Lecture 1

Microeconomics principles

Question

Is using Wechat free?

If we ask this guy the same question… answer would be a YES

But you should ask yourself the following question:

What do you give up when you use Wechat?

- Using Wechat may not cost you money, but it does take your time.
- What can you do with the time?
- How does that translate into money?

This lecture

In this lecture, we introduce the *economic way* of thinking about the world.

- We economists study the **choices that people make**, from big decisions like choosing a career to daily decisions like chatting and browsing with Wechat.
- To understand those choices, we often focus on the **costs and benefits** involved.

The Scope of Economics

Economics involves far more than making or saving money.

- If you are taking this course because you want to make a big fortune, then you made a big mistake
- That's what *personal finance* course or *accounting* course will teach you

The Scope of Economics

At a broad level, economics try to understand **all types of human choice**:

- A person's decision to whether to go to a university or not
- a person's decision to enter ZJU or other university
- whether to have a girl friend/boy friend during your stay in college
    - and if the answer is yes, whom?
- whether you are going to pursue a master or PHD after graduation from ZJU

Here are some examples…

Crime and Punishment:
An Economic Approach

Gary S. Becker

University of Chicago and National Bureau of Economic Research

What Has Economics to Say About Racial Discrimination?

Kenneth J. Arrow

Racial discrimination pervades every aspect of a society in which it is found. It is found above all in attitudes of both races, but also in social relations, in intermarriage, in residential location, and, frequently, in legal barriers. It is also found in levels of economic accomplishment; that is, income, wages, prices paid, and credit extended. This economic dimension hardly appears in general treatments of economics, outside of the specialized literature devoted to it. Nevertheless, it is important not only in itself but as a test of standard theories.

Choice—not money—is the unifying feature of all the things that economics studies.

This immediately leads to two questions

- 1. Who makes the choices
- 2. What limits or defines the scope of choices

Two concepts

To give you a more precise definition of choice, we first need to introduce two important concepts:

- economic agents
- resource allocation.

Economic agents

- **An economic agent is an individual or a group that makes choices.**

Economic agents

- **A consumer,** who chooses to buy an iphone, or Huawei, or Xiaomi.
- **An instructor,** who chooses to teach microeconomics with a lot of mathematics equations or not
- **A student,** who chooses to attend my class or not
- **A businessman,** who chooses to keep his factories in Wenzhou, or move the machines to Vietnam.
- **A president of Ukraine**, who choose to stay and fight for his country or run away

Economic agents

- Not all economic agents are individuals.
- Sometimes economists simplify their analysis by treating a group of people as economic agents

Economic agents

Example

- Apple, **the company**, prices the iPhone to maximize its profits (instead of David Cook, the individual)
- The **Chinese government** chooses whether and how to fight back unfair clamp down on China's high-tech enterprises

Scarce resources

Scarce resources : things we want to have, but the amount that we want (if it is free) exceeds the amount that is available

Why does scarcity exist?

- Unlimited wants
- Limited resources

Scarce resources

- That's why we ***normally*** do not talk about scarcity of air
  - Even if air if free, the wants on air do not exceed the air available on earth
- But what about ***clean air***? Is that a scare resource?

Scarce resources

The big question:

- The world we live in has limited resources but unlimited wants, in this **situation how does the society decide who gets what?**
- In other words, **how does society allocate the scarce resources in the economy?**

Definition of Economics

- **Economics** is the study of how agents choose to allocate scarce resources and how those choices affect society.

Definition of Economics

Two important point in this definition

- 1. individual choice
- 2. Moreover, how these choices affects other people in the society
- You may notice that there is a *loop*: you choice/action affects other people's choice, other people's choice then affects your choice…

Your choices affects others

Example: Suppose you choose to buy a car. This choice not only affects yourself but other people

- Generate sales tax, which the government can use to fund a university
- Generate congestion on the road
- If you drives recklessly, or drive when you are drunk, then the car may generate risks to other drivers.

Economists study the original choice and its multiple consequences for other people in the world.

But why study choices?

Understanding people's choices is practically useful for two reasons.

1. Describes or explain what people **actually do** (positive economics)

2. Recommends what people, including society, **ought to do, or what is the right thing to do** (normative economics)

Aside: Positive v.s Normative Statement

Positive statements describe what things *actually are*

Normative statements describe what things *ought to be*

- Understanding the difference of the two is extremely useful, not only when studying economics, but also in everyday life

Positive Economics

Positive Economics Describes What People Actually Do

- ***Positive statements can be true or false***
- ***But can be confirmed or tested with data.***

Positive Economics

Example: consider the following statement:

- “In 2019, 6300 freshmen come to Zhejiang University. Among them, male: female= 60.1% : 39.9%”.
- These statistics **can be wrong**, but they are trying to describe what it is
- **Anyone can check whether they are right or wrong**

Positive Economics

Another example

- One of my former teacher, who is one of the leading experts of international trade in China, predicted that the China-US trade war will stop before June, 2019
- This is also an example of positive statement
- Now we find that he is wrong

Positive Economics

Another example

- Suppose a law is passed that dictates cloth producers in Zhejiang to meet certain quality standard.

Questions:

1. How will it affect the incomes of cloth producers

2. What effect will it have on the number of businessman who decide to become cloth producers?

3. How is that going to affect cloth producers in other provinces?

3. How is that going to affect consumers?

Normative Economics

Normative Economics Recommends What People Ought to Do

Example: continue with our cloth producer example

- The following is normative questions:
- **Is this law, on balance, a good thing?**
- **Should we subsidize those who are hurt by the policy?**

Normative Economics

- Normative economics is almost always dependent on ***subjective judgments***, which means that normative analysis depends at least in part on personal feelings, tastes, or opinions.
- **So whose subjective judgments do we try to use**?

Normative Economics

Advising a single agent:

Suppose I am helping my mom, who is 60 years old, to decide how much risk to take in her investments.

- I might ask my mom about her own preferences regarding investment risk.
- Suppose my mom said that she would not have any good sleep at night, if her retirement savings were invested in the Shanghai stock market, which does fall sharply from time to time.

Normative Economics

- Two investment choice A and B
- A is riskier than B: the return is much more volatile than B
- but A has a higher expected return
- Suppose after I have informed my mom about these facts, she still chooses B
- Then it might be the right thing for me to help my mom to find something like B to invest

Important

- Here I, the economist, plays the role of engineer: **finding the investment portfolio that will deliver the level of risk-return that my mom wants**
- And that's the key—what the person I advised wants, not what I want!

Normative Analysis and Public Policy

But things get much more complicated when we are trying to advise a group of people!

- Public policy: a set of uniform rules to all people involved
- But people involved may have different views or conflict of interest
    - As a result, most of the times, public policies could create winners and losers

Example 1

- Building a large waste treatment plant may benefit residence in a city
- But people who live near the location would strongly oppose the plan

Example 2

- Suppose the government is considering abandoning the *Hukou* (户口) system
- Who would welcome and who would oppose this policy recommendation?

Example 3

- The government imposed a cap (i.e., an upper bound) on housing prices

Example 4

- The government bans online celebrities (流量明星)

Example 5

- The government bans the use of ChatGPT

What economists can do

- Economics can provide answers to the positive questions, at least in principle
- However, economics **by itself** can never answer a normative question;
- In the Hukou example, your answer to the normative question must depend on how you feel about the relative merits of helping immigrants versus protecting local people's interest

Normative Analysis and Public Policy

- When a government policy creates winners and losers, economists need to make some ***ethical judgments*** to conduct normative analysis.
- People with different ethics or moral philosophies will make different policy recommendations.
- But sometimes these two things mingled together because there does not exist ***the theory***

Normative Analysis and Public Policy

- Ethical judgments are usually unavoidable, because there are not many policies that make *everyone* better off.
- Deciding whether the costs experienced by the losers are justified by the benefits experienced by the winners is partly an ethical judgment.

Normative Analysis and Public Policy

- Examples:
- Is it ethical to shut down factories in Hebei province or Shandong province, so Beijing residents can enjoy clean air?
- Is it ethical to forbid second-hand housing transactions so housing price could stabilize?
- These public policy questions—which all ask what society should do—are normative economic questions.

Three pillars of economic analysis

- Optimization
- Equilibrium
- Empiricism

Optimization

(Constrained) optimization: choose the best feasible option, given whatever (limited) information, knowledge, experience, and training the economic agents have.

Optimization

Many different forms of constraints:

- Financial budget
- Time constraint
- Your mental capacity
- Education you received

Optimization

- Here, *information* means the set of information that are available when you make the choice.
- Optimization means you rely on the information you currently have, **NOT that you can perfectly foresee the future**

Information and optimization

Example

- Cai Xukun got a girlfriend in the first year of college
- A year later, Xukun found that she is the not right person and break up with her

Question: Some of Cai Xukun's friends think that Xukun is **not optimizing** in the first place. Are they correct?

Information and optimization

- The fact that the relationship fails does not necessarily mean that Xukun is not optimizing in year 1
- More likely, this is because the information he discovered in year 2 were not available back in year 1.
- Instead, at both year 1 and year 2 he is making optimization, given his information available

Every person is unique

- Finally, it is important to note that what we optimize varies from person to person and group to group.
- Most firms try to maximize profits, but most people are **not** trying to maximize their personal income.
- It is important to remember that people have different **objective functions.**

Trade-offs and Budget Constraints

Trade-offs: **some benefits must be given up in order to gain others.**

Trade-offs and Budget Constraints

- Economists use **budget constraints** to describe trade-offs.
- A budget constraint is the set of things that a person can choose to do (or buy) without breaking her budget.
- Budget can be about anything: money, time, your energy, attention……

Example: time constraint

$$5 \text{ hours} = \text{Hours surfing the Web} + \text{Hours working at part-time job.}$$

Exhibit 1.2 Possible Allocations of 5 Free Hours (Round Numbers Only)

Each row reports a different way that a person could allocate 5 free hours, assuming that the time must be divided between surfing the Web and working at a part-time job. To keep things simple, the table only reports allocations in round numbers.

Budget	Hours Surfing the Web	Hours at Part-Time Job
5 hours	0 hours	5 hours
5 hours	1 hours	4 hours
5 hours	2 hours	3 hours
5 hours	3 hours	2 hours
5 hours	4 hours	1 hours
5 hours	5 hours	0 hours

Opportunity Cost

What you give up can be called “cost”

Attending my class has cost, you could use the time you spend to do a lot of other things

- Sleep
- Playing video games in your dormitory
- **Attending other classes that are less challenging**
- **发呆**

All these mean that you have to give up a lot of **opportunities**

- **A cost is a forgone opportunity**

Opportunity Cost

- Evaluating trade-offs can be difficult, because so many options are under consideration.
- Economists tend to focus on the **best alternative activity.**
- We refer to this best alternative activity as the **opportunity cost.**

Example

- A big fan of TF Boys won a lottery and was given the opportunity to hug one of the three boys, **but only one**.
- She likes Jackson Yi the most, and prefers Wang Junkai to Wang Yuan
- Of course, she optimized by choosing to hug Jackson Yi
- What is the opportunity cost of doing this?

Note

- In calculating opportunity costs, it is important not to double-count.
- The fan can hug Junkai or Wang Yuan if she choose not to hug Jackson Yi, but she can not hug both.
- The time spent in class could have been used to go to the movies or to study for an exam, but not both.
- Therefore, it would not be correct to count both the forgone movie and the forgone studying as costs.

Assigning a Monetary Value to an Opportunity Cost

- It is difficult to estimate the real monetary value of the cost in real world circumstances
- but helpful to have a rough estimate.

Budget	Hours Surfing the Web	Hours at Part-Time Job
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5 hours	4 hours	1 hours
5 hours	5 hours	0 hours

Assigning a Monetary Value to an Opportunity Cost

- Suppose you can find a part-time job outside campus, the wage is **200RMB per hour**
- What is the monetary value of opportunity cost, of one hour's internet surfing?
- Depends on whether doing the part-time job is the best alternative
- If not, then the OC is at least 200RMB
- If yes, then the OC is 200RMB

Cost-Benefit Analysis

- We can sum up the benefits and subtract the costs, with both benefits and costs denominated in a *common unit of measurement* **(** like RMB or dollars)
- Then find the best alternative whose net benefit is the highest
- This calculation is called **cost-benefit analysis.**
- To an economist, cost-benefit analysis and optimization are the same thing.

Cost-Benefit Analysis

- **When you pick the option with the greatest net benefits, you are optimizing.**
- As it uses a common unit of measurement, cost-benefit analysis is useful for normative economic analysis.
- It enables an economist to determine what an individual or a society should do.
- What is the moral philosophical assumption behind the cost-benefit analysis?

The Second Principle of Economics: Equilibrium

- Not only you optimize. Other peoples are not stupid (even Donald Trump is not stupid)
- Other people are also optimizing
- And other people's behavior will influence what you decide to do.

Equilibrium

- Economists think of the world as a large number of economic agents who are interacting and influencing each other at optimization.
- **Equilibrium is the special situation in which everyone is optimizing**, so nobody would benefit personally by changing his or her own behavior.

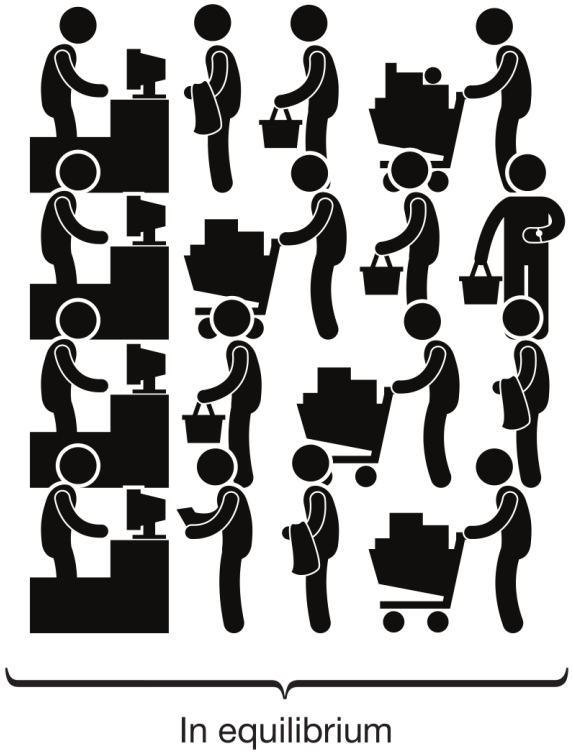
An important clarification:

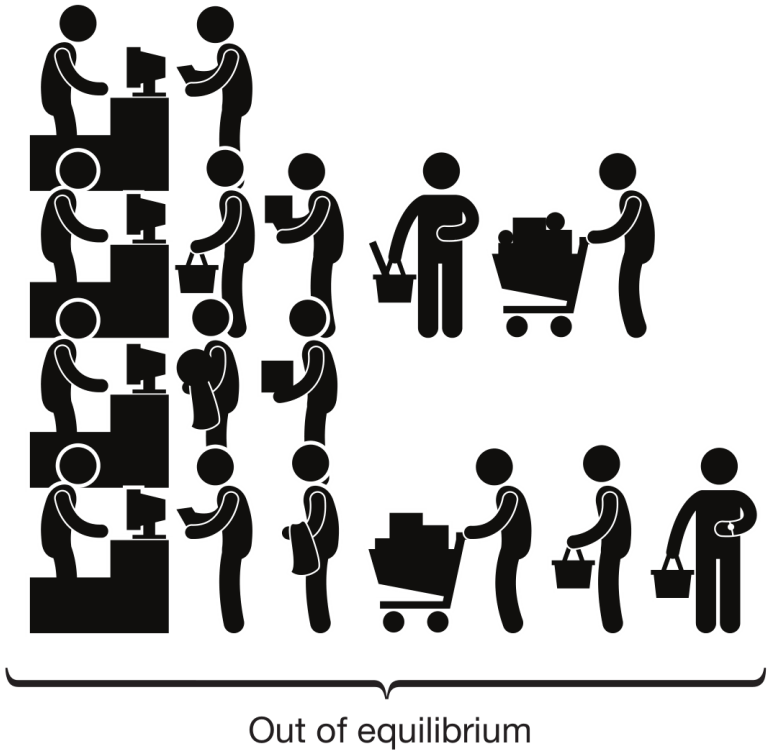
- When we say that nobody would benefit personally by changing his or her own behavior, we mean that nobody believes he or she would benefit from such a change.

An important clarification:

- In equilibrium, all economic agents are making their best feasible choices, taking into account all of the information they have, **including their beliefs about the behavior of others**.
- We could rewrite the definition by saying that **in equilibrium, nobody perceives that they will benefit from changing their own behavior *unilaterally*.**

checkout lines at the supermarket





The Free-Rider Problem

Let's use the concept of equilibrium to analyze a problem: roommates.

- 5 roommates live in dormitory.
- Each roommate can spend some time contributing to the general well-being of all the roommates by throwing away trash.
- Or each roommate can spend all his or her time on activities that only benefit him or herself—for instance, playing a video game.

The Free-Rider Problem

- Imagine that one roommate hates the mess and starts spending time cleaning up.
- Although the other roommates appreciate it, they have no incentive to help him
- If he spends 30 minutes doing the cleaning, all the other roommates benefit without having to lift a finger.
- It would be beneficial to each of the roommates if everyone did a little cleaning.
- But each of the five roommates has an incentive to leave that to others.

The Free-Rider Problem

- Consequently, dormitories with lots of roommates are often a mess.
- The *equilibrium prediction* is that when people live in larger rooming groups, they will have messier apartments than if the same people each had their own apartment.

The Free-Rider Problem

- The same thing happens when an old lady or an old man falls down the street
- With a lot of people in the street, people are less likely to help because they are expecting other people to help
- If you understand this, you are less likely to blame people for there indifference, or coldness

Empiricism

- Economists test their ideas with data.
- We refer to such evidence-based analysis as **empirical analysis** or **empiricism.**
- We use optimization and equilibrium to predict human behavior
- But are these predictions correct? Need to confront with the data.
- Could be inconsistent, then revise and improve the theory

Empiricism

- Also important and interesting is what is called causal inference.
- Causality versus correlation