

## Course Syllabus & Ten Principles Translated

▶ Course Syllabus:



10 Principles Translated:



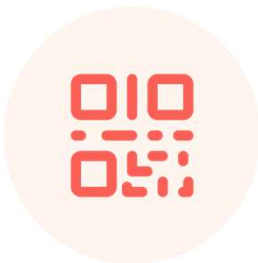
▶ Textbook Ordering (??): Ask Your Class Representative (+TA)...

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Ten Principles of Economics

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#303138

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## Principles of Microeconomics

# Chapter 1:



QR code for Chapter 1  
(Sample chapter by Cengage)

# Ten Principles of Economics



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## In This Chapter

- ▶ What kinds of **questions** does economics address?
- ▶ What are the principles of how people **make decisions**?
- ▶ What are the principles of how people **interact**?
- ▶ What are the principles of how the **economy as a whole** works?

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## Ten Principles of Economics

### Resources are scarce

- ▶ **Scarcity**: the limited nature of society's resources
  - ▶ Society has limited resources and cannot produce all the goods and services people wish to have.
- ▶ **Economics**
  - ▶ The study of how society **manages** its scarce resources

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## Ten Principles of Economics

- ▶ **Economists study**:
  - ▶ How **people** decide how much they work, what they buy, how much they save, and how they invest their savings
  - ▶ How **firms** decide how much to produce and how many workers to hire
  - ▶ How **society** decides how to divide its resources between national defense, consumer goods, protecting the environment, and other needs

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## What Economics is **Really** About?

- ▶ Traditionally: Economics is the study of how society produces and distributes goods to satisfy the wants and needs of their members.
- ▶ For me, Economics is the study of institutions and human behavior (reactions to institutions)
  - ▶ 「上有政策，下有對策」
- ▶ (Classical) market mechanism is just one example!
- ▶ Other mechanisms: Auctions, match-making
- ▶ Other institutions: governments, congress, national health insurance, families, social norms

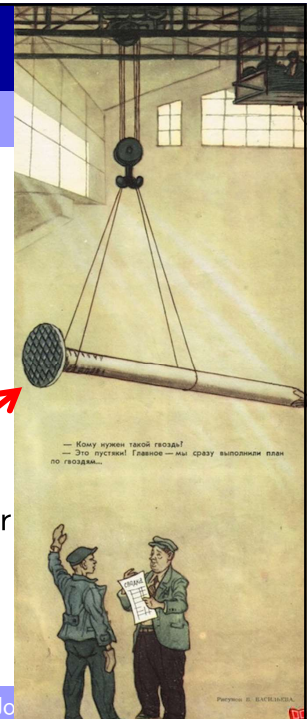
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## People Respond to Incentives!

- ▶ Central Planning in Soviet Union:
  - ▶ "...if the plan merely calls for tonnages of output,
  - ▶ there is every incentive to skimp on design or finish or quality, in order to concentrate on sheer weight."
  - The Economic Problem (1970), by Robert L. Heilbroner
- ▶ Interesting cartoon in Krokodil:
  - ▶ (Russian satirical magazine)



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## How People Make Decisions

- ▶ **Principle 1:** People face trade-offs
- ▶ **Principle 2:** The cost of something is what you give up to get it
- ▶ **Principle 3:** Rational people think at the margin
- ▶ **Principle 4:** People respond to incentives

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## Principle 1: People Face Trade-Offs

To get something that we like,

- ▶ We have to give up something else that we also like.
- ▶ Going to a party the night before an exam
  - ▶ Less time for studying
- ▶ Having more money to buy stuff
  - ▶ Working longer hours, less time for leisure
- ▶ Protecting the environment
  - ▶ Resources could be used to produce consumer goods.

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## Principle 1: People Face Trade-Offs

- ▶ The more it spends on national defense (guns) to protect from foreign aggressors
  - ▶ The less it can spend on consumer goods (butter) to raise its standard of living
- ▶ Pollution regulations: cleaner environment and improved health
  - ▶ But at the cost of reducing the well-being of the firms' owners, workers, and customers

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## EXAMPLE 1B: Society faces trade-offs

- ▶ **Efficiency:** Society gets the maximum benefits from its scarce resources.
- ▶ **Equality:** Prosperity is distributed uniformly among society's members.
  - ▶ **Trade-off:**
    - ▶ To achieve greater equality, we could redistribute income from wealthy to poor.
    - ▶ But this reduces incentive to work and produce, shrinking the size of economic "pie".

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## Principle 2:

### The Cost of Something Is What You Give Up to Get It

- ▶ Making decisions:
  - ▶ Compare costs with benefits of alternatives
  - ▶ Need to include opportunity costs
  
- ▶ **Opportunity cost**
  - ▶ Whatever must be given up to obtain some item

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## EXAMPLE 2: Opportunity Cost

- ▶ What is the opportunity cost of going to college for a year?
  - ▶ Tuition, books, and fees
  - ▶ **NOT:** room and board
  - ▶ **PLUS** foregone earnings
  
- ▶ What is the opportunity cost of going to the movies?
  - ▶ The price of the movie ticket
  - ▶ **PLUS** the value of the time you spend in the theater

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## Principle 3: Rational People Think at the Margin

- ▶ Rational people
  - ▶ Systematically and purposefully do the best they can to achieve their objectives given the available opportunities
  - ▶ Make decisions by evaluating costs and benefits of **marginal changes**
    - ▶ Small incremental adjustments to a plan of action

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## Active Learning 1: Thinking at the Margin

- A. As the manager at a local Carrefour-Welcome (頂好家樂福) grocery store, you are thinking of hiring one more cashier that would increase sales revenues by NT\$40k per month.
  - ▶ The new cashier would earn NT\$24k per month.
  - ▶ Should you hire the new cashier? Why?
- B. You pay NT\$330/month for access to Netflix, regardless of how many movies or TV shows you watch in a month.
  - ▶ Should you watch one more movie (or episode)? Why?

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As the manager at a local Carrefour-Welcome (頂好家樂福) supermarket, you are thinking of hiring one more cashier that would increase sales revenues by NT\$40k per month. The new cashier would earn NT\$24k per month. Should you hire the new cashier?

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You pay NT\$330/month for access to Netflix, regardless of how many movies or TV shows you watch in a month. Should you watch one more movie (or episode)? Why?

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## Active Learning 1: Answers, A

- A. Manager at a local Carrefour-Welcome (頂好家樂福) supermarket:
- ▶ **Marginal benefit of hiring one more cashier:**
    - ▶ Sales would increase by NT\$40k per month.
  - ▶ **Marginal cost of hiring one more cashier:**
    - ▶ The new cashier would earn NT\$24k.
  - ▶ **Decision:** Because the marginal benefit exceeds the marginal cost, the manager should hire the additional cashier

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## Active Learning 1: Answers, A

- B. Netflix:
- ▶ **Marginal benefit of watching one more movie:**
    - ▶ The enjoyment you get from watching the movie
  - ▶ **Marginal cost of watching one more movie:**
    - ▶ Monetary cost = NT\$0
    - ▶ Opportunity cost of time
  - ▶ **Decision:** If the marginal benefit exceeds the marginal cost, watch the movie.

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## Principle 4: People Respond to Incentives

- ▶ **Incentive**
  - ▶ Something that induces a person to act
  - ▶ Can have unintended consequences
- ▶ People respond to incentives
  - ▶ Because rational people make decisions by comparing costs and benefits
- ▶ An increase in the price of doughnuts:
  - ▶ Consumers buy fewer doughnuts.
  - ▶ Sellers produce more doughnuts.

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## EXAMPLE 3: Incentives

The government increases the gasoline tax by NT\$10 per liter.

- ▶ How do consumers respond?
  - ▶ Drive smaller or more fuel-efficient cars
  - ▶ Carpool
  - ▶ Use public transportation
  - ▶ Move closer to work
- ▶ How do businesses respond?

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## Active Learning 2: Applying the Principles

- ▶ You are selling your old ASUS laptop.
- ▶ You have already spent NT\$10,000 on repairs.
- ▶ At the last minute, the Blu-ray drive dies.
  - ▶ You can pay NT\$6,000 to replace it, or sell it “as is.”
- ▶ In each of the following scenarios, should you have the Blu-ray drive replaced? Explain.
  1. Shopee value (what you could get for the laptop) is NT\$25,000 if Blu-ray drive works, NT\$17,000 if it doesn't.
  2. Shopee value is NT\$20,000 if drive works, NT\$15,000 if not.

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You can pay NT\$6,000 to replace the Blu-ray drive, or sell your old ASUS laptop “as is.”

Shopee value is NT\$25,000 if Blu-ray drive works, NT\$17,000 if it doesn't.

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You can pay NT\$6,000 to replace the Blu-ray drive, or sell your old ASUS laptop “as is.”

Shopee value is NT\$20,000 if Blu-ray drive works, NT\$15,000 if it doesn't.

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## Active Learning 2: Answers

- ▶ Cost of replacing the Blu-ray drive = NT\$6,000
- A. Shopee value (what you could get) is NT\$25,000 if Blu-ray drive works, NT\$17,000 if it doesn't.
  - ▶ Benefit of replacing Blu-ray drive = NT\$8,000
  - ▶ **Get the Blu-ray drive replaced.** (= 25,000 – 17,000)
- B. Shopee value is NT\$20,000 if Blu-ray drive works, NT\$15,000 if it doesn't.
  - ▶ Benefit of replacing Blu-ray drive = NT\$5,000
  - ▶ **Do not pay NT\$6,000 to fix it.** (= 20,000 – 15,000)

## Principles of Microeconomics

### Ch.1-1 How People Make Decision

Questions about this part?

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## QR Code for Course Website & Textbook

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Textbook Group Order:



▶ Textbook: 東華: 吳飛龍 0937-950267, 02-2311-4027

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## Principles of Microeconomics

### Chapter 1:



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## How People Interact

- ▶ **Principle 5:** Trade can make everyone better off.
- ▶ **Principle 6:** Markets are usually a good way to organize economic activity.
- ▶ **Principle 7:** Governments can sometimes improve market outcomes.

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## Principle 5: Trade Can Make Everyone Better Off

- ▶ People benefit from trade:
  - ▶ People can buy a greater variety of goods and services at lower cost.
- ▶ Countries benefit from trade:
  - ▶ Allows countries to specialize in what they do best
  - ▶ Enjoy a greater variety of goods and services

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## Principle 6: Markets

### Are Usually a Good Way to Organize Economic Activity

- ▶ **Market**
  - ▶ A group of buyers and sellers (need not be in a single location)
- ▶ **Organize economic activity** means determining:
  - ▶ What goods and services to produce
  - ▶ How to produce these goods and services
  - ▶ How to allocate them to their final user

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## Principle 6: Markets

### Are Usually a Good Way to Organize Economic Activity

- ▶ **Market Economy**
  - ▶ Allocates resources through the
    - ▶ Decentralized decisions of many firms and households
  - ▶ as they interact in markets
  - ▶ Proven remarkably successful in
    - ▶ Organizing economic activity to promote overall prosperity

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## Principle 6: Markets

### Are Usually a Good Way to Organize Economic Activity

- ▶ Prices:
  - ▶ Determined by the interaction of buyers and sellers
  - ▶ Reflect the good's value to buyers
  - ▶ Reflect the cost of producing the good
- ▶ Adam Smith's "invisible hand":
  - ▶ Prices guide self-interested households and firms to
  - ▶ make decisions that maximize society's economic well-being.

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## Principle 7: Governments

### Can Sometimes Improve Market Outcomes

- ▶ Government: **Enforce Property Rights**
  - ▶ Enforce rules and maintain institutions that are key to a market economy
    - ▶ People are less inclined to work, produce, invest, or purchase if there is a large risk of their property being stolen.
    - ▶ We rely on government-provided police and courts to enforce our rights over the things we produce.

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## Principle 7: Governments

### Can Sometimes Improve Market Outcomes

- ▶ **Government: Promote Efficiency**
  - ▶ **Avoid Market Failures:** Market left on its own fails to allocate resources efficiently.
- ▶ **Sources of market failure:**
  1. **Externality** – Production or consumption of a good affects bystanders (e.g. pollution).
  2. **Market power** – A single buyer or seller has substantial influence on market price (e.g., monopoly).

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## Principle 7: Governments

### Can Sometimes Improve Market Outcomes

- ▶ **Government: Promote Equality**
  - ▶ Avoid disparities in economic well-being
  - ▶ Use tax or welfare policies to change how the economic “pie” is divided.
- ▶ **Disclaimer:** To say that the government can improve market outcomes
  - ▶ Does not mean that it always will

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## Active Learning 3: The Government

- ▶ In each of the following situations, what is the government's role?
- ▶ Does government intervention improve the outcome?
  - A. Public schools for K-12
  - B. National health insurance
  - C. Workplace safety regulations
  - D. Public highways
  - E. Patent laws, which allow drug companies to charge high prices for life-saving drugs

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In which of the following situations does government intervention improve the outcome?

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### Ch.1-2: How People Interact

Questions about this part?

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## How the Economy as a Whole Works

- ▶ **Principle 8:** A country's standard of living depends on its ability to produce goods and services.
- ▶ **Principle 9:** Prices rise when the government prints too much money.
- ▶ **Principle 10:** Society faces a short-run trade-off between inflation and unemployment.

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## How the Economy as a Whole Works

- ▶ These are Principles of Macroeconomics
  - ▶ For the Spring semester, not for now
  - ▶ Some are still controversial and under debate
- ▶ Blah blah blah...
  - ▶ See Yoram's Translation of the Ten Principles:



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## Principle 8: A Country's Standard of Living

### Depends on Its Ability to Produce Goods and Services

- ▶ Huge variation in living standards across countries and over time
  - ▶ 2017 average income:
    - ▶ \$60,000 in the U.S.; \$6,000 in Nigeria
  - ▶ Average income in rich countries
    - ▶ Is more than ten times average income in poor countries
  - ▶ The U.S. standard of living today
    - ▶ Is about eight times greater than 100 years ago
  - ▶ What about Taiwan?

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## Principle 8: A Country's Standard of Living

### Depends on Its Ability to Produce Goods and Services

- ▶ **Productivity:** most important determinant of living standards
  - ▶ Quantity of goods and services produced from each unit of labor input
  - ▶ Depends on the equipment, skills, and technology available to workers
    - ▶ Other factors (e.g., labor unions, competition from abroad) have far less impact on living standards.

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## Principle 9: Prices Rise

### When the Government Prints Too Much Money

- ▶ **Inflation**
  - ▶ An increase in the overall level of prices in the economy
- ▶ In the long run
  - ▶ Inflation is almost always caused by excessive growth in the quantity of money, which causes the value of money to fall
  - ▶ The faster the government creates money, the greater the inflation rate

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## Principle 10: Society Faces a Short-Run

### Trade-Off between Inflation and Unemployment

- ▶ Short-run trade-off between inflation and unemployment
  - ▶ In the short-run, many economic policies push inflation and unemployment in opposite directions.
  - ▶ Other factors can make this trade-off more or less favorable, but the trade-off is always present.

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## Think-Pair-Share

### Youbike Rental On Campus

- ▶ Your university decides to reduce the price of campus Youbike rentals from NT\$5 per trip to NT\$1 per trip.
  - A. The number of students desiring to ride Youbikes will...
  - B. The amount of time it takes to find a Youbike will...
  - C. Will the lower price of a Youbike rental necessarily lower the true cost of rental? (Hint: opportunity cost)
  - D. Would the opportunity cost of Youbike rental be the same for students with no outside employment and students with jobs earning NT\$450 per hour?

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Your university decides to reduce the price of campus Youbike rentals from NT\$5 per trip to NT\$1 per trip. The number of students desiring to ride Youbikes will...

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Your university decides to reduce the price of campus Youbike rentals from NT\$5 per trip to NT\$1 per trip. The amount of time it takes to find a Youbike will

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Will the lower price of a Youbike rental necessarily lower the true cost of rental?  
(Hint: opportunity cost)

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Would the opportunity cost of Youbike rental be the same for students with no outside employment and students with jobs earning NT\$450 per hour?

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## Chapter in a Nutshell

### ▶ Individual Decision Making:

1. People face trade-offs among alternative goals.
2. The cost of any action is measured in terms of forgone opportunities.
3. Rational people make decisions by comparing marginal costs and marginal benefits.
4. People change their behavior in response to the incentives they face.

## Chapter in a Nutshell

### ► Interactions Among People:

5. Trade and interdependence can be mutually beneficial.
6. Markets are usually a good way of coordinating economic activity among people.
7. Governments can potentially improve market outcomes by remedying a market failure or by promoting greater economic equality.

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## Chapter in a Nutshell

### ► The Economy as a Whole:

8. Productivity is the ultimate source of living standards.
9. Growth in the quantity of money is the ultimate source of inflation.
10. Society faces a short-run trade-off between inflation and unemployment.

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## Chapter 1: Ten Principles of Economics

- ▶ Seven in Micro-economics
  - ▶ Three in Macro-economics: Blah blah blah
- ▶ Homework:
  - ▶ Watch Ten Principles of Economics: A Translation and read its transcript online
  - ▶ Mankiw, Chap.1, Problem 1, 3, 8, 9
- ▶ Past Midterm Questions N/A

How to Read  
Your Textbook

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## FYI: How to Read the Textbook

1. Read before class.
  - ▶ You'll get more out of class.
2. Summarize, don't highlight.
  - ▶ Highlighting is a passive activity
    - ▶ Won't improve your comprehension
  - ▶ Summarize each section in your own words
    - ▶ Then, compare it to end-of-chapter summary

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## FYI: How to Read the Textbook

3. Test yourself!
  - ▶ Try Quick Quiz before moving on
4. Practice, practice, practice.
  - ▶ Work through end-of-chapter review questions & homework problems.
  - ▶ The more you use your new knowledge, the more solid it will become.

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## FYI: How to Read the Textbook

5. Go online.
  - ▶ The book comes with excellent web resources:  
[http://homepage.ntu.edu.tw/~josephw/principles\\_21F.htm](http://homepage.ntu.edu.tw/~josephw/principles_21F.htm)  
<http://academic.cengage.com/economics/mankiw>
6. Study in groups
  - ▶ Get together with a few classmates to
    - ▶ review each chapter, quiz each other, and
    - ▶ help each other understand the material.

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## FYI: How to Read the Textbook

7. Teach someone.
  - ▶ The best way to learn something is to teach it
8. Don't skip the real world examples.
  - ▶ Read Case Studies, In The News and Ask the Experts in each chapter.
  - ▶ As you read the online news, see if you can find connections with what you've learned.

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## What Economics is Really About?

- ▶ Economics is the study of institutions and human behavior (reactions to institutions)
  - ▶ 「上有政策，下有對策」
  - ▶ (Classical) Market mechanism is just one example!
- ▶ Other mechanisms: Auctions, Match-Making
- ▶ Other institutions: Governments, Congress,
  - ▶ National Health Insurance,
  - ▶ Families, Social Norms

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Textbook Group Order:



▶ Textbook: 東華: 吳飛龍 0937-950267, 02-2311-4027

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## Principles of Microeconomics

### Ch.1: Ten Principles of Economics

Questions about chapter 1?

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## Principles of Microeconomics

### Ch.1

# The End

## Classroom Experiment 1: The LUPI Game

Ensam med lägst nummer vinner.

**Limbo**

Välj ett nummer mellan 1 och 99 999.

1. Kryssa ett nummer per spelrätt (A-F). Du nummer i kryssan 00002.  
2. Kryssa senast spelrättarna du vill spela.

Kryssa antal spelrättningar i följande:

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Innan du kryssar per spelrätt nummer (A-F) multiplifieras med antal spelrättningar. Spel för dig med Sällskart.

- ▶ Swedish Lottery in 2007
- ▶ Lowest Unique Positive Integer Game
- ▶ 最小唯一者勝的賽局 (LUPI game)
- ▶ Choose a positive integer from 1 to 100
- ▶ Win if choose the **Lower** but **Unique** number
- ▶ Prize?

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Choose a positive integer from 1 to 100  
(請選擇 1 到 100 之間的一個正整數)

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## Economic Lessons of The LUPI Game

1. A Set of Rules (= Institution)
  - ▶ 一套遊戲規則:可以是明文規定或不成文的潛規則
2. Individuals Optimize
  - ▶ 個人決策謀求最佳化，因為人們對誘因有反應!
3. You Need to React to Others Optimizing
  - ▶ 其他人也在最佳化，所以你要因應。即使多數人循規蹈矩，制度設計者仍須考慮有人惡搞會怎樣?
4. What should the aggregate data look like?
  - ▶ 整體結果長怎樣? 理論的預測為何?

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## Solving the LUPI Game Equilibrium

- ▶ Win by Choosing  $k$  if no other chooses  $k$ , and nobody "uniquely chooses 1 to  $(k - 1)$ "
- ▶ Assume Number of Players is  $\text{Poisson}(n)$
- ▶ Mixed Strategy Equilibrium requires:
- ▶  $\text{Pr}(\text{win} \mid \text{choose } 1) = \text{Pr}(\text{win} \mid \text{choose } 2) = \dots$

$$e^{-np_1} = (1 - np_1 e^{-np_1}) \cdot e^{-np_2}$$

Nobody chose 1

Nobody uniquely chose 1

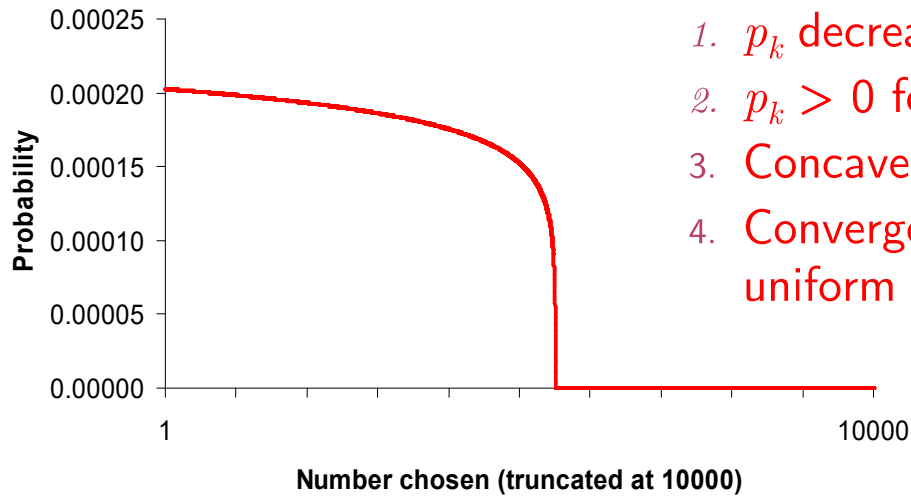
Nobody chose 2

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## Unique Poisson-Nash Equilibrium (Mixed)



1.  $p_k$  decreases
2.  $p_k > 0$  for all  $k$
3. Concave/Convex
4. Converges to uniform if  $n$  large

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## Economic Lessons of The LUPI Game

### 5. Does empirical data match the theory?

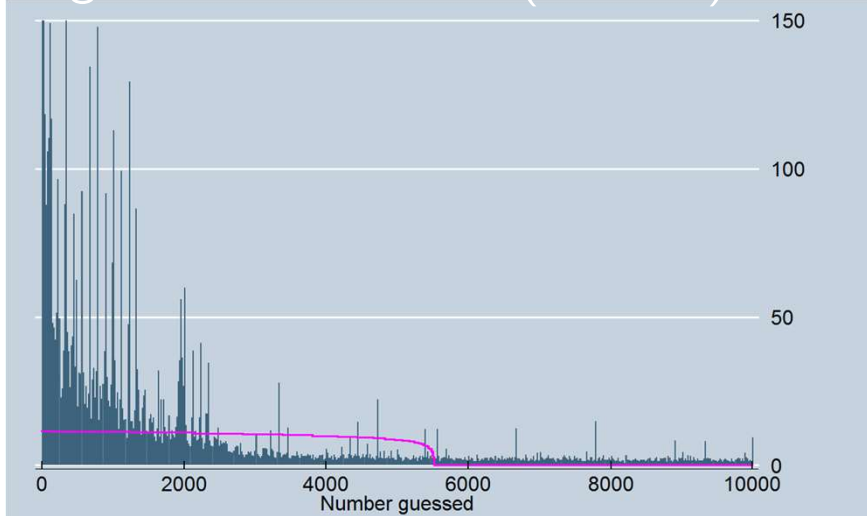
- ▶ 實證資料是否支持你的預測？蒐集資料來看看「整個社會」的結果如何

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## Daily Average of Each Number (Week 1)

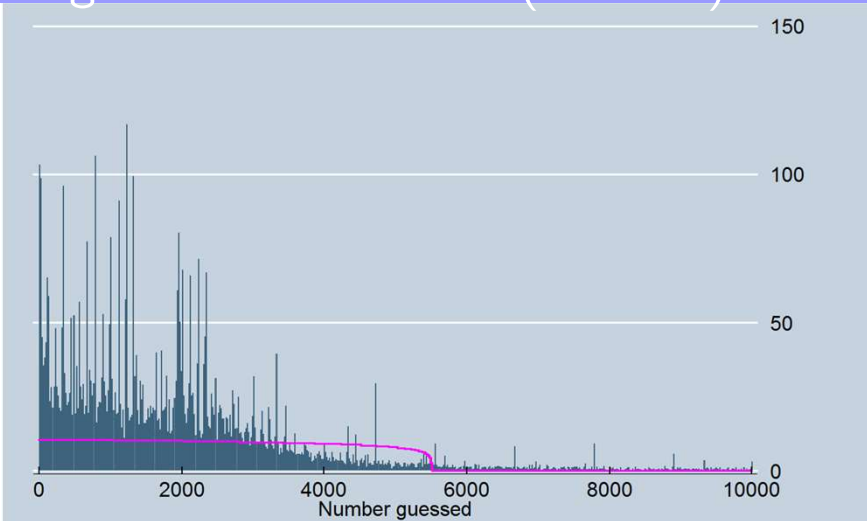


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## Daily Average of Each Number (Week 3)

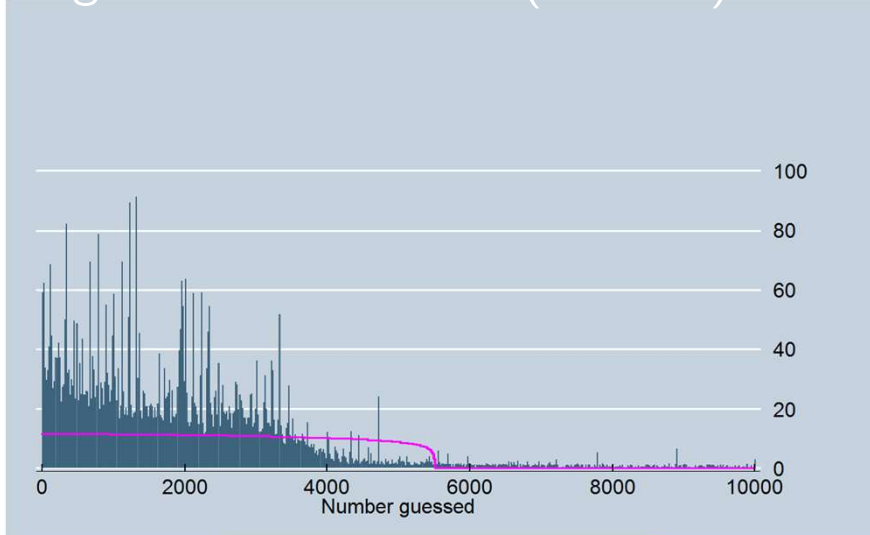


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## Daily Average of Each Number (Week 5)

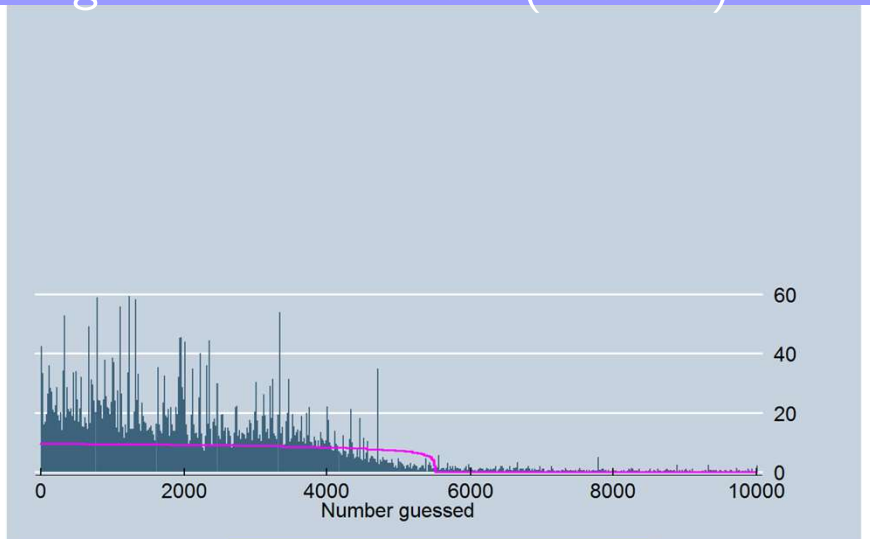


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## Daily Average of Each Number (Week 7)



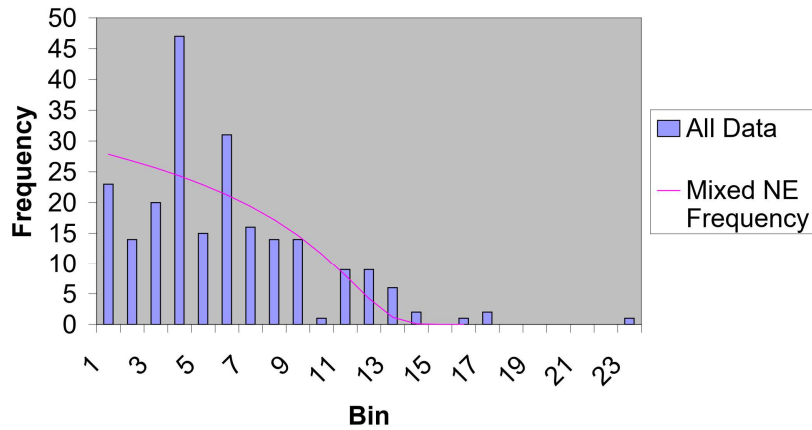
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# Are We in the LUPI Game Equilibrium?

Fall 2007 Principle Class LUPI Experiment



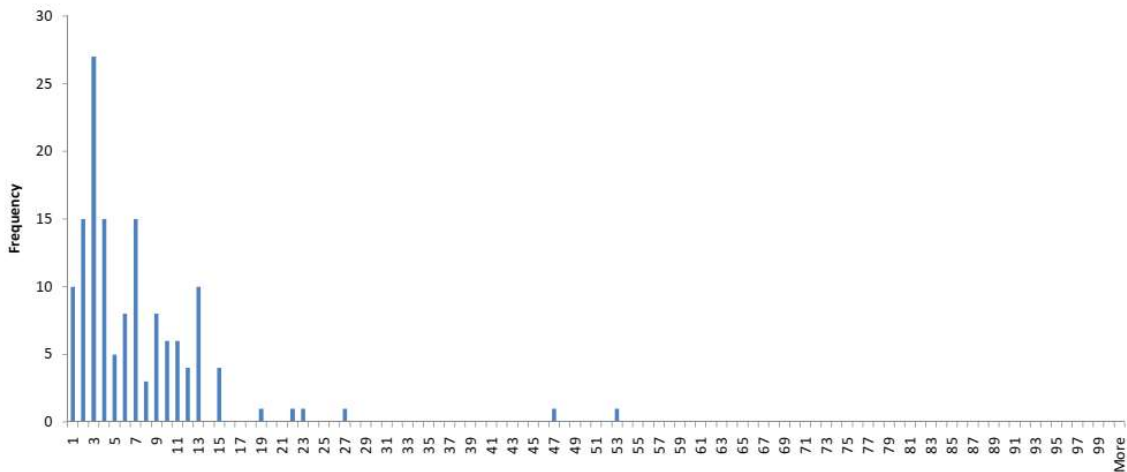
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# Are We in the LUPI Game Equilibrium?

The LUPI game (09F): Round 1-10

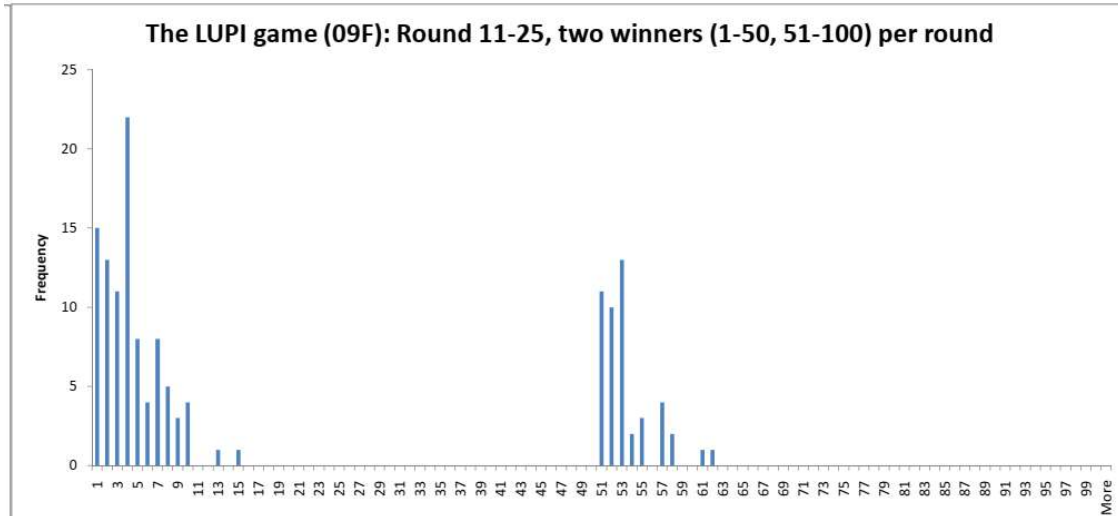


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# Are We in the LUPI Game Equilibrium?

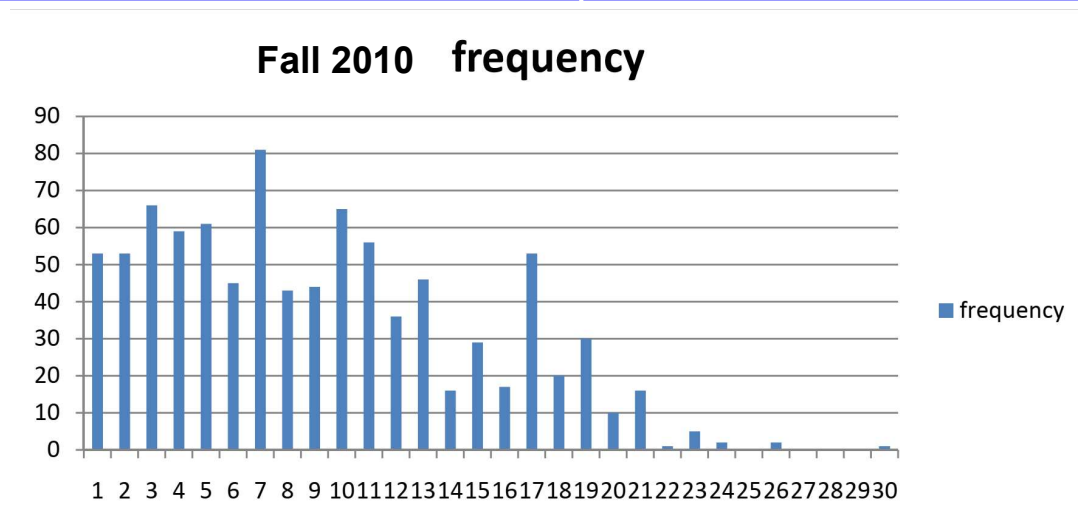


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# Are We in the LUPI Game Equilibrium?



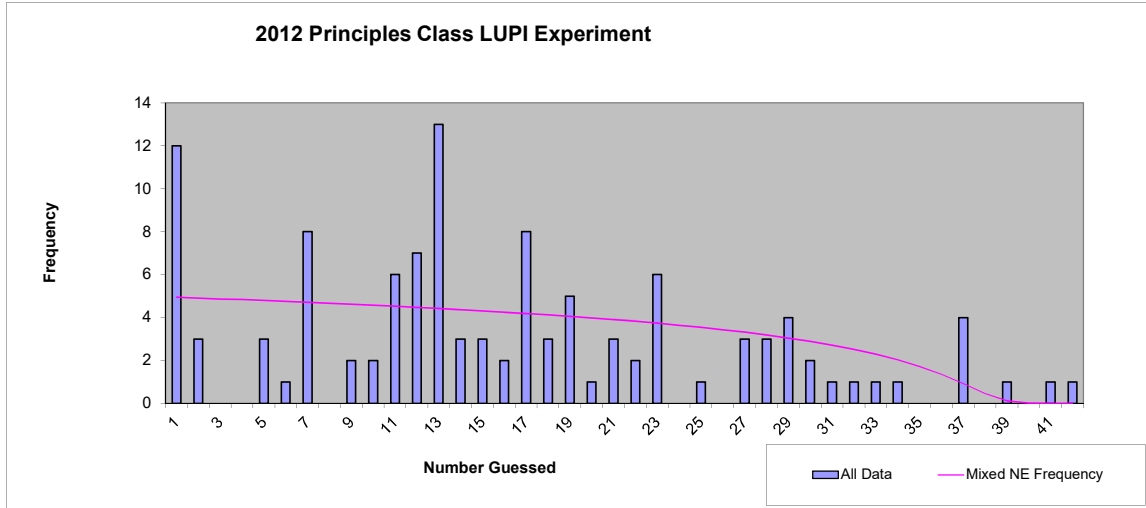
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# Are We in the LUPI Game Equilibrium?



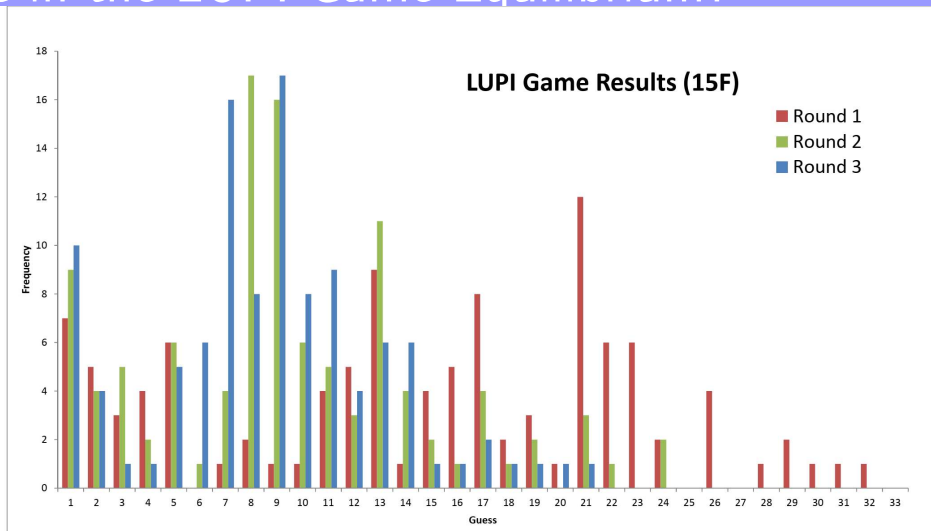
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# Are We in the LUPI Game Equilibrium?

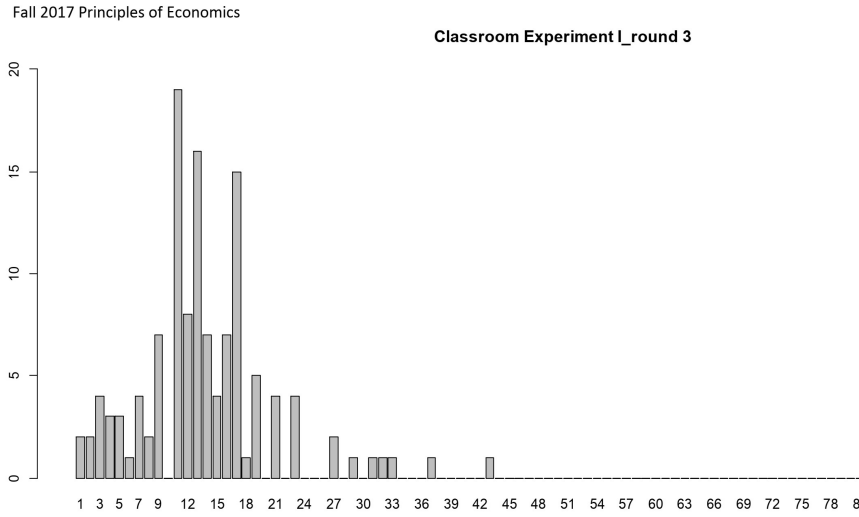


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# Are We in the LUPI Game Equilibrium?

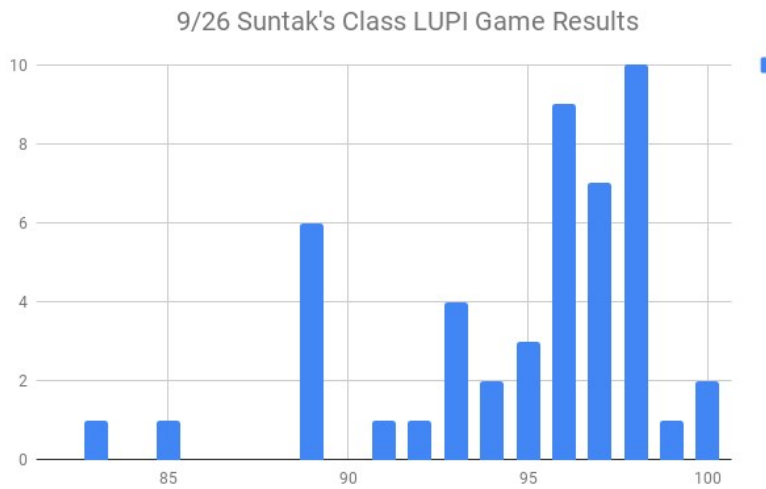


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# More LUPI Data (Largest Unique)

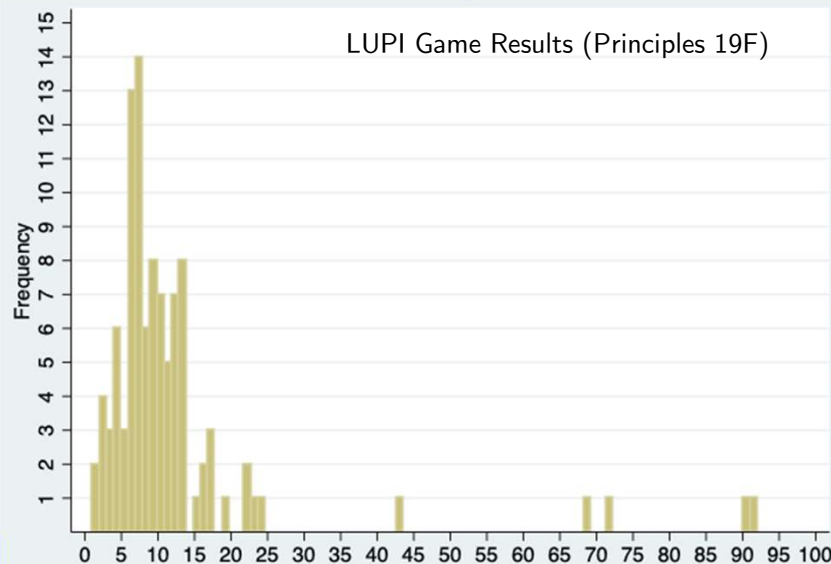


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## Are We in the LUPI Game Equilibrium?



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## Economic Lessons of The LUPI Game

### 5. Does empirical data match the theory?

- ▶ 實證資料是否支持你的預測？蒐集資料來看看「整個社會」的結果如何

### 6. Can individual differences be explained?

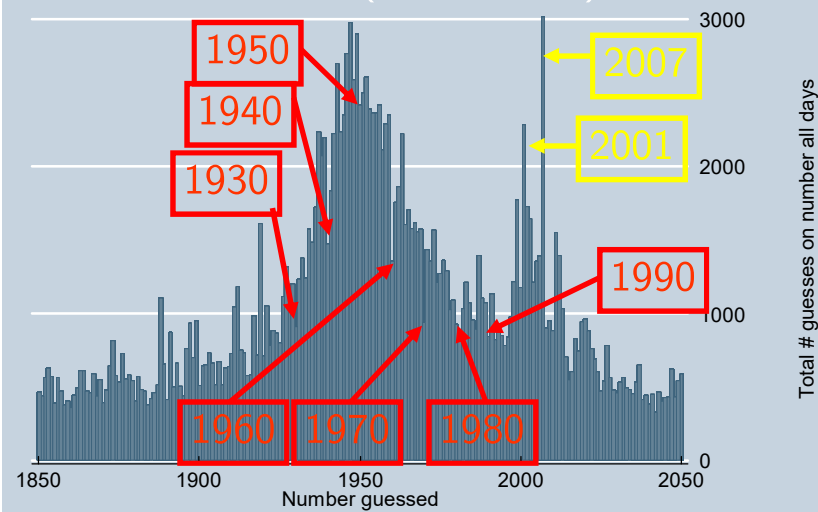
- ▶ (資料中)個別差異能否解釋？理論有改進空間嗎？

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## Choose Own Birth Year (and 2007)?

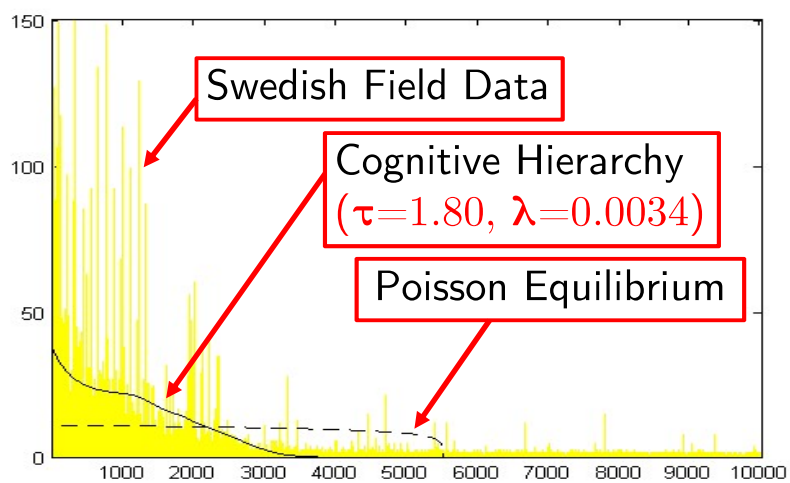


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## Initial Frequencies: Field Data (Week 1)

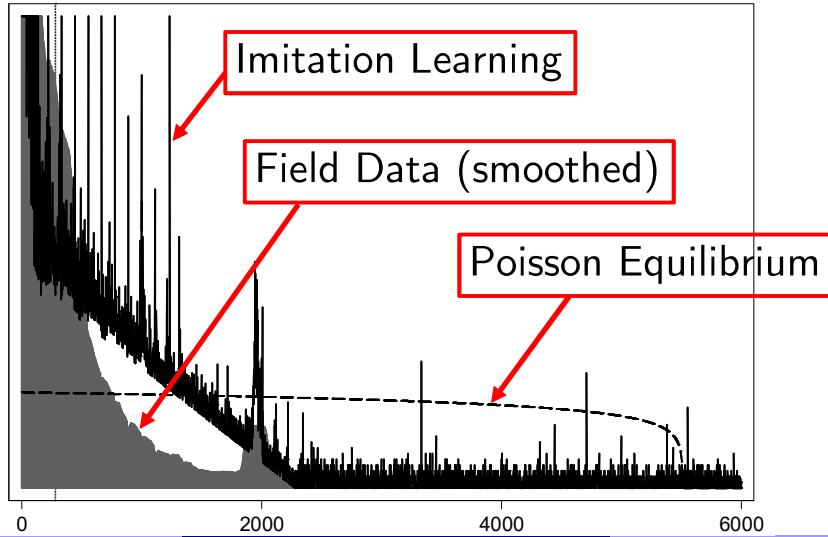


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## Imitation Learning vs. Field Data - Day 2

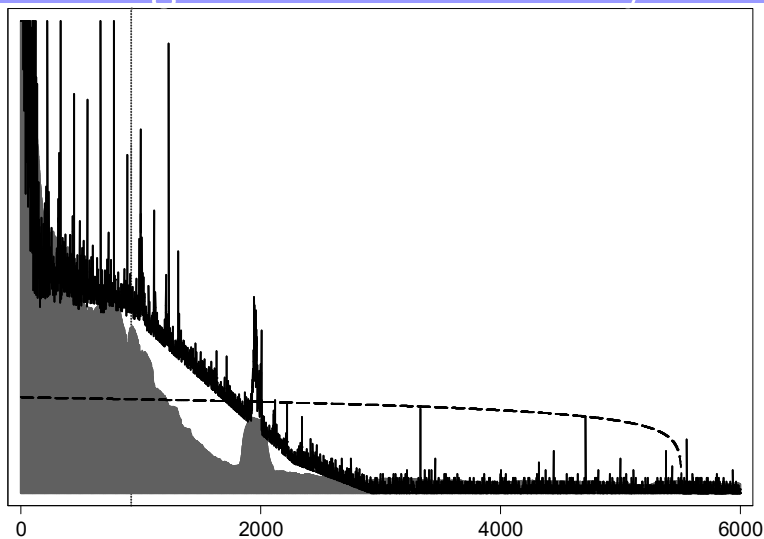


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## Imitation Learning vs. Field Data - Day 3

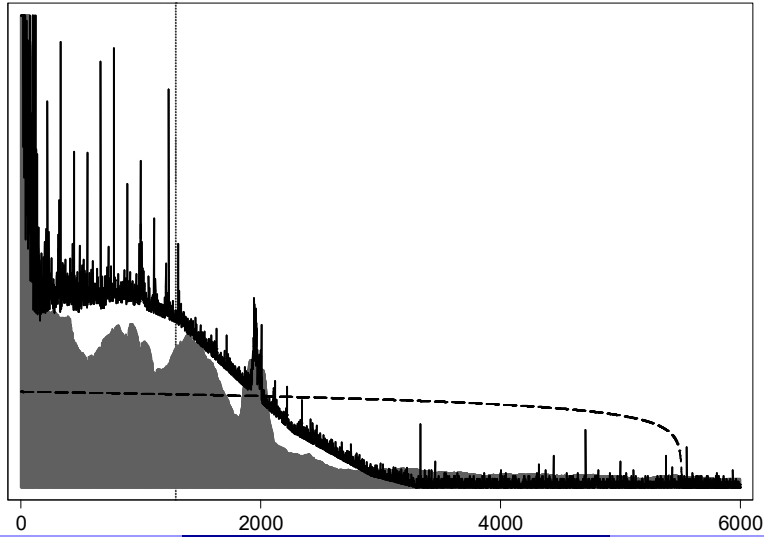


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## Imitation Learning vs. Field Data - Day 4

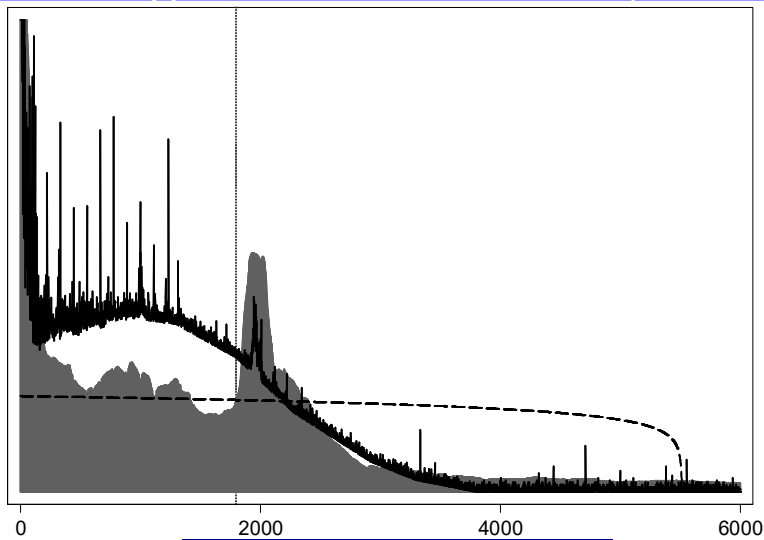


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## Imitation Learning vs. Field Data - Day 5

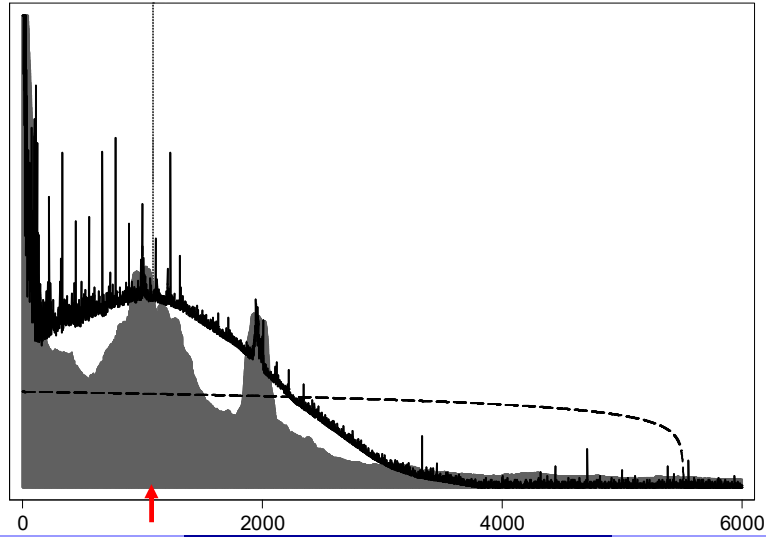


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## Imitation Learning vs. Field Data - Day 6

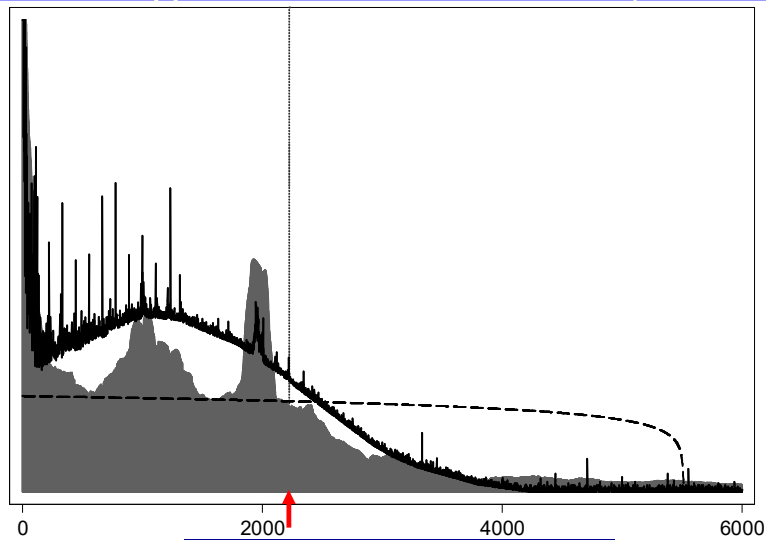


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## Imitation Learning vs. Field Data - Day 7

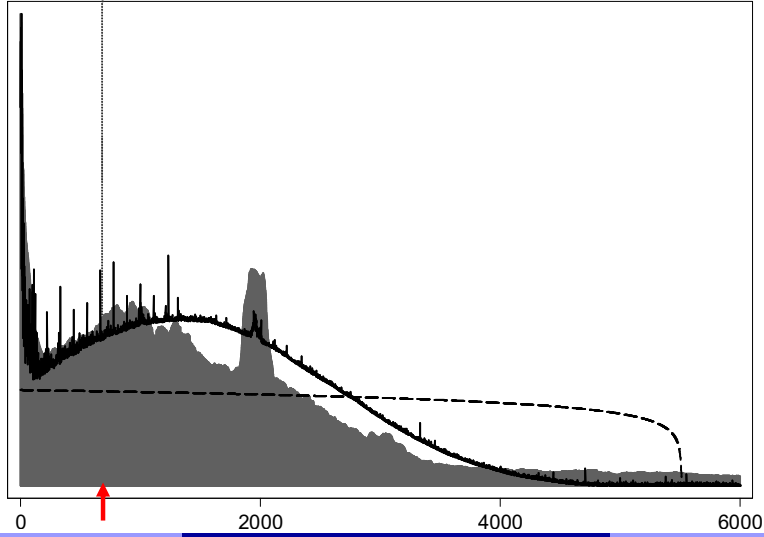


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## Imitation Learning vs. Field Data - Day 14

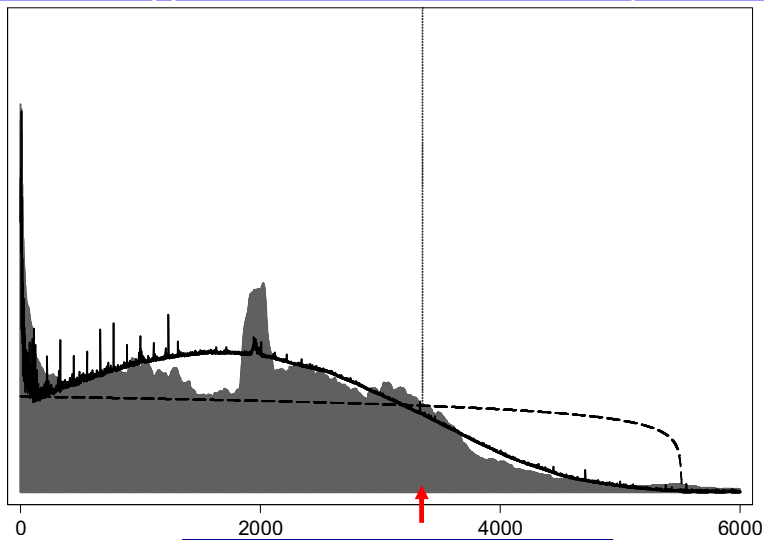


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## Imitation Learning vs. Field Data - Day 21



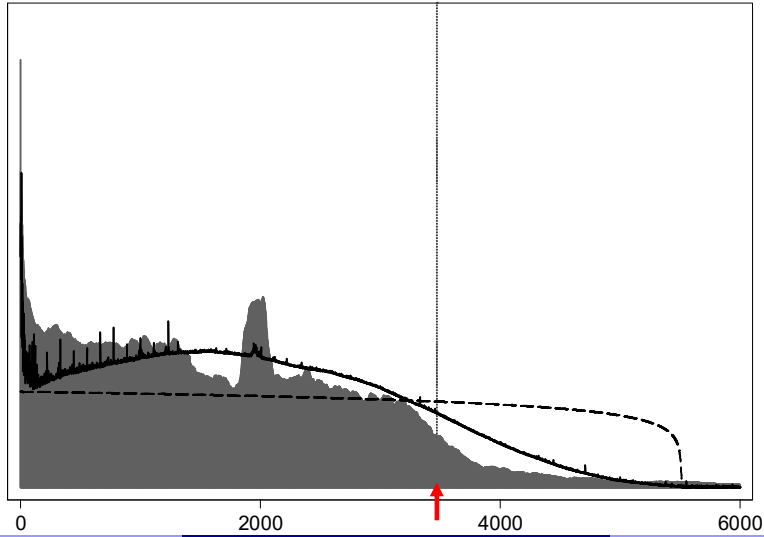
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## Imitation Learning vs. Field Data - Day 28

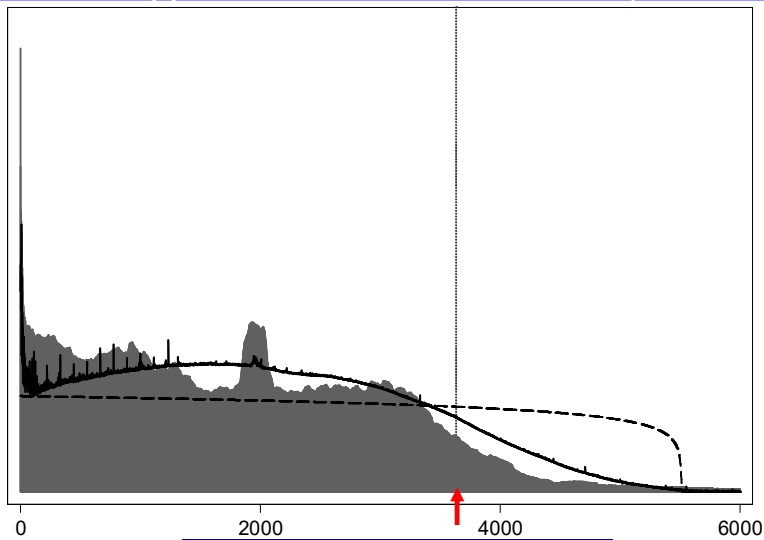


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## Imitation Learning vs. Field Data - Day 35

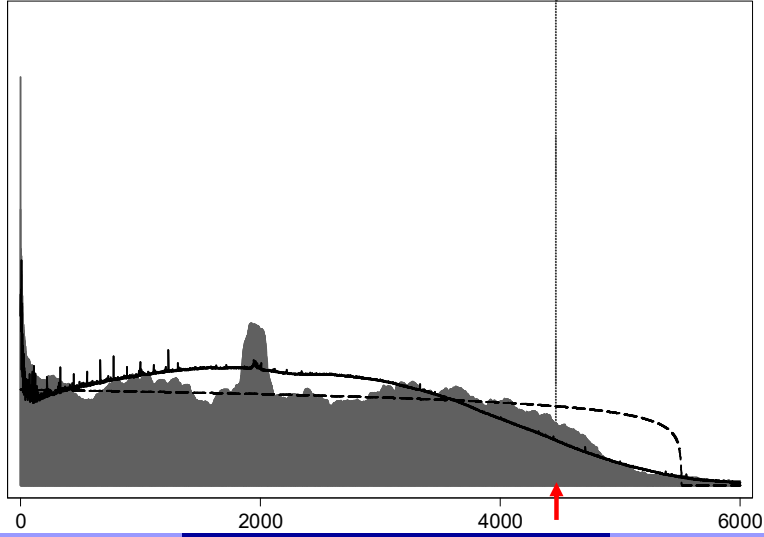


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# Imitation Learning vs. Field Data - Day 42

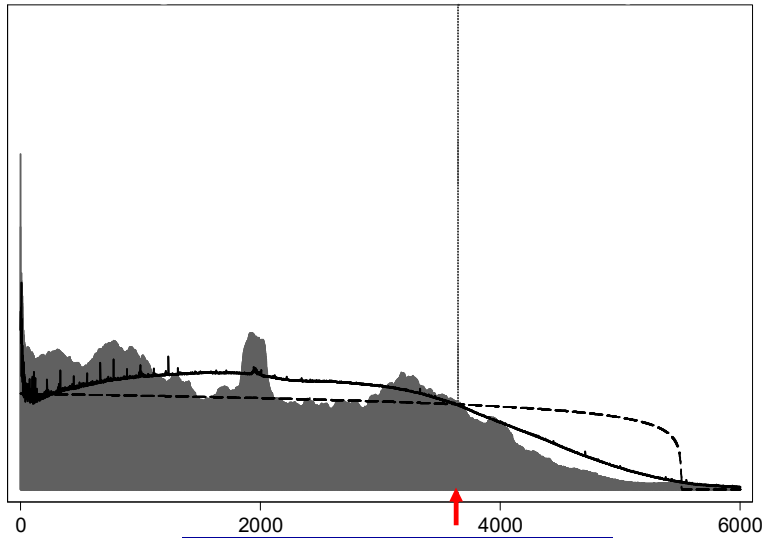


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# Imitation Learning vs. Field Data - Day 49



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## Economic Lessons of The LUPI Game

5. Does empirical data match the theory?
  - ▶ 實證資料是否支持你的預測？蒐集資料來看看「整個社會」的結果如何
6. Can individual differences be explained?
  - ▶ (資料中)個別差異能否解釋？理論有改進空間嗎？
7. How can the institution be improved?
  - ▶ 工程師問:制度(遊戲規則)有沒有可以改進的地方？
8. Where did this institution come from?
  - ▶ 這套制度是哪裡來的？現況的邏輯是什麼？

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## Principles of Microeconomics

### Exp.1: The LUPI Game

Questions about experiment 1?

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Audience Q&A Session

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① Start presenting to display the audience questions on this slide.

Principles of Microeconomics

Ch.1 and Exp.1

The End

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3	Page 64, 68-77, 79-82, 84-97		This work is licensed by Joseph Tao-yi Wang for the use of General Education TW ONLY. The copyright belongs to the above mentioned licensor(s).