Economics 1

weeks 1-5

Supply, Demand, and Prices

Simon Clark

meet the lecturers: semester 1

Simon Clark

Supply, Demand, and Prices

Sean Brocklebank

Production, Economic Efficiency and Market Failure

David Candon

Maths for Economics

meet the lecturers: semester 2

David Candon

Introduction to Macroeconomics

Andreas Steinhauer

Growth, Employment, Inflation, and Short-run Fluctuations

Before we start…

Is Economics 1 the right course for you?

We offer another economics course:

Economic Principles and Applications

Which course?

- ***Economics 1*** is for students who
  - do an Economics degree (compulsory);
  - did Higher, A(S)-level, IB Economics or equivalent;
  - did Higher, A(S)-level, IB Mathematics or equivalent;
  - intend to transfer into a degree in economics

- Otherwise,

  Economic Principle and Applications (EPA) is likely to be the better course for you.

Economics 1 LEARN site

All course information
Lecture notes and other teaching materials
Course Handbook

- ***There are three lectures per week***
  - Tuesday, Thursday and Friday from 16:10 to 17:00 in this room
  - In semester 1, the Thursday lectures will be about maths

- ***There is a two-hour tutorial every week***
  - Tutorials start in week 2 and run until week 10 each semester
  - Times vary; you will be signed up ***automatically*** by the Student Allocator
  - Attendance and homework submission at tutorials is 10% of your final grade

Assessment

- ***30% : four class exams (one at the end of each 5-week block)***
  - The October, February and March exams are 60 minutes, MCQ-based and potentially worth 10% each, but we only count the best 2 out of 3. They occur
    - Semester 1 – Saturday after week 5 (22 October)
    - Semester 2 – Saturday after week 5 (18 February)
    - Semester 2 – Early in week 11 (date to be confirmed)
  - The December exam is 90 minutes, MCQ and written, and counts for 10% of your final grade
- ***10% : Tutorial attendance & homework***
  - Details on the next slide
- ***10% : Essay***
  - Due in the second semester
- ***50% : Final exam***
  - Consists of MCQs and written questions, scheduled in the April/May diet

Tutorial attendance and engagement (10%)

- To earn points, students must bring homework at the *beginning* of their tutorial. The homework must be at least three sides of written or two pages of typed work which attempts to answer the questions from the current week's tutorial sheet. The answers do not have to be correct; all that is necessary is that the questions are attempted. You also need to submit a 'declaration of work' coversheet.

- Each week that a student brings homework and attends their tutorial, they earn 1 mark;

- Each week that a student attends their tutorial without bringing homework, they earn 0 marks. But you should still attend. Each week students miss their tutorial, they earn 0 marks.

- A maximum of 14 marks are available, (14 marks are worth 10% of your final grade; fewer marks are worth fewer points on your grade!)

Economics 1 Reading Group

Optional reading group

- Six meetings over the year

Lots of work (reading & writing) for the chance at up to a 6% bonus on your final grade

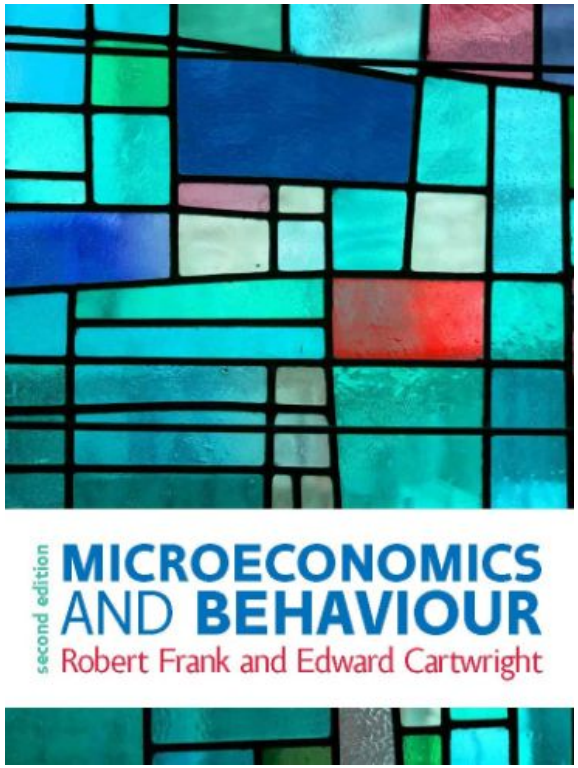
- Only makes sense if you really like reading and talking about economics
- **More details in the** course handbook

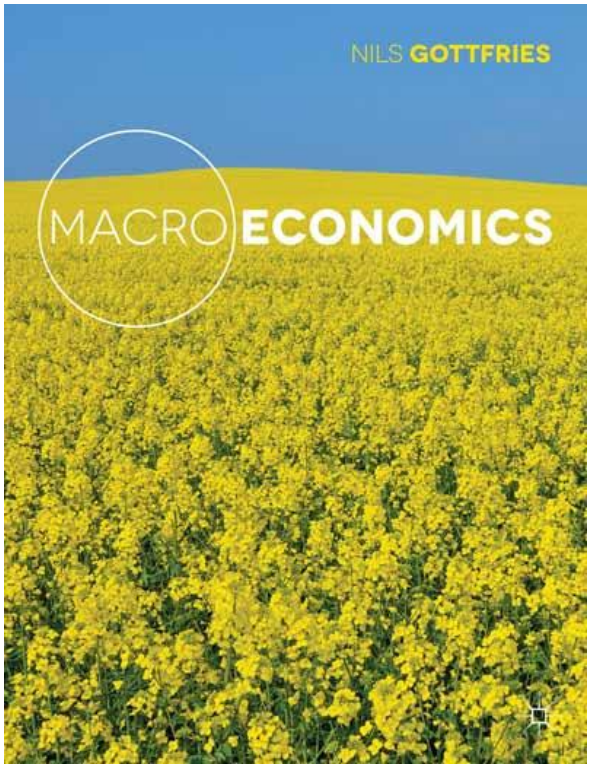
First meeting : Wed 05 Oct @ 6:15pm

Topic of first meeting and other details have already been emailed (please contact sean.brocklebank@ed.ac.uk if in doubt)

Textbooks

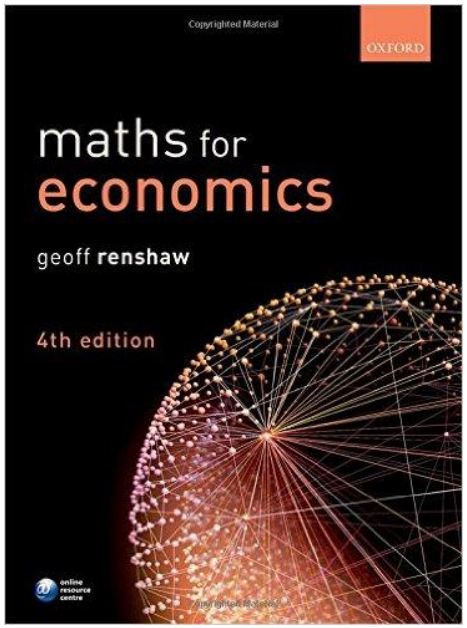
- ***There are two core textbooks***
  - One for micro in semester 1, one for macro in semester 2
  - These books will be re-used in Economics 2





Math textbook

- ***There is a suggested math text***
  - Most of you will want the maths book, although it is not obligatory if you are comfortable with the maths
  - Note that the book is in the 4th edition, but you can get any edition (they're pretty similar)



Helpdesks

- Twice-weekly Economics 1-only helpdesk staffed by some of the best students who took Econ 1 last year
- Provisionally it is on Wednesdays and Fridays from 1pm to 2pm in room G3 of 30 Buccleuch Place, but check learn for updates

maths in economics: why?

Many economic magnitudes are inherently numerical - prices, quantities, interest rates

maths offers a very efficient way to express relationships - between price and quantity demanded, or unemployment and inflation

maths enables us to analyse many interacting relationships at the same time

a central concept in economics – of rational maximising agents – is naturally modelled using maths

we need to formulate and test our theories using statistical techniques which require some maths

using maths to develop economic theories reduces the possibility of logical errors and inconsistencies

what maths do we use in Economics 1?

basic algebra
logs and indices
maximization
solving simultaneous linear equations
basic calculus

these techniques are developed and applied as part of the economics

on Learn:

- a guide 'Mathematics for Economics' outlining the techniques used
- maths exercises included in weekly tutorial sheets.

leaflet prepared by Economics Network
http://www.economicsnetwork.ac.uk/themes/maths_formula_sheet.pdf

http://www.metalproject.co.uk/, website of Mathematics for Economics: enhancing Teaching and Learning; esp. link to Teaching and Learning Guides

For a non-mathematical treatment, take
Economics: Principles and Applications (EPA)

Outline of weeks 1 - 5

Frank & Cartwright

Thinking Like an Economist	Ch1
Supply and Demand	Ch2
Rational Consumer Choice	Ch3
Individual and Market Demand	Ch4

week 5, Saturday, 22th October, MCQ exam

some things to note

these lectures will not be repeating the text book

read the text book ahead of the lectures

if I don't mention something in the lectures, it may still be examined

to illustrate the economic approach, consider some interesting problems:

the market for lemons

the prisoners' dilemma

ice cream wars

the demand for things without a market
e.g. good state schools

the market for lemons

a seller has a car that is either good (a plum) or bad (a lemon)

	plum	lemon
value to buyer	3,000	1,500
value to seller	2,500	1,000

the difference of 1,500 between plum and lemon reflects repair costs to convert a lemon to a plum

with complete information:

a plum would sell for between 2,500 and 3,000

a lemon would sell for between 1,000 and 1,500

what if the quality of the car is ***private information*** and hence unknown by the buyer?

if the buyer cannot tell a plum from a lemon then there cannot be separate prices for the two types

So, how much would a buyer pay for a car of unknown type?

Recall:

	plum	lemon
value to buyer	3,000	1,500
value to seller	2,500	1,000

if the proportion of plums and lemons offered for sale is 50-50, then a randomly selected car would have an expected or average value to the buyer of ½ (3000+1500) = 2250

this is the maximum price a buyer would be willing to pay for a randomly selected car

but at this price or less no owner of a plum would be willing to sell, since he values a plum at 2,500

only lemons are offered for sale

this is a severe case of ***adverse selection***

theory developed by Akerlof in 1970s (got Nobel prize in 2001)

Question

Suppose the proportion of plums and lemons offered for sale is ¾ and ¼ and a buyer is offered a randomly selected car.

What is the maximum price a buyer would be willing to pay?

1	1,000
2	1,500
3	2,025
4	2,625
5	3,000

reminder:

	plum	lemon
value to buyer	3,000	1,500
value to seller	2,500	1,000

if the proportion of plums and lemons offered for sale is ¾ and ¼ , then a randomly selected car would have an expected or average value to the buyer of

$$\frac{3}{4} \times 3000 + \frac{1}{4} \times 1500 = 2625$$

at this price, both sellers of plums and lemons are willing to sell

a buyer might get lucky or unlucky

but he or she is willing to take the risk

note: we are implicitly assuming *risk neutrality*

market failure

if the maximum price a buyer is willing to pay is less than 2500, only lemons are offered for sale

buyers realise this (or find out through various sources) and hence would not be prepared to pay more than 1,500

only lemons are sold, even though there is a potential gain from a market in plums

owners of plums cannot convince buyers that their cars are plums

mere verbal assurances about quality are not convincing since this is a tactic that can be **costlessly imitated** by owners of lemons

the ubiquity of (possible) adverse selection

insurance markets	careful/reckless drivers
	healthy/already ill people
labour markets	conscientious/lazy workers
capital markets	entrepreneurs with high/low risk projects
asset markets	car owners know if the clutch is no good
	house sellers know where the dry rot is

adverse selection and liquidity

banks selling bundles of debt (CDOs) know if the underlying loans are toxic or not

here, market failure means a breakdown of secondary financial markets and a possibly severe loss of liquidity

this can be contagious and have macro (economy wide) consequences

signalling: one way to overcome adverse selection

an **informative** signal of quality is one that it is not worth the owner of a lemon imitating

e.g. the seller of a plum can offer a warranty that a lemon owner would find unprofitable

in labour markets, education can be seen as a signal of productivity

not because education makes you productive

but because only productive workers can acquire education at low cost

this view of education developed by Spence, who shared the 2001 Nobel prize with Akerlof and Stiglitz

the prisoners' dilemma

two prisoners are questioned separately by police

the police have some evidence and each prisoner can deny or confess

each cell shows 1st then 2nd prisoner's payoff (negative of prison sentence)

first prisoner \ second prisoner	deny	confess
deny	-10, -10	-25, 0
confess	0, -25	-20, -20

Question : what happens?

assume this situation occurs only once, and they do not meet again

the numbers capture all aspects of the prisoners' preferences

they cannot make binding agreements before they are caught

1 they both confess

2 they both deny

3 one confesses and one denies

first prisoner \ second prisoner	deny	confess
deny	-10, -10	-25, 0
confess	0, -25	-20, -20

the prisoners' dilemma:
the economist's answer

1 they both confess

second prisoner

first prisoner	deny	confess
deny	-10, -10	-25, 0
confess	0, -25	-20, -20

the payoffs in the prisoners dilemma have a very particular structure

importantly:

- there are no binding agreements
- payoffs are completely given by the numbers
- the game is only played once

the Prisoner's dilemma is a metaphor for a wide range of situations, where cooperation is mutually beneficial but not individually rational

collusion in cartels	restrict or expand output set high or low prices
trade wars	low or high tariffs, quotas
overfishing	restrict or expand catch
CO_2 emissions	restrict or expand pollution
arms races, advertising	

some interesting questions to consider

What if the situation is repeated? Does cooperation emerge?

How can we test this theory?

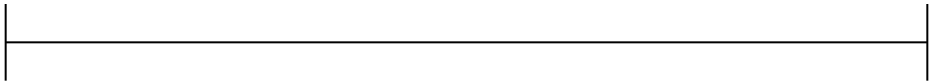
Experimental economics is now a very active research area

In practice, people do seem to cooperate more than the theory suggests? Why? Maybe economics does not have the answer to everything!

ice cream wars

2 ice-cream sellers simultaneously choose a location on a beach

consumers are distributed evenly along the beach, and buy from the nearest seller



each seller's profits is proportional to sales

where do they go?

Question: where do they go?

1 0 and 1

2 0.25 and 0.75

3 0.33 and 0.67

4 both at 0.5

5 none of the above

Hint:

Both sellers know what you know.

Test your answer by asking if either seller can do any better, given the position of the other.

where do they go?

1 0 and 1

2 0.25 and 0.75

3 0.33 and 0.67

4 both at 0.5

5 none of the above

4 both at 0.5

life's a beach

again, this can be seen as a metaphor for many other situations

we have to reinterpret what we mean by 'the beach' (known as the Hotelling line)

a common application is to explain a lack of product variety, e.g. cars, breakfast cereals

in models of political parties, the beach could be a Left-Right spectrum, parties choose a political position, and consumers are voters

some interesting extensions to consider

what if there are 3 or more sellers?

what if the beach is not a line but the circumference of a circle, or the whole circle, or some other space

how would we introduce transport costs?

and what do transport costs mean in a non-geographic setting?

how do we combine competition in both price and variety?

the demand for things without a market

a common problem is how to estimate the benefits of a project or policy
e.g. a new bridge, or laws restricting traffic speed

if available, data on existing prices and quantities is a starting point

if not, behaviour in other markets may give some information e.g. travel costs

- implicitly it costs time, fuel etc to access some resources, such as a country park
- if people pay these costs this reveals something about how they value the resource
- can we use data on time, fuel costs etc to infer these values?

hedonic pricing

- people are prepared to pay more for goods of higher quality, or that embody desired characteristics
- or will accept less pay for jobs that provide valued benefits
- require more pay for jobs that have costs or disadvantages

think of goods or jobs as a bundle

can we put a value on each component of the bundle?

using house prices

a house: price reflects

- size, style, number of rooms
- location:
  - proximity to amenities (parks, transport links, access to state schools)
  - local environment (e.g. noise etc)

implicitly there is a market for ‘peace and quiet’, or access to good state schools’

we can collect data on prices and characteristics

then statistically disentangle influence on price of each characteristic

house prices and school quality

Cheshire and Sheppard, (Economic Journal Nov 2004)

looked at house prices in Reading in 1999/2000

price: min=£45,000 max=£385,000 mean=£127,000

price depends on *(inter alia):*

detached, semi, terrace etc	size of plot
no. of bedrooms, baths etc	if near Thames
distance from centre of town	if near industry
transport links	ethnic mix

quality of primary school (success rate at Key Stage 2)
quality of secondary school (success rate at GCSEs)

after much statistical analysis, they worked out 'the price of quality'

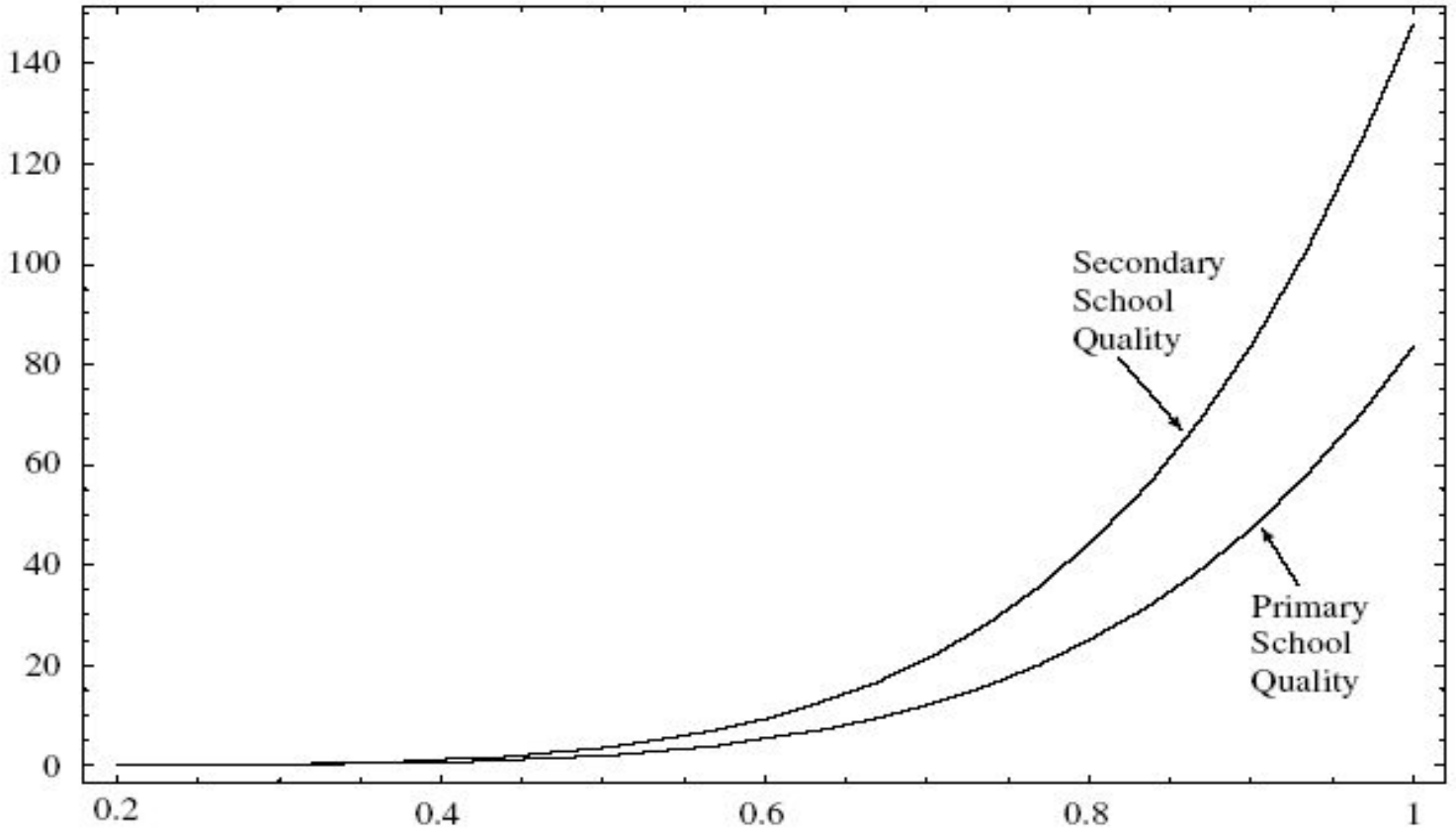


Fig. 3. *Comparison of Price of Quality*

[9] Evaluated for a house whose value and other characteristics are equal to sample mean values.

conclusions from the study

For the average house the difference between the best and worst schools is

- secondary: 19% or £23,750.
- primary: 34% or £42,550.

Home buyers discount for risk: the more the variability in a school's past results, the less is paid for current school quality. i.e. they are *risk averse*

Only the 'best' (top 10%) state schools command major money: being in the catchment area of an average school compared to even that of the very worst has little impact on prices.

The added cost for a home with access to the best state schools is close to the total cost of school fees for comparable private schools.

conclusions from these problems

simple numerical examples can be very enlightening

simple models can be enlightening – no need for lots of complications

eventually we do need to test the models with data

some concepts appear in totally different settings

apparently unrelated problems sometimes have a common structure

How is economics done?

constructing theories

- simplifying assumptions
- generate (testable) conclusions

this is where maths often comes in

data gathering

- statistical sources
- "experiments"

theory testing

- confront theory with data
- change theory, gather more data

this is where econometrics comes in

use the theory and data to make statements about the world, formulate policy, make money etc.