Economics of Strategy for Online and Digital Markets

Topics in Economic Theory and Policy, 31C01000

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Lecture 1: Introduction

Epilogue: Phantom packages

Figure: Aliexpress.com.

Online markets: Use of data

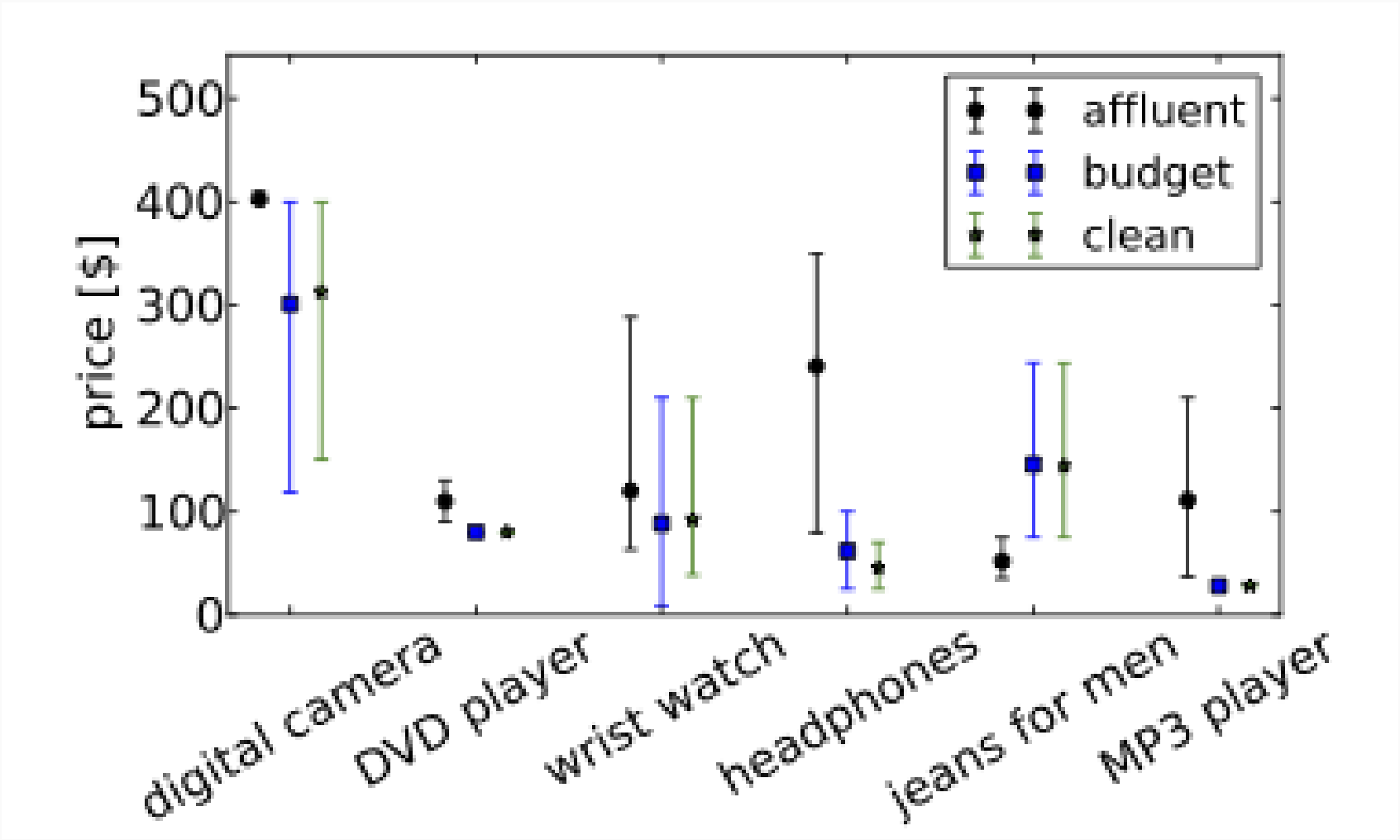


Figure: Mikians et al. 2012.

Platforms: Reduction of frictions

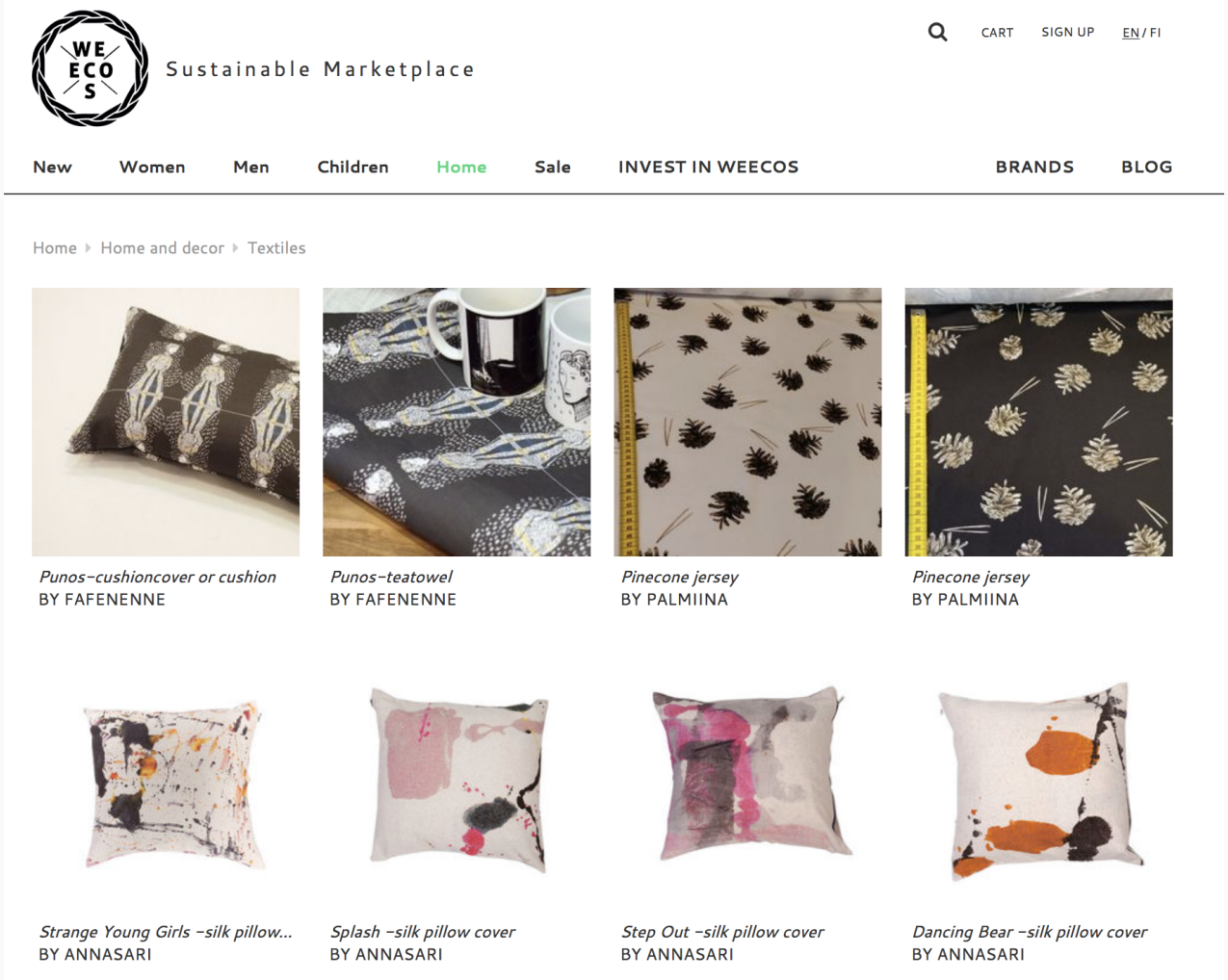


Figure: Weecos.

Why economics

- Preferences
- Efficiency

The role of preferences in a market place

- What you want to do
- How to find out what you want to do

Example: Preferences

- What you want to do
  - Buy a phone
- How to find out what you want to do... and change it
  - Design a mechanism (market place, auction, platform) to discover your preferences (in monetary terms).
  - Collect and use data to improve your design.
- We will be more precise in Lecture 2.

Example: Preferences

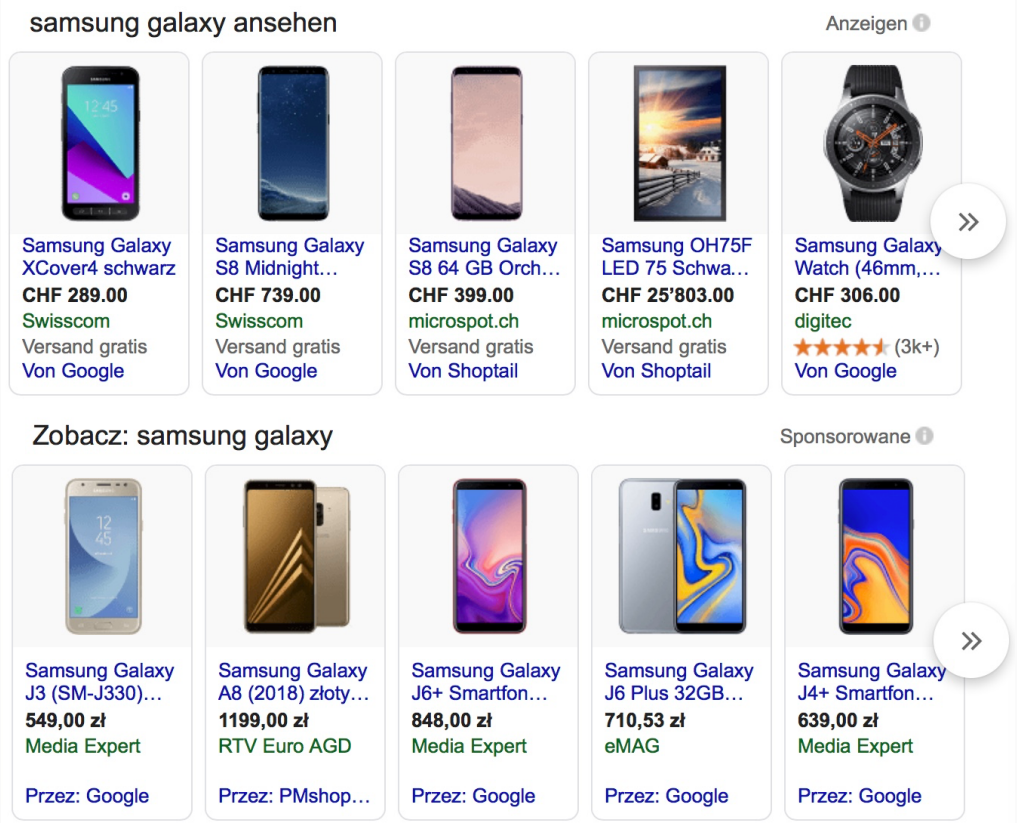


Figure. Two identical Google searches, one done in Switzerland (top) and another in Poland (bottom).

Figure: Google.

Efficiency

Why have the online and digital markets been so succesful?

- The usual suspects:
  - Economics of scale
  - Lower transaction costs
- But also need to consider
  - Search costs
  - Property rights
  - Asymmetric information
- Much of the course will be spent on these topics in detail, but we start already today.

In-class exercise: Search costs game

Write three things on a piece of paper that you are given:

1. B if you are a buyer and S if you are a seller
   - If your first name has odd number of letters you are B.
   - If your first name has even number of letters you are S.
2. Your private value for the item, i.e. the maximum price you are willing to pay or the minimum price you are willing to sell the item
   - Take the alphabet ordinal number of the first letter of your first name (A = 1, B = 2, . . .), use a proxy if needed.
3. The item you want to trade:
   - Apple, if you are an Aalto econ major.
   - Orange, if you are not an Aalto econ major.

As an example, Iivo gets you S and 9 from the first two points.

In-class exercise: Search costs game

- Your task is to maximize your payoff from the trade:
  - If you want to buy an item, find someone willing to sell the same item with the lowest price you can.
  - If you want to sell an item, find someone willing to buy the same item with the highest price you can.
  - The payoff from your trade is the difference between the price you can find and your private value.
  - If you cannot buy or sell your item, you get nothing.
- As an example, if Ivo can sell his orange for 10, his payoff is 1.
- The game will continue for x minutes.

In-class exercise: Search costs game

Now let's organize differently...

And discuss the results.

Property rights

Examples:

- Buyers
  - Questions on data
- Sellers
  - From the world of IPR and standards to platforms

Data

- Many of the most valuable companies in the world collect data of their users and use it to advance their business.
- Ownership of this data may not be clearly defined or understood; nor is its value.
- People exchange data of varying value against payment in the form of service(s) that they use.

Example: Netflix

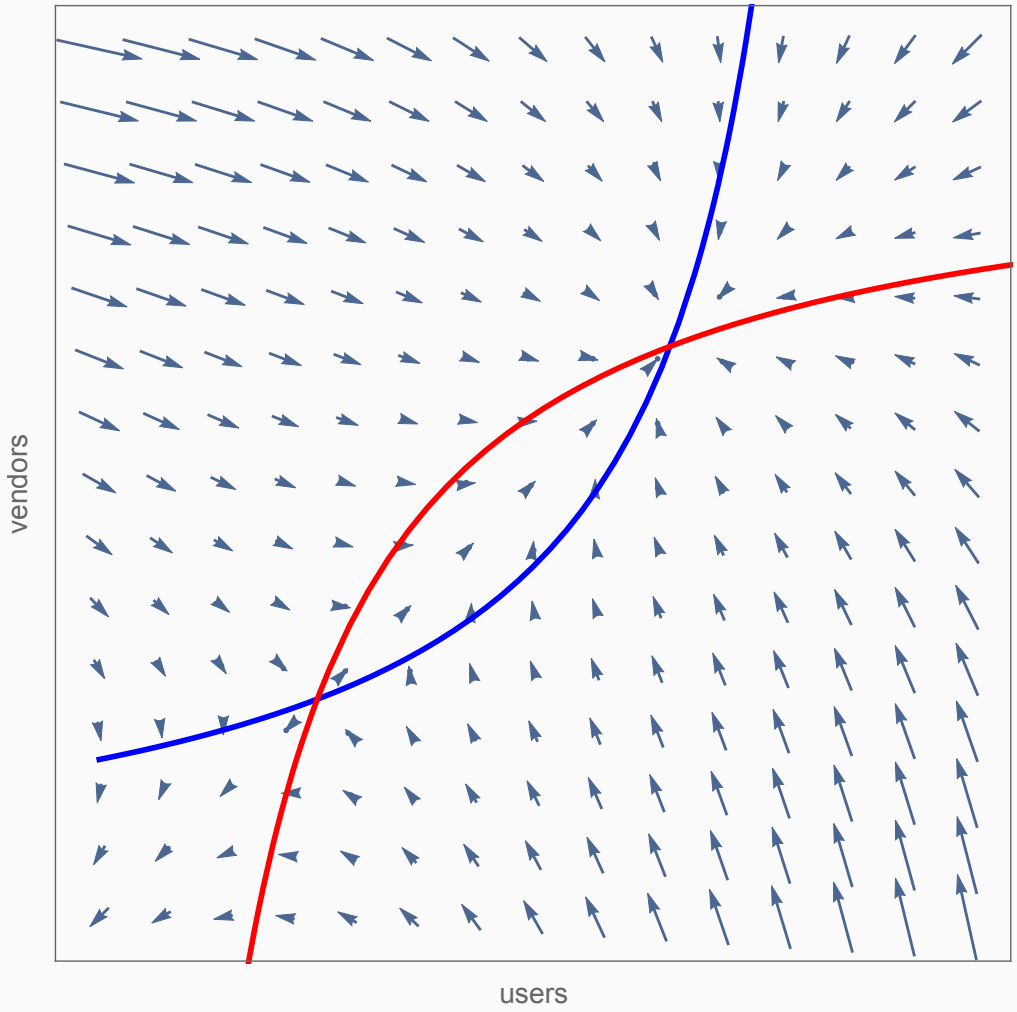
- Netflix has a 60 PB+ of data collected from all its operations, with 100+ million subscribers (around 600 MB per customer).
- Company policy is to only do data driven business decisions:
  - Recommend films
  - Choose which content to purchase
  - Create content (House of Cards)
  - Improve user experience through A/B testing
  - Give users information on which Internet provider to use
- But where should the limits on data use be?
  - Facebook was caught providing Netflix access to its user data without the consent of the users (NYT, 18 Dec 2018).

Source: Keijo Helanko / Aalto SCI.

From standards. . .

Figure: Wikimedia.

. . . to platforms



Asymmetric information

Your preferences are private information, but also the market places have information that you do not. This leads to many economic questions, such as:

- Adverse selection
- Signaling

We will discuss the role of information in many subsequent lectures.

Example: Adverse selection – Market for lemons

Market for used cars:

- Every day, 10 owners of 10 used cars consider selling.
- The cars differ in quality.
- Quality ranges from zero to 9,000 euro in equal steps.
- The average value of the cars is thus 4,500 euro.
- There are many prospective buyers and each would happily buy a car for a price equal to its true value, but not more.
- However, as the quality of the cars is not known for the buyers they are only willing to pay the average of the previous day.
- Sellers are willing to sell if they can get more than half the true value.

Akerlof, 1970.

Adverse selection robust strategies?

Figure. Earl Munz.

Figure: CBS Television.

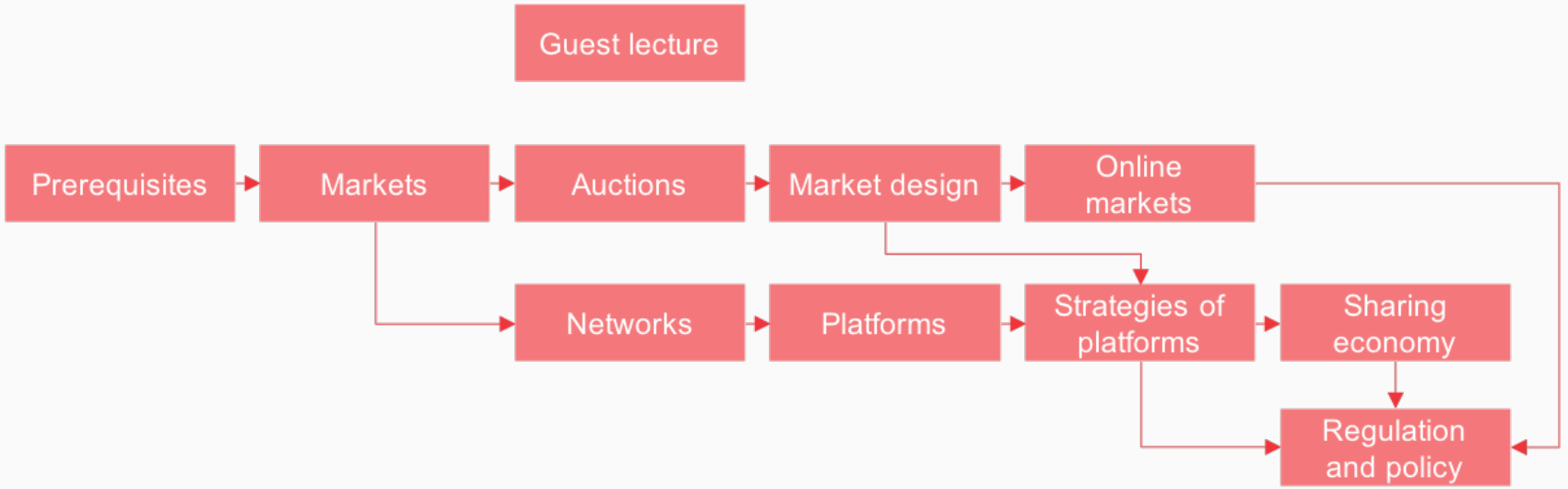
Signaling

- Instead of pretending to be crazy, try to obtain a proof of quality.
- Popular tool in online markets are reviews and ratings by previous customers.

Learning outcomes for the course

- Understand the economics of firm decisions and strategies, and competition in online and digital markets.
- Learn how the special features of such markets affect decisions.

Schedule


Guest lecture
Prerequisites
Markets
Auctions
Market design
Online markets
Networks
Platforms
Strategies of platforms
Sharing economy
Regulation and policy

Economics story that we are going to cover: Part I

Lecture 2 PREREQUISITES

- Preferences
- Basics of game theory
- Pareto efficiency

Lecture 3 MARKETS

- Institutions
- Supply and demand
- Competitive equilibrium
- Perfect competition – oligopoly – monopoly

Economics story that we are going to cover: Part I

Lecture 4 AUCTIONS

- Motivation: price discovery, competition
- Private values vs. public values
- Auction types

Lecture 5 GUEST LECTURE

- Economics of games
- Janne Peltola from Supercell

Guest lecture: Games

Figure: Supercell.

Economics story that we are going to cover: Part I

Lecture 6 MARKET DESIGN

- Setting the right incentives, implementation
- Ad-market in the internet
- Radio spectrum auctions

Lecture 7 ONLINE MARKETS

- Reduction of frictions
- Use of data
- Build trust

Economics story that we are going to cover: Part II

Lecture 8 NETWORKS

- What happens when my demand affects your demand: externality
- How does that affect the firm decisions: difference between complements and substitutes

Lecture 9 PLATFORMS

- Two (or more) distinct sides whose benefit stems from interacting through a common platform

Economics story that we are going to cover: Part II

Lecture 10 STRATEGIES OF PLATFORMS

- Design, governance, openness, pricing

Lecture 11 SHARING ECONOMY

- Peer-to-peer markets, trust, reputation

Lecture 12 REGULATION AND POLICY

- Digital rights, market power, discrimination

Grading

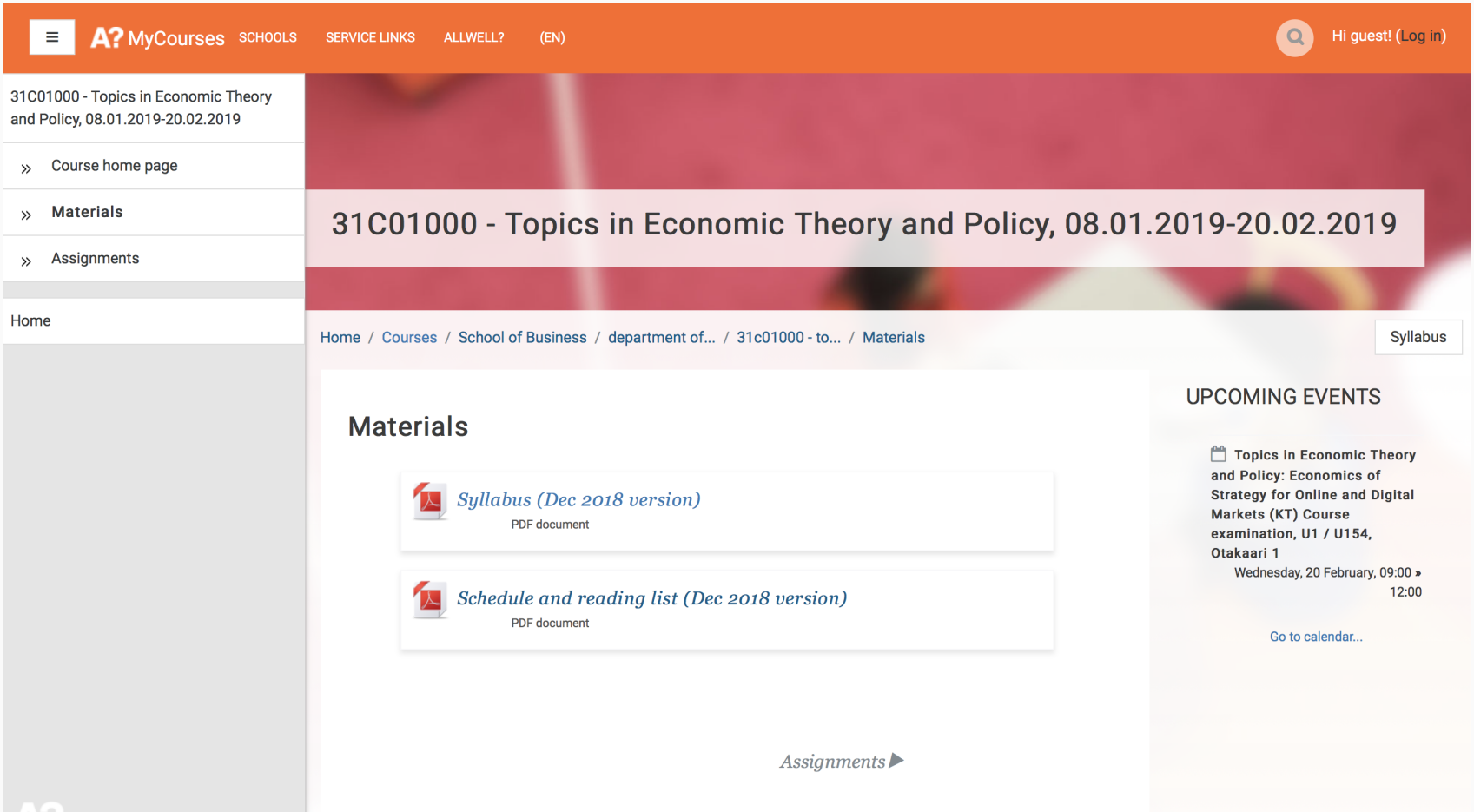
The final grade will be based on:

- 40 % exam
- 60 % assignments

There will be six graded exercise sets.

To pass the course a passing grade in the exam is required.

MyCourses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Syllabus
Materials
Syllabus (Dec 2018 version)
PDF document
Schedule and reading list (Dec 2018 version)
PDF document
Assignments
UPCOMING EVENTS
Topics in Economic Theory and Policy: Economics of Strategy for Online and Digital Markets (KT) Course examination, U1 / U154, Otakaari 1
Wednesday, 20 February, 09:00 » 12:00
Go to calendar...

Reading material

- Especially at the start of the course *The Economy* (www.core-econ.org) should be helpful for anyone in need to update their basic economics.
- Later, we will use mostly academic journal articles as reading material for each lecture.
- See details in the schedule which can be found in the course page at MyCourses.
- When needed, I'll give more detailed reading instructions, some of the material can get overly technical for the purposes of this course.

Exercises

There will be 6 sets of exercises initially as follows:

- Lectures 1–2
- Lecture 3–4
- Lecture 5
- Lectures 6–7
- Lectures 8–9
- Lectures 10–12

i.e. the exercise deadlines are grouped as above in MyCourses.

Learnings today

- Economics tools used extensively in online and digital markets.
- Relationship between preferences and data.
- Sources for efficiency improvements: search costs, frictions.

Exercises for Lecture 1

1. Come up with at least one example of both
   (a) an online market place
   (b) a digital platform

   that you would be interested to hear about later during the course.
2. List the top 5 reasons why you think Amazon has been so successful.

Readings for this lecture

- Athey, S. and M. Luca. 2018. Economists (and Economics) in Tech Companies. Harvard Business School Working Paper, Working Paper 19-027.

Next time

Prerequisites

- Preferences
- Game theory
- Pareto efficiency