Internet Economics

Academic Year 2016–17 Hilary Term
Day and Time: Thursdays 2-5pm
Location: TBC

Course Provider
Dr. Greg Taylor, Oxford Internet Institute, greg.taylor@oii.ox.ac.uk

Background

This course will provide an introduction to the economics of the Internet and to economics as a tool for social science research more generally. Economics is, at its heart, the study of why people, businesses, and policy makers make the choices they do—and of what can and should be done to influence these choices. Economics, though, is not just a body of knowledge. It is also a methodological framework that can be applied to many new and interesting problems that are not obviously of an economic nature. This has led to economics occupying a central role in policy formulation, competition/industrial regulation, consultancy, and business strategy—not to mention debates on issues ranging from intellectual property to network neutrality. Throughout this course we will see how economic analysis can be used as a tool for rigorous thinking about important social issues, and how strong positive and normative social implications emerge naturally from this foundation. We will also see how this framework has been (and is being) applied to a broad range of problems facing actors in the Internet and technology world.

No prior knowledge of economics is necessary.

Key Themes

- How does the Internet challenge existing models of economic behaviour and markets?
- What kinds of business models and practices are used by online firms?
- When and how should policy makers intervene to ensure the full social potential of the Internet is realised? What is the rationale for common forms of statutory or regulatory intervention?
- How do people and firms behave within the context of the Internet? What important economic considerations does the Internet introduce?
- How should interactions mediated by the Internet be structured? How should markets and online platforms be designed to facilitate good outcomes, and what are some standard by which the desirability of an outcome can be assessed?

Learning Objectives

At the end of this course students will…
• …have obtained an understanding of the basic concepts and methodology of microeconomic theory.

• …know how economic analysis can be applied to help understand interaction and exchange on the Internet and a broad range of other social phenomena.

• …understand how the Internet mediates interaction between agents, and how the precise mechanism of this interaction can affect social and commercial outcomes.

• …be able to formulate research questions that are amenable to economic analysis and use the tools of economics and game theory to provide answers to them.

• …be familiar with important work on the economics of the Internet authored by distinguished researchers in the field.

Assessment
Assessment is by a single essay not to exceed 5000 words in length, which will be used to assess how well the students have met the Learning Objectives set out above. This essay must be submitted via Weblearn by 12 noon on Monday, Week 1 of Trinity term.

Formative Assessment
Students will be required to write one short (advised length: 2000-2500 words) essay. This essay will provide a means for students to obtain feedback on the progress they have achieved.

Submission of Assignments
The summative assignment for this course is due on Monday Week 1 Trinity Term (24 April) by 12.00pm and should be submitted electronically via the Assignment Submission WebLearn Site. The assignment should also be submitted electronically by 5:00 pm on the same day to teaching@oii.ox.ac.uk. If anything goes wrong with your submission, email teaching@oii.ox.ac.uk immediately. In cases where a technical fault that is later determined to be a fault of the Weblearn system (and not a fault of your computer) prevents your submitting the assessment on time, having a time stamped email message will help the Proctors determine if your assessment will be accepted. Please note that you should not wait until the last minute to submit materials since Weblearn can run slowly at peak submission times and this is not considered a technical fault.

Full instructions on using WebLearn for electronic submissions can be found on Plato under General Information. There is also an FAQ page on the Assignment Submission WebLearn Site.

Please note that work submitted after the deadline will be processed in the standard manner and, in addition, the late submission will be reported to the Proctors’ Office. If a student is concerned that they will not meet the deadline they must contact their college office or examinations school for advice. For further information on submission of assessments to the examinations school please refer to http://www.ox.ac.uk/students/academic/exams/submission/. For details on the regulations for late and non-submissions please refer to the Proctors website at https://www.admin.ox.ac.uk/proctors/examinations/candidates/.

Any student failing this assessment will need to follow the rules set out in the OII Examining Conventions regarding re-submitting failed work.

Topics
1. An introduction to firm and consumer behaviour
2. Information economics  
3. Modelling strategic interaction using game theory  
4. Markets with platforms, network effects, and switching costs  
5. Consumer search  
6. Auctions  
7. Competition (antitrust) policy  
8. The economics of intellectual property, creativity, and technological innovation

For students without a strong background in mathematics, an optional mathematics primer lecture will take place at the beginning of Hilary Term (time and location TBC).

Summary of Topics & Reading List
(*') denotes technically advanced material.

1. An introduction to firm and consumer behaviour

How do economists approach the problem of modelling consumer and firm behaviour? In this topic we shall start to answer this question and see how economics can be used as a general toolbox to answer both positive and normative questions facing society. Key ideas such as competitive equilibrium, utility, supply, demand, monopolist pricing, natural monopolies, and externalities will be introduced. We will also begin to discuss how these tools can be used to think about new environments and interactions that have arisen on the Internet. The framework covered by this and the following topics will form the foundation for the analysis that follows in the remainder of the course.

Primary readings:
All students should acquaint themselves with principles 1–7 from chapter 1 (available at [http://www.cengage.com/economics/mankiw/samplechapter/Mankiw5e_Econ_Ch01.pdf](http://www.cengage.com/economics/mankiw/samplechapter/Mankiw5e_Econ_Ch01.pdf)) of

Mankiw, N. Gregory  

Secondary readings

Students should supplement the lecture material with follow-up reading of the relevant chapters from the following text as needed.

Varian, Hal R.  

2. Information economics

People make choices subject to the information available to them. But when two people interact it is often the case that they do not have access to the same information. For example, it's hard to be sure whether an eBay seller is holding something back in the description of an item for sale (or whether an online dating profile is completely upfront). This creates the need for trust—and the opportunity for insincere behaviour. In this topic, we will see that the consequences of such information asymmetry for otherwise well-functioning markets can be deleterious. But we will also learn what kinds of new market arrangements or institutional structures can be introduced to mitigate these effects. Important
specific issues to be covered include adverse selection, moral hazard, price discrimination, signalling, screening, and reputation. All of these issues take on a particular significance in an information society where technology mediates asynchronous and geographically dispersed transactions.

Primary readings:

George Akerlof, Michael Spence, and Joseph Stiglitz jointly received the Nobel Prize in economics for their work in this area. A good summary of their contributions can be found here:


The following paper presents a fairly intuitive model of second degree price discrimination in the context of designing information goods:


Secondary readings


• Chapter 2.


• Chapter 25


• Chapters 12, 26

3. Modelling strategic interaction using game theory

Economic actors cannot take the world around them and the actions of others for granted. Instead, they must act strategically because their economic outcome affects and is directly affected by the decisions of others. How to price a product, how to bid against others in an auction, how to choose a political platform on which to campaign, or how much to spend on R&D are all examples of fundamentally strategic decisions. Game theory is a formal framework in which such problems may be analysed. We will learn how to use game theory to solve static and dynamic situations of strategic interaction (known as games). We will also begin to see how these concepts can be applied to answer questions of economic interest such as how firms should strategically choose the price and characteristics of their product.
Primary Readings

A fairly concise treatment of the main ideas covered in this lecture can be found in the following text, which offers and especially good treatment of games of imperfect information.


An alternative general text on game theory, which is more accessible (especially on early topics) is


Secondary readings

For a textbook treatment of the IO models from this lecture see section 5.1, 5.4, and 7.1 of:


N.B. these IO models will often turn up as basic building blocks for more sophisticated models that we encounter later.

A basic introduction to the core ideas of game theory can also be found in


but the coverage of game theory in Varian is not, alone, sufficient to meet the needs of this course.

4. Markets with platforms, network effects, and switching costs

The following characteristics are very common in markets for digital goods and services: (1) markets are subject to network effects, (2) large platforms act as intermediaries for interactions, and (3) consumers are subject to switching costs or technological lock-in. Moreover, these properties give rise to a range of interesting phenomena such as market tipping, critical mass effects, self-fulfilling expectations, cross-subsidisation, and the provision of products and services for free. In this topic we will investigate how these closely related properties shape the functioning of a market and their implications for practice. The basic principles of platform pricing strategy will be introduced.

Primary readings


Secondary readings


(*) Caillaud, Bernard “Chicken & Egg: Competition Among Intermediation Service Providers”.

5
5. Consumer search

The Internet has altered the way in which consumers search for goods and services and, by the same token, the ways in which firms compete for the business of those consumers. In this topic we will review models of consumer search behaviour, investigate the effect of a dramatic reduction in search costs on firm competition in prices and product offerings, and discuss some of the strategies the firms may use in order to mitigate these effects. We will also discuss the implications of new search technologies for broader strategic considerations such as product design.

Primary readings

(*) Baye, Michael R. Morgan, John Scholten, Patrick


Secondary readings

(*) Armstrong, Mark Vickers, John Zhou, Jidong


(*) Bar-isaac, Heski Caruana, Guillermo Cunat, Vicente


(*) Baye, Michael R. Morgan, John


Baye, Michael R.

“Price Dispersion in the Small and in the Large: Evidence From an Internet Price Comparison Site”. 2004. Journal of Industrial Economics, 52(4),
<table>
<thead>
<tr>
<th>Morgan, John Scholten, Patrick</th>
<th>463–496.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• See chapter 2 for an introduction to some basic ideas in consumer search.</td>
</tr>
</tbody>
</table>

6. Auctions

In this topic we will begin by looking at the way in which economists think about auctions and, in particular, how game theory can be used to answer questions about bidder behaviour and efficient auction design. We shall then focus our attention on some important applications of auctions: (i) consumer-to-consumer auction websites such as eBay; (ii) public radio spectrum license auctions; and (iii) the search engine ‘position’ auctions that are commonly used to sell advertisement space by search engines. We will learn about the ways in which auctions have been used to resolve fundamental challenges in such markets, and how economics informed their design and operation.

**Essential readings**

|----------------|-----------------------------------------------------------------------------------------------------------------------------------|

**Optional readings**

On consumer-to-consumer Internet auctions:
<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Title</th>
<th>Journal/Publication Details</th>
</tr>
</thead>
</table>

On spectrum auctions

<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Journal/Publication Details</th>
</tr>
</thead>
</table>

On search engine ‘position’ auctions:

<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Journal/Publication Details</th>
</tr>
</thead>
</table>

7. **Competition (antitrust) policy**

Competition (antitrust) policy is an important branch of policy/law intended to protect the competitive process and ensure markets deliver fair and efficient outcomes for consumers and society. This is achieved by monitoring the behaviour of firms and intervening to prevent actions known to be contrary to these aims. This has been (and continues to be) a key theatre of conflict between policy makers and large technology firms, as both sides try to define and push the boundaries of acceptable conduct. But what kinds of conduct should be considered acceptable? Law-makers have answered this question by turning to economic analysis and we will use economics to look critically at some of the most common concerns that arise in competition cases. We will also see how economics can help to formulate an effective approach to competition policy and examine the economics underlying some important historical competition cases in the technology sector.
Essential readings

The following book gives a general overview of the economics of competition policy.


The first chapter of Motta provides a concise overview of the existing legal framework for competition policy in the US, EU, and UK. This serves as helpful background for thinking about how economics can inform competition policy. Treat the rest of Motta as a reference source to learn more about the topics covered in the lecture.

The following book gives a nice overview of the main economic and legal aspects of a variety of important competition cases, including several in the technology sector that we will consider during the lecture.


Note that, unlike many academic texts, Kwoka and White varies substantially between editions (earlier editions contain different cases). The sixth edition is recommended for its coverage of a number of important technology cases absent in earlier versions of the book.

Optional readings


8. The economics of intellectual property, creativity, and technological innovation

The legal framework that protects intellectual property plays a key role in enabling information content industries and technology markets to flourish. In this topic we will investigate the economic rationale for protecting intellectual property, think about the optimal design of intellectual property regimes, and consider alternatives to intellectual property protection. We will also look at the relationship between competition, intellectual property, and innovation, and at the impact of piracy on the producers of creative works.

Essential readings


Optional readings

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackburn, David</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oberholzer-Gee, Felix Strumpf, Koleman</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(*) Peitz, Martin Waelbroeck, Patrick</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• See Chapter 10 for a basic introduction to the economics of patents.</td>
<td></td>
</tr>
</tbody>
</table>