there is some controversy in the industry and even within firms about the best course of action for the relevant parties, or what the role of government regulation should be, or whether the big firms are behaving in a way that is good for the internet ecosystem and innovation. Enlightened debate about the best plan to implement can add significantly to the understanding of the issues. Thirdly, because of the varied backgrounds in the class, many of you will have important contributions to make based on your personal experience.

We will try to learn about your backgrounds over the course of the term, but you are encouraged to bring these experiences to bear in the discussion.

Because every faculty member has somewhat different expectations as to class operations and norms for individual behavior, here are my expectations.

- (1) I understand that other demands or illness may require you to miss a class, but missing any class of the six will require a written assignment to compensate. Two absences may require you to withdraw, as that would be 1/3 of the class.
- (2) Please let me know in **advance** if you must miss a class. If you do miss a class, please find out from a classmate what additional assignments might have been made, and what handouts you may have missed. After discussion of the class with a classmate, write a three-page summary of the main points in the class, to be handed in at the beginning of the next class.
- (3) As a courtesy to your classmates, please arrive on time.
- (4) Please use your name card in class.
- (5) I will call on students even if your hands are not raised, in order to ensure that everyone is part of the discussion.

WRITTEN ASSIGNMENT AND GRADING

One piece of written work is required for the course. You should individually complete a 5-page paper addressing *one* of the following topics. In each case the topic is fleshed out in bullet points, but you should not address *all* of the bullet points on a given topic, rather the bullet points are suggestions for things to focus on within the topics. You can modify the question somewhat, but please check with the instructor if you do so.

1. Search Engine Competition
 - Is it possible for multiple search engines to survive and be profitable?
 - Do you expect to see entry and exit of major players in search in the next 5-10 years?
 - What would you suggest to be key components of a strategy to challenge a dominant search engine in a given market?
 - How should a dominant firm defend its position?
 - What do you think about rebates for consumers who use the search engine?
Developing innovative new ad products to attract advertisers?
2. Search Advertising Markets
 - What changes do you expect to occur in search advertising in the next 5-10 years?
 - Why do you expect that larger search engines earn more money per search, and what strategies should a competing search engine consider to narrow the gap?
 - What should a dominant ad platform do to defend its position?
 - What can we learn from search about other online advertising markets?
 - Is search advertising best thought of as “just an auction,” and to the extent that it cannot, what are key considerations for managing the market? Provide a conceptual framework for balancing the sides of the market and discuss how it might be implemented.
3. Vertical Search
 - How does the growth of specialized search engines and the transition to mobile computing affect the traditional internet search business?

- What do you expect to see occur in terms of vertical integration in the future? Which verticals are most likely to have the market leader be an independent firm, and which ones will be vertically integrated?
4. Entry and Exit
- Would you recommend that a venture capitalist fund a start-up search engine? Why or why not? What attributes would one have to have for you to fund it?
 - Would you recommend that one of the tech firms that doesn't currently have a search engine should build one, or buy one? Why or why not? If a firm built one, how should the entry path progress?
 - Should a second-place search engine stay in the market, or sell to another firm? How does the answer depend on which firm it is?
5. Data driven business
- What does search teach us about data-driven businesses of the future? You may focus on management structure, skills required, or the role of MBAs and other skill sets.
 - If you were designing the metrics, measurement, and incentives for a search engine and its ad platform, what would be objective and what subjective?
6. Regulation
- Should search be subject to regulatory oversight (privacy, antitrust, etc.)?
 - What things do search engines do that are good for consumers and advertisers in the short and long run? What is harmful?
 - Is consumer choice enough to ensure that search engines make the short and long run decisions that are in the interest of society? Where are the biggest departures? You may take the perspective of either privacy or antitrust.

Grading

Your course grade will be based on:

Final project assignment:	60%
Class participation:	40%