Intermediate Microeconomics

An Introduction

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Spring 2016

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INTRODUCTION

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What is Microeconomics?

- Is it defined by subject matter?
- "A social science that studies the production, distribution and consumption of goods and services"?

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Plausibly true in 1911

- *Agricultural Credit in the United States* by E. W. Kemmerer
- *Will the Present Upward Trend of World Prices Continue?* by Irvin Fisher
- *The Report of the Tariff Board on Cotton Manufacturers* by Melvin T. Copeland
- *The Report of the Tariff Board on Wool and Woolens* by F.W. Taussig
- *Marketing of Agricultural Lands in Minnesota and North Dakota* by John Lee Coulter
- *Profit on National Bank Notes* by Spurgeon Bell

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Less true now….

- *The Impact of Legalized Abortion on Crime* by John Donohue and Steven Levitt
- *Corruption, Norms, and Legal Enforcement: Evidence from UN Diplomatic Parking Tickets* by Ray Fisman and Edward Miguel
- *Racial Preferences in Dating: Evidence from a Speed Dating Experiment* by Ray Fisman, Sheena Iyengar, Emir Kamenica and Itamar Simonsen
- *A Theory of Rational Addiction* by Gary Becker and Kevin Murphy
- *Professionals* (soccer players) *Play MinMax* by Ignacio Palacios-Huerta
- *The Endowment Effect in Capuchin Monkeys by* Keith Chen, Venkat Lakshminarayanan and Laurie Santos

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What is Microeconomics?

- More usefully defined by its approach
- Based on two core ideas:

1. People respond to incentives
   - Wages
   - Punishment
   - Taxes and Benefits
   - Risk of Infection or injury
   - Profits
   - Sex
   - Effort
2. Environments adjust until they are in equilibrium
   - Prices adjust to equate supply and demand
   - Strategies of firms adjust until each is optimal given what the other is doing

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What is Microeconomics?

- These two ideas are extremely powerful
  - Can be used to address a huge range of topics
  - Hence the scope of subject matter in economics journals
- Incentives and equilibrium are both important if you want to make predictions
  - E.g. a firm wants to know what happens if they increase their prices
  - A government wants to know what will happen if they increase taxes

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The Importance of Incentives and Equilibrium

- Incentives are important
- Equilibrium is important

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Incentives are Important

- Policy
  - Reduce rat population by paying people for rat pelts
- Effect
  - Industrious locals set up rat farms

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A Rat Farm

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Incentives are Important

- Policy
  - Paying fossil hunters per piece of bone they find while fossil hunting
- Effect
  - Fossil hunters smash bones they find into lots of small pieces

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Incentives are Important

- Policy
  - Bail out major banks if they get into financial trouble to prevent a collapse of the financial system
- Effect
  - Encourage bankers to lend more recklessly because they know they will be bailed out

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Incentives are Important

- Policy
  - Introduce laws that make it hard for firms to sack workers in order to reduce unemployment
- Effect
  - (Could) stop firms from hiring workers and so increases unemployment

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Incentives are Important

- Policy
  - Encouraging people to buy health/car/house insurance
- Effect
  - Reduce efforts made by people to stay healthy/not crash/protect their home

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Incentives are Important

- An example with numbers
  - You are a state governor trying to decide whether to increase workers' compensation
  - Current total benefit is $500 for an injury/illness
  - Currently 5 injuries/illnesses per 100 employees
  - The state has 1 million employees
  - What would the cost be of increasing benefits to $800?
- NOT # injuries x increase in cost = 50,000*300 = $15,000,000
- Why?
  - Because increased incentives may lead to an increase in reported injuries and illnesses
    - May take less care at work
    - May be more likely to call in sick
- Estimate [Kaestner and Carroll]: $300 increase in benefits increases reported illnesses/injuries by about 1 per 100 employees
- Cost of policy $23,000,000

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The Importance of Incentives and Equilibrium

- Incentives are important
- Equilibrium is important

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Equilibrium is also Important

Rotherham
(Pop: 200)

Sheffield

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Equilibrium is also Important

Rotherham
(Pop: 200)

Highway
Journey: 1 hour

Sheffield

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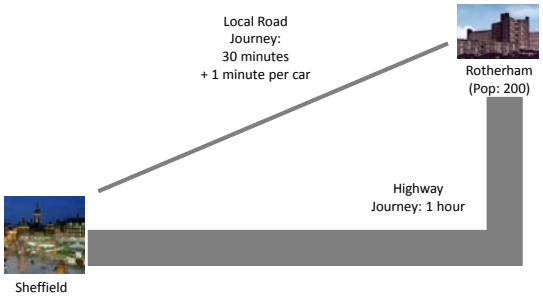
Equilibrium is also Important



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Which Route to Take?

- Say less than 30 cars are currently taking the local
  - Travel time is 30mins + 1 x number of cars < 1hr
  - Everyone wants to take the local road
- Say more than 30 cars are currently taking the local
  - Travel time is 30mins + 1 x number of cars > 1hr
  - Everyone wants to take the highway

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Which Route to Take?

- Say exactly 30 cars are currently taking the local
  - Travel time is 30mins + 1 x number of cars = 1hr
  - Everyone indifferent between taking the highway
- This is an Equilibrium: Given what everyone else is doing, no one has incentive to change their plans
  - This is our prediction of how many cars will take the local
  - More than 30: cars would switch from the local to the highway
  - Less than 30: cars would switch from the highway to the local

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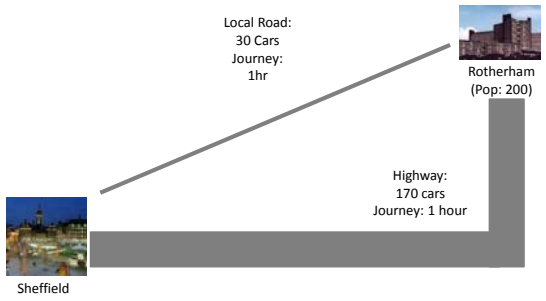
Equilibrium



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Expanding the Local Road

- Rotherham City Council has a plan to double the capacity of the local road

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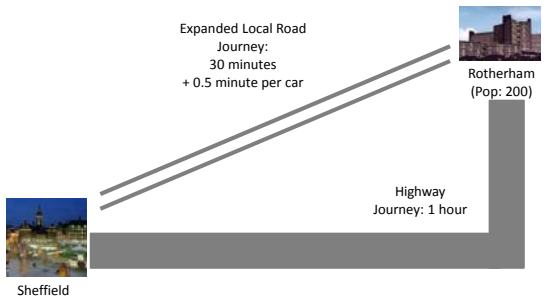
Expanding the Local Road



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Expanding the Local Road

- Will this reduce journey time?
- Yes, say Rotherham city council
  - 30 people use the local road
  - It currently takes them 1 hour
  - Under the new road, it will only take them 45 minutes
- Conclusion: Rotherham city council may not be the sharpest tools in the box

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Expanding the Local Road

- Imagine that Rotherham City Council were right
  - Time taken on highway: 1hr
  - Time taken on local road: 45 mins
  - Those on the highway would want to switch
  - This is not an Equilibrium
- Road improvements will lead people to switch from the highway to the local road
  - When will this process stop?
  - When journey times are the same on the highway and the local road

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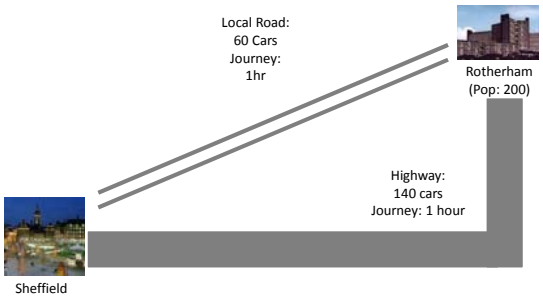
Equilibrium II



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COURSE AIMS

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Aims

- To teach you the basic tools economists use to analyze
  - Response to incentives
  - Equilibrium
- The good news: There is basically only three things for you to learn
  - Optimization
  - Market Equilibrium
  - Game Theory

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Aims

- Optimization
- Market Equilibrium
- Game Theory

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Optimization

- (Most) of economics makes a specific assumption about how people behave:
- They maximize a well specified mathematical function….
  - Utility function for individuals
  - Profit function firms
- …but are constrained in what they can choose
  - Budget constraints for individuals
  - Technological constraints for firms
- We solve models of constrained optimization to make predictions about how people behave
  - The single most important thing you will learn in this course

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Aims

- Optimization
- Market Equilibrium
- Game Theory

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Market Equilibrium

- Market equilibrium aims to understand what happens when agents interact in an economy
  - How are prices determined?
  - Who ends up with what stuff?
- Considers the case in which agents (firms and individuals) are 'small'
- They buy, sell and produce goods which they trade at market prices
- Consumers and firms cannot influence prices, so they take them as given
  - E.g. prices in shops are fixed
  - Don't negotiate, decide only whether to buy or not
- Market equilibrium: Prices adjust to equalize supply and demand

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Aims

- Optimization
- Market Equilibrium
- Game Theory

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Game Theory

- Sometimes, the assumption that agents are 'small' is a bad one
- The actions of agent A may directly affect those of agent B
  - E.g. 'Oligopoly' – Price that Apple set for Macs will directly affect PC manufactures
- Agent B may react to the actions of agent A, which may in turn will affect agent A
  - PC manufacturers will respond to changes in Mac prices which will in turn affect demand for Macs
- Agent A needs to take this into account when they decide what to do
- This is the arena of Game Theory: the study of strategic interaction

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SOME WORDS OF WARNING

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Limits of Economics

- Is economics "fundamentally flawed"?
  - Failure to predict market crash
  - Interventions in Russia and Argentina didn't go so well
  - Seen as 'cold hearted', and inherently favoring the rich
- Many criticisms aimed at the assumption that people are rational agents that maximize a well-specified utility function
  - People have well defined utility functions?
  - The always choose the best option?
  - People are selfish?

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"All models are lies: The art is telling useful lies"

- Economists rely on simplified models of the environment
- In many cases, these simplified models are fantastically useful
  - Predictions
  - Understanding
- But they have their limits
- IT IS IMPORTANT TO REMEMBER THIS!
- Studying where the standard model goes wrong is one of the most interesting areas of economics
  - Behavioral economics
  - Economics and psychology
- We will touch on these areas towards the end of the course

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Economics has very few 'universal truths'

- This course will not allow you to conclude
  - "Markets are good things"
  - "A minimum wage creates unemployment"
  - "Healthcare should/should not be provided by the government"
- These are complicated questions, with complicated answers
- But it will give you the tools to join the debate
- Normative conclusions, in particular should be examined critically
  - Normative economics: what policy makers should do
  - Positive economics: what people do do

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COURSE OUTLINE

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Course Outline 1: The Core Curriculum

1. *Consumer Theory: (2 weeks)*
2. *Equilibrium Theory: (2 weeks)*
3. *Producer Theory with Perfect Competition: (2 weeks)*
4. *Producer Theory with Monopoly (1 week)*
5. *Game Theory (2 weeks)*

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Course Outline 1: The Fun Bits

1. *Choice Under Uncertainty (1 week)*
2. *Behavioral Economics (1 week)*

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A NOTE ON MATHEMATICS

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A Note on Maths

- Mathematics is the language of economics
- This is not because we like being difficult
- It is because it is fantastically useful
  - Makes ideas clear and precise
  - Makes it easier to see what is going on
  - Allows us to make predictions we could not make using intuition alone
- The maths we will use in this course is not complicated…
- …but we will be using it very regularly
  - Calculus
  - Algebra
  - Logic/proofs
- Your life will be a *lot* easier if you make sure you are comfortable with the basics before we start
- 1st assignment (not for handing in) will give you some practice

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