

ECO 202 Principles of Economics II

Lecture 1

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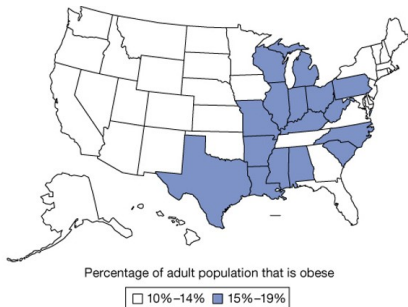
- 1 Three Key Economic Ideas
- 2 The Economic Problem That Every Society Must Solve
- 3 Economic Models
- 4 Microeconomics versus Macroeconomics
- 5 Tools: Using Graphs and Formulas

Three Key Economic Ideas

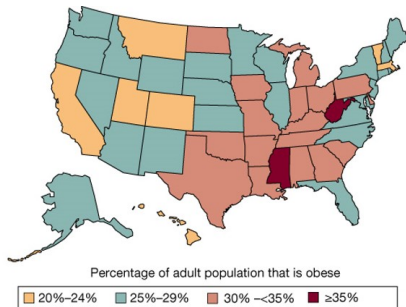
Three Key Economic Ideas

- People are rational.
 - People use *all information* to achieve goals.
 - Benefit-cost analysis.
 - Example: individual's decision is based on utility maximization and firm's decision is based on profit maximization.
- People respond to incentives.
 - As incentives change, the actions that people take will also change.
 - Policy-related.
 - Example: tax reform, seat belt enforcement, etc.
- Optimal decisions are made at the margin.
 - Decisions can be binary (0 or 1, market entry or exit).
 - Decisions can also be continuous (output quantity, time allocation).
 - Example: time for studying ECO202 one more hour versus watching an extra hour of TV.
 - Comparing marginal cost (MC) and marginal benefit (MB) is known as **marginal analysis**.

Example: Obesity and Health Insurance



(a) Obesity rates in 1994



(b) Obesity rates in 2013

The Economic Problem That Every Society Must Solve

- **What** goods and services will be produced?
 - Back to ECO201, trade-offs are everywhere due to the scarcity of resources.
 - Individuals (micro), firms (micro), government (macro) must decide on the goods and services that should be produced.
 - The criteria? Opportunity cost.
- **How** will the goods and services be produced?
 - Production function, usually capital-labor.
 - Technology.
- **Who** will receive the goods and services produced?
 - Distribution problem.
 - Government policies of redistribution is necessary.

In order to respond to the three previous economic problems, different economy has different solutions.

- **Centrally planned economy:** An economy in which the government decides how economic resources will be allocated.
- **Market economy:** An economy in which the decisions of households and firms interacting in markets allocate economic resources.
- **Mixed economy:** An economy in which most economic decisions result from the interaction of buyers and sellers in markets but in which the government plays a significant role in the allocation of resources.

China's 13 Five-Year Plan

- Efficiency.
 - Productive efficiency: goods and services are produced at the lowest cost.
 - Allocative efficiency: combined with consumer preferences where marginal benefit is equal to marginal cost.
 - Why not efficient? Information, externalities.
- Equity: the fair distribution of economic benefits.
 - Tax policy and government transfer.
 - Welfare programs.

Economic Models

- Make assumptions.
 - Output is produced by how much capital you invest and how many labor you hire and augmented by technology, i.e., $Y = AK^\alpha L^{1-\alpha}$.
- Form testable hypotheses.
 - $\alpha = 0.33$.
- Test hypotheses.
 - Using regression techniques and statistical tools, we can test if $\alpha = 0.33$.
- Revise model and fit data.
- Explain results (Positive versus Normative Analysis).
 - What it is versus what it should be?
 - Objective versus subjective.
 - Facts versus values.

Microeconomics versus Macroeconomics

- Microeconomics is the study of
 - Households and firms' decisions.
 - The interactions of the market participants.
 - Their responses to government policies.
- Macroeconomics is the study of the economy as a whole.

Microeconomics versus Macroeconomics

Examples of microeconomic issues

- How consumers react to changes in product prices
- How firms decide what prices to charge for the products they sell
- Which government policy would most efficiently reduce teenage smoking
- What are the costs and benefits of approving the sale of a new prescription drug
- What is the most efficient way to reduce air pollution

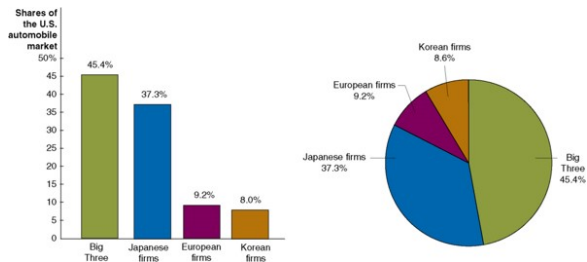
Examples of macroeconomic issues

- Why economies experience periods of recession and increasing unemployment
 - Why, over the long run, some economies have grown much faster than others
 - What determines the inflation rate
 - What determines the value of the U.S. dollar
 - Whether government intervention can reduce the severity of recessions
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Tools: Using Graphs and Formulas

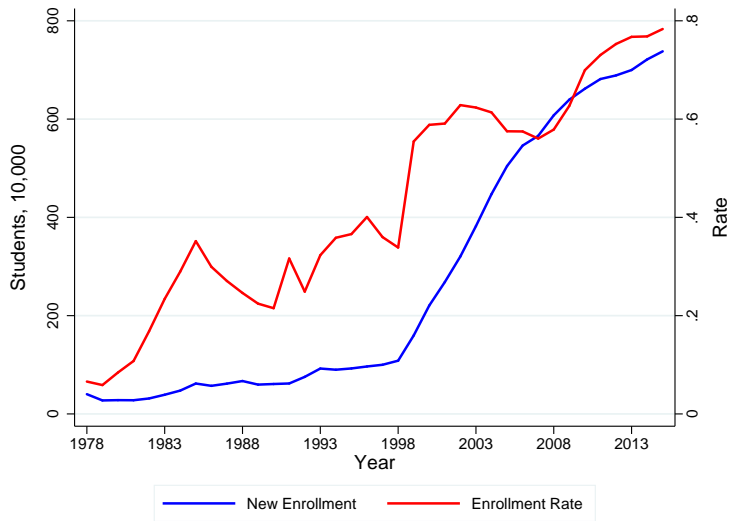
Bar Graphs and Pie Charts

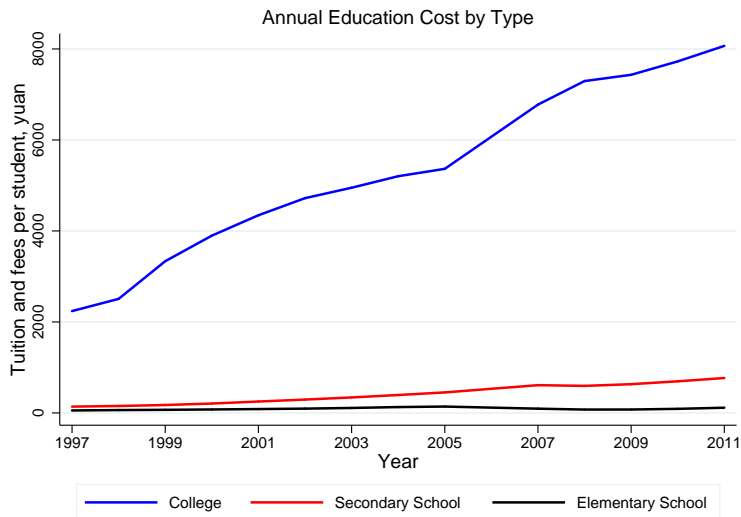
It all starts with raw data and a good representation of your data is important.

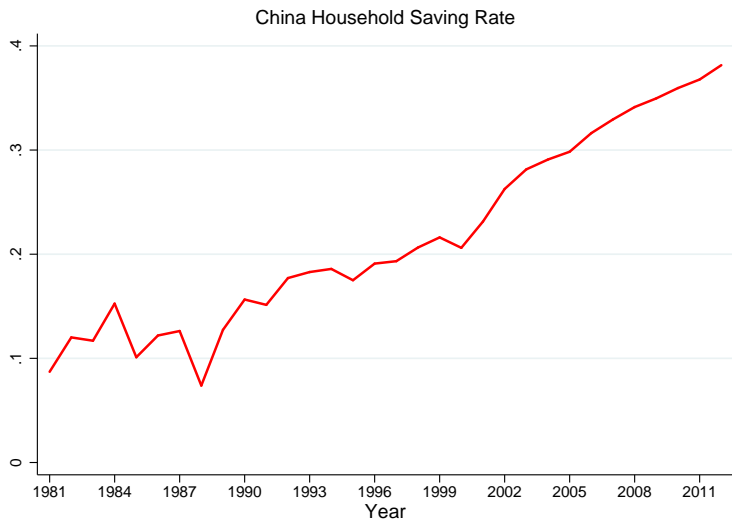


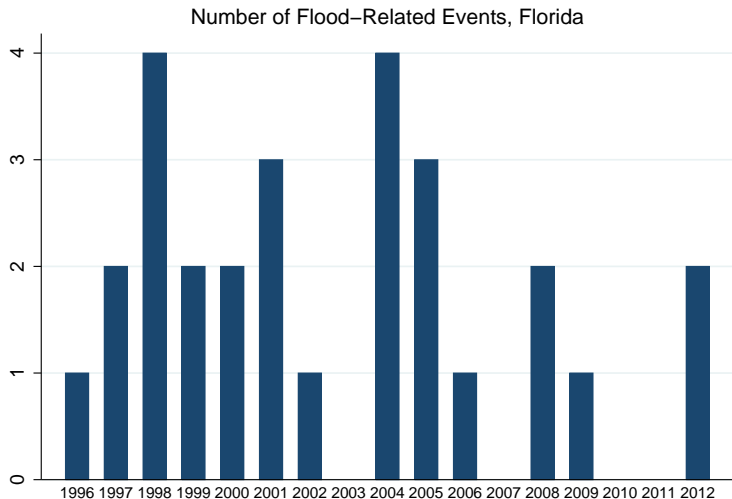
The left panel shows a bar graph of market share data for the U.S. automobile industry; market share is represented by the height of the bar. The right panel shows a pie chart of the same data; market share is represented by the size of the “slice of the pie”.

Time Series Graphs

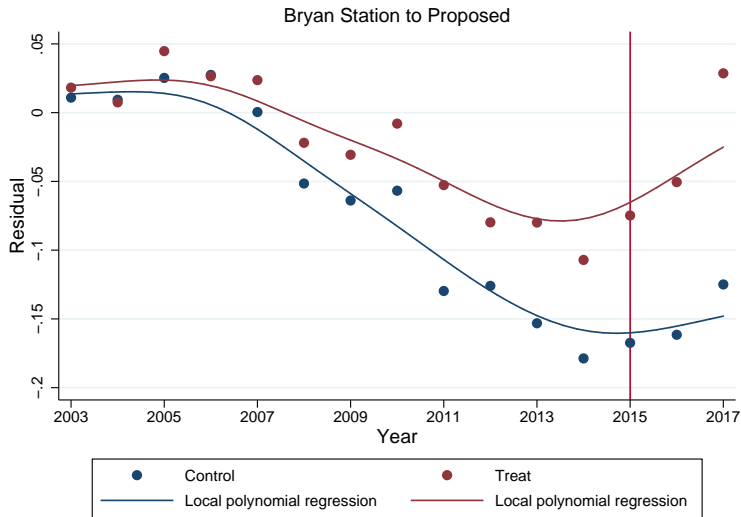








Source: The National Flood Insurance Program.

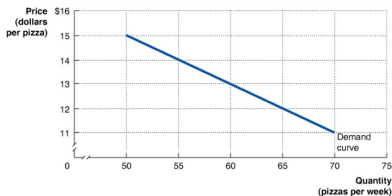


Price versus Quantity

Suppose we observe a set of price of pizza and quantity associated with each price like this

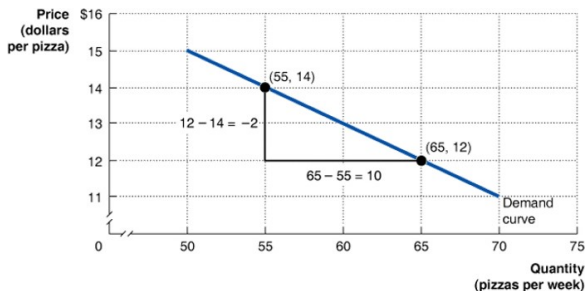
Price (dollars per pizza)	Quantity (pizzas per week)	Points
\$15	50	<i>A</i>
14	55	<i>B</i>
13	60	<i>C</i>
12	65	<i>D</i>
11	70	<i>E</i>

We can plot them in a two-dimensional graph,



Calculating the Slope

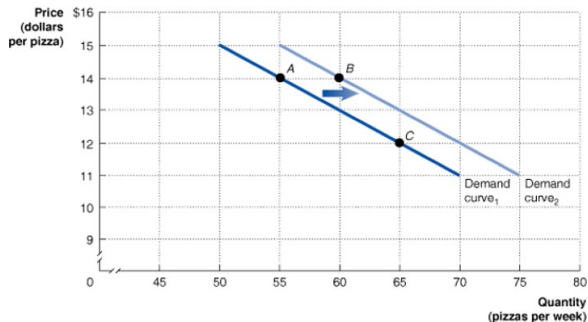
$$\text{Slope} = \frac{\text{Change in value on the vertical axis}}{\text{Change in value on the horizontal axis}} = \frac{\Delta y}{\Delta x}$$



$$\text{Slope} = \frac{\text{Change in value on the vertical axis}}{\text{Change in value on the horizontal axis}} = \frac{\$12 - \$14}{65 - 55} = \frac{-2}{10} = -0.2$$

Shift of Demand Curve

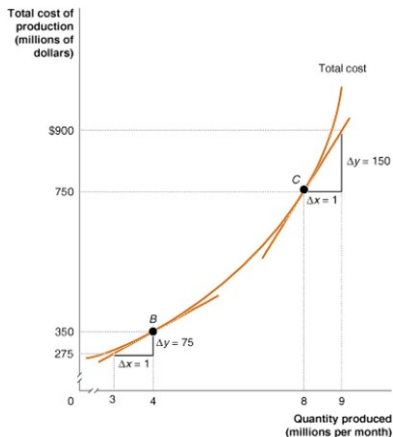
If the price of pizza is \$14 (point A), an increase in the price of hamburgers from \$1.50 to \$2.00 increases the quantity of pizzas demanded from 55 to 60 per week (point B) and shifts us to Demand curve 2.



When using graphs to analyze data, keep in mind that correlation does not imply causation.

The Slope of a Nonlinear Curve

Economic relationship is not always linear. The following curve shows the total cost of production for various quantities of Apple Watches.



(b) The slope of a nonlinear curve is measured by the slope of the tangent line

The Slope of a Nonlinear Curve

One way to measure the slope of a non-linear curve is to measure the slope of a tangent line to the curve, at the point we want to know the slope.

$$\frac{\Delta\text{Cost}}{\Delta\text{Quantity}} = \frac{75}{1} = 75$$

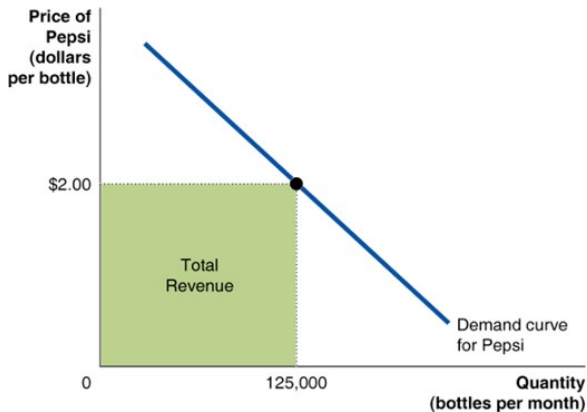
$$\frac{\Delta\text{Cost}}{\Delta\text{Quantity}} = \frac{150}{1} = 150$$

Formula for a Percentage Change

One important formula is the percentage change, which is the change in some economic variable, usually from one period to the next, expressed as a percentage.

$$\text{Percentage change} = \frac{\text{Value in the second period} - \text{Value in the first period}}{\text{Value in the first period}} \times 100$$

Combining Formula and Graph



Here, total revenue is equal to the quantity of 125,000 bottles times the price of \$2.00 per bottle, or \$250,000. The area of the green-shaded rectangle shows the firm's total revenue.

- Make sure you understand the economic concept the formula represents.
- Make sure you are using the correct formula for the problem you are solving.
(Specification)
- Make sure the number you calculate using the formula is economically reasonable.
(Economic interpretation)