

N. GREGORY MANKIWI

PRINCIPLES OF  
**ECONOMICS**  
Eight Edition



CHAPTER  
**1** **Ten Principles of  
Economics**

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### Look for the answers to these questions:

- 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
    - 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 what to buy, how much to work, save, and spend
  - How **firms** decide how much to produce, 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?

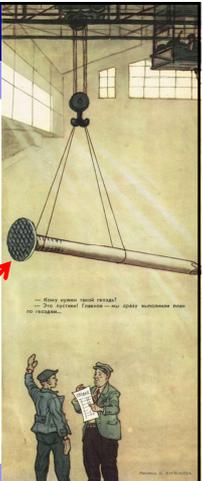
- ▶ **Traditionally**: Economics is the study of how society produces and distributes goods to satisfy the wants and needs of their members. **For me**,
- ▶ Economics is the study of **institutions and human behavior** (reactions to institutions)
  - ▶ I.e. 「上有政策，下有对策」
  - ▶ (Classical) market mechanism 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

- **Society faces trade-offs:**
  - The more it spends on national defense (guns) to protect its shores
    - The less it can spend on consumer goods (butter) to raise the standard of living at home
  - Pollution regulations: cleaner environment and improved health
    - But at the cost of reducing the incomes of the firms' owners, workers, and customers

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## Principle 1: People Face Trade-offs

- **Efficiency:** society gets the most from its scarce resources
- **Equality:** prosperity is distributed uniformly among society's members
- **Tradeoff:**
  - To achieve greater equality, could redistribute income from wealthy to poor
  - But this reduces incentive to work and produce, shrinks 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 w/ benefits of alternatives
  - Need to include opportunity costs
- **Opportunity cost**
  - Whatever must be given up to obtain some item

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## Principle 2: The Cost of Something Is What You Give Up to Get It

- **The opportunity cost of:**
  - Going to college for a year
    - Tuition, books, and fees
    - **PLUS** foregone wages
  - 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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### Principle 3: Rational People Think at the Margin

- **Examples:**
  - Cell phone users with **unlimited** minutes (the minutes are free at the margin)
    - Are often prone to making long/frivolous calls
    - Marginal benefit of the call > 0
  - A manager considers whether to increase output
    - Compares the cost of the needed labor and materials to the **extra** revenue

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### Principle 4: People Respond to Incentives

- **Incentive**
  - Something that induces a person to act
- **Examples:**
  - When gas prices rise, consumers buy more hybrid cars and fewer gas guzzling SUVs
  - When cigarette taxes increase, teen smoking falls

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### Active Learning 1 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.
  - 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 repaired? Explain.

A. 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.

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

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### Active Learning 1 Answers

Cost of fixing the Blu-ray drive = NT\$6,000

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

- Benefit of fixing Blu-ray drive = NT\$8,000  
(= NT\$25,000 – NT\$17,000)
- **Get the Blu-ray drive fixed**

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

- Benefit of fixing Blu-ray drive = NT\$5,000  
(= NT\$20,000 – NT\$15,000)
- **Do not pay NT\$6,000 to fix it**

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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 and specialization**
  - Get a better price abroad for goods they produce
  - Buy other goods more cheaply from abroad than could be produced at home

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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 much** of each to produce
  - **Who** produced and consumed these

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### Principle 6: Markets Are Usually a Good Way to Organize Economic Activity

- **A market economy allocates resources**
  - Decentralized decisions of many firms and households – as they interact in markets
- **Famous insight by Adam Smith in The Wealth of Nations (1776):**
  - Each of these households and firms acts as if “led by **an invisible hand**” to promote general economic well-being

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### Principle 6: Markets Are Usually a Good Way to Organize Economic Activity

- **Prices:**
  - Determined: interaction of buyers and sellers
  - Reflect the good’s value to buyers
  - Reflect the cost of producing the good
- **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 large risk of their property being stolen

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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
  - **Externality** – source of market failure
    - Production or consumption of a good affects bystanders (e.g. pollution)
  - **Market power** – source of market failure
    - 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

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### Active Learning 2 Discussion Question

In each of the following situations, what is the government's role?  
Does the government's intervention improve the outcome?

- Public schools for K-12
- National health insurance
- Patent laws, which allow drug companies to charge high prices for life-saving drugs

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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: Country's Standard of Living Depends on Its Ability to Produce Goods and Services

- **Huge variation in living standards**
  - Across countries and over time
  - 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 larger than 100 years ago
- **What about Taiwan?**

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### Principle 8: 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 unemployment and inflation**
  - Over a period of a year or two, 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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### Summary

- Fundamental lessons about **individual** decision making:
  - People face trade-offs among alternative goals
  - The cost of any action is measured in terms of forgone opportunities
  - Rational people make decisions by comparing marginal costs and marginal benefits
  - People change their behavior in response to the incentives they face

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### Summary

- Fundamental lessons about **interactions** among people:
  - Trade and interdependence can be mutually beneficial
  - Markets are usually a good way of coordinating economic activity among people
  - The government can potentially improve market outcomes by remedying a market failure or by promoting greater economic equality

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### Summary

- Fundamental lessons about the economy **as a whole:**
  - Productivity is the ultimate source of living standards
  - Growth in the quantity of money is the ultimate source of inflation
  - Society faces a short-run trade-off between inflation and unemployment

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### QR Code for Course Website & Textbook

Course Website: 

Textbook Group: 

▶ 如果你是經濟系大一，應該考慮修新生專題!!

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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 TBA

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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. Read before class. 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\\_18F.htm](http://homepage.ntu.edu.tw/~josephw/principles_18F.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 a study of institutions and human behavior (reactions to institutions)
  - ▶ 「上有政策，下有對策」
- ▶ (Classical) market mechanism is one example
- ▶ Other mechanisms: [auctions](#), [matching](#)
- ▶ Other institutions: [Governments](#), [congress](#),
  - ▶ [Welfare systems](#), [national health insurance](#),
  - ▶ [Families](#), [social norms](#)

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### Classroom Experiment 1: The LUPI Game



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

### 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?

### 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 Poisson(n)
- ▶ Mixed Strategy Equilibrium requires:
- ▶  $Pr(\text{win} | \text{choose } 1) = Pr(\text{win} | \text{choose } 2) = \dots$

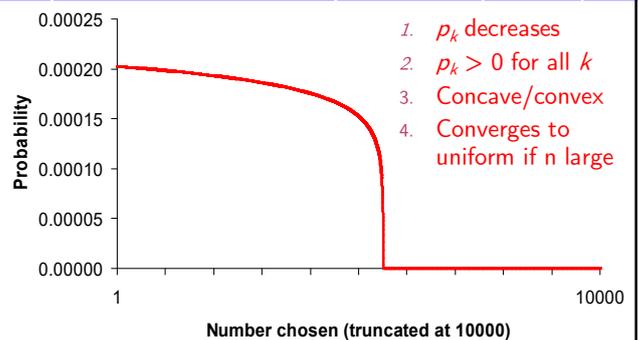
$$e^{-np_1} = (1 - np_1 e^{-np_1}) \cdot e^{-np_2}$$

Nobody chose 1

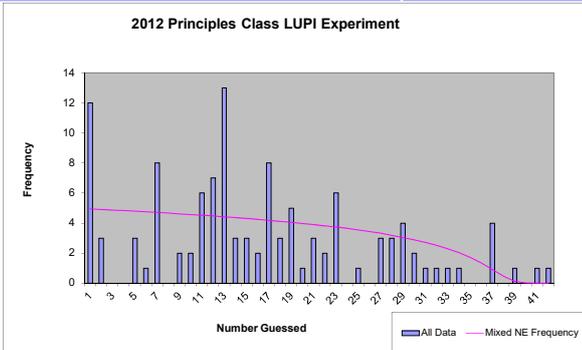
Nobody uniquely chose 1

Nobody chose 2

### Unique Poisson-Nash Equilibrium (Mixed)

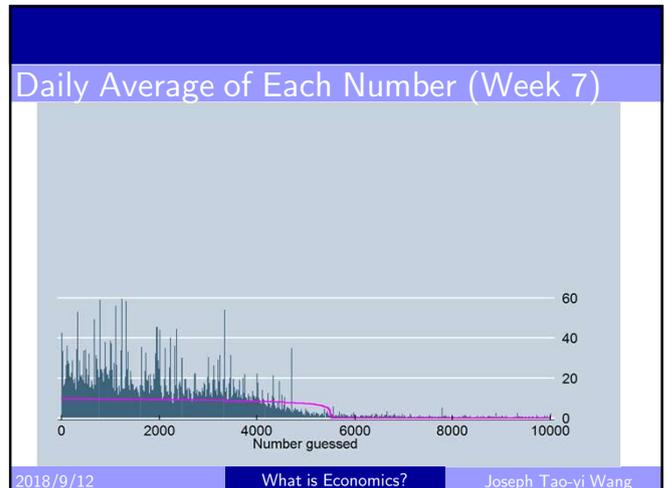
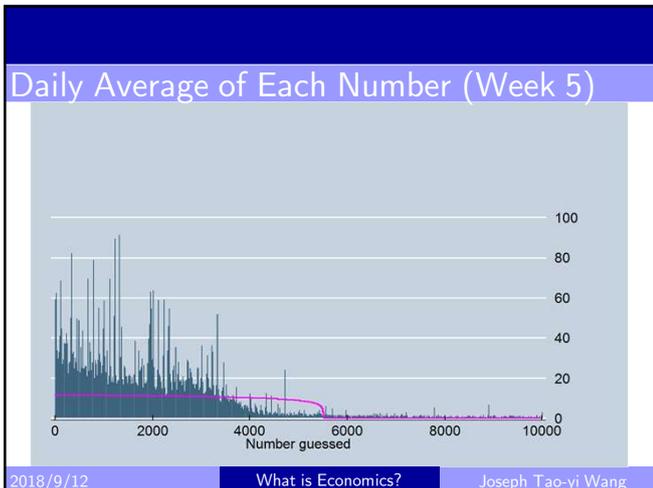
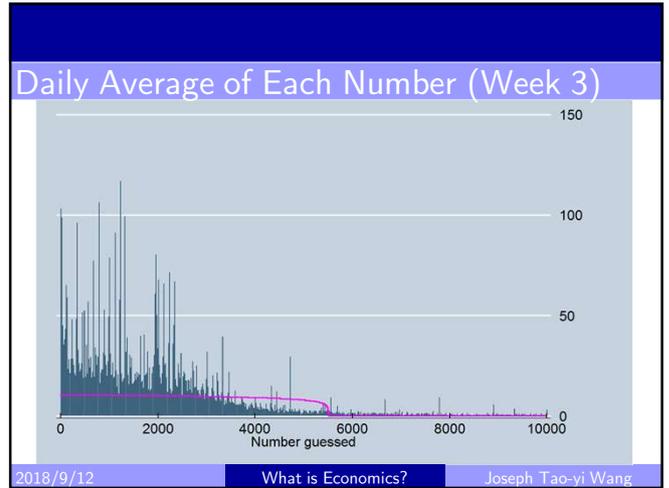
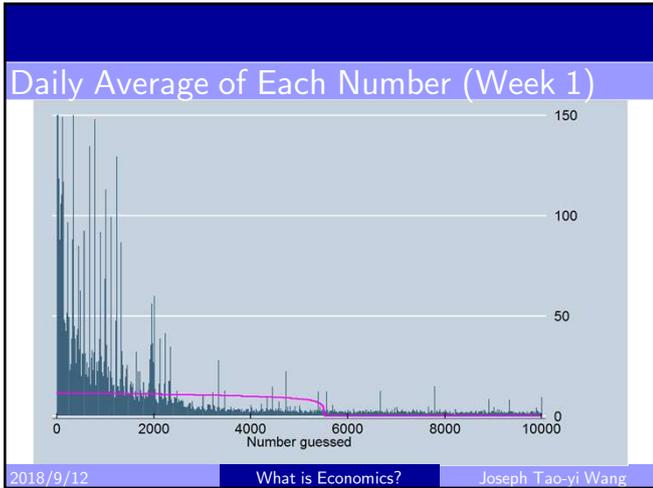


### Are We in the LUPI Game Equilibrium?



### Economic Lessons of The LUPI Game

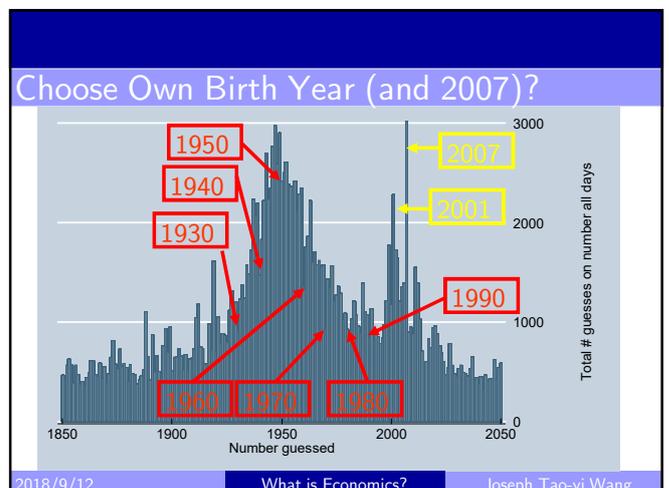
5. Does empirical data match the theory?
  - ▶ 實證資料是否支持你的預測? 蒐集資料來看看「整個社會」的結果如何



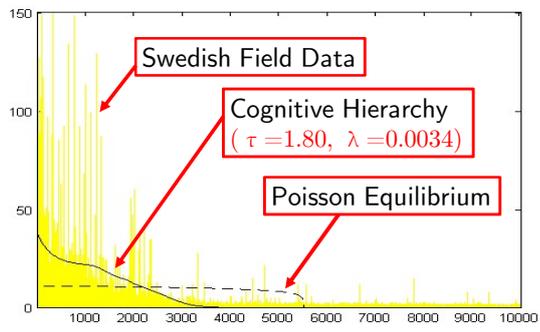
### Economic Lessons of The LUPI Game

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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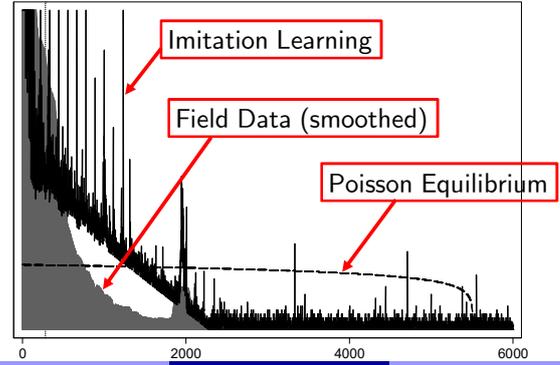


Initial Frequencies: Field Data (Week 1)



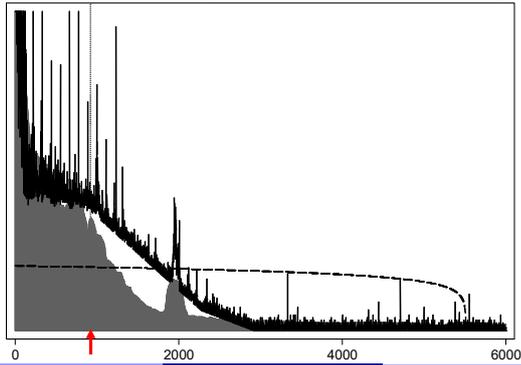
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Imitation Learning vs. Field Data - Day 2



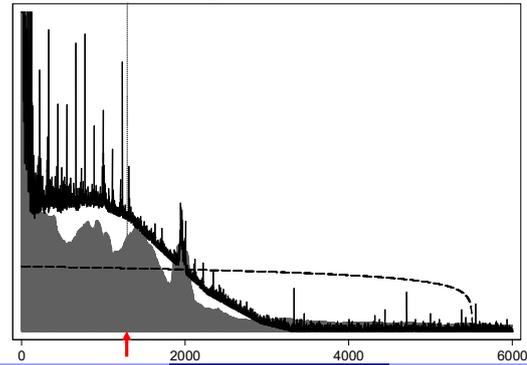
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Imitation Learning vs. Field Data - Day 3



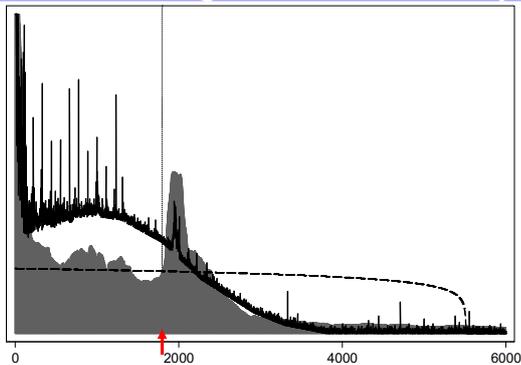
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Imitation Learning vs. Field Data - Day 4



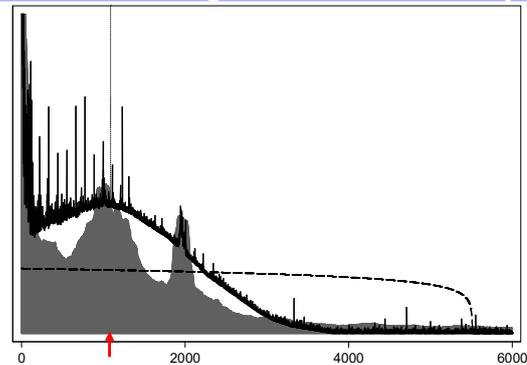
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Imitation Learning vs. Field Data - Day 5



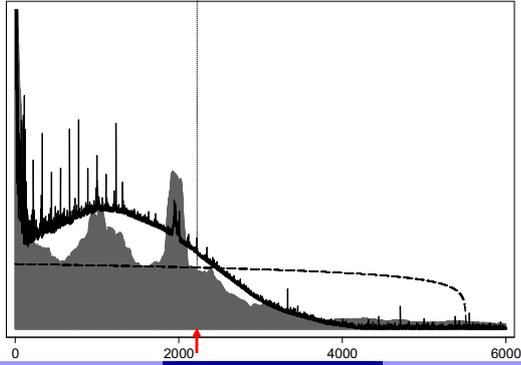
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Imitation Learning vs. Field Data - Day 6



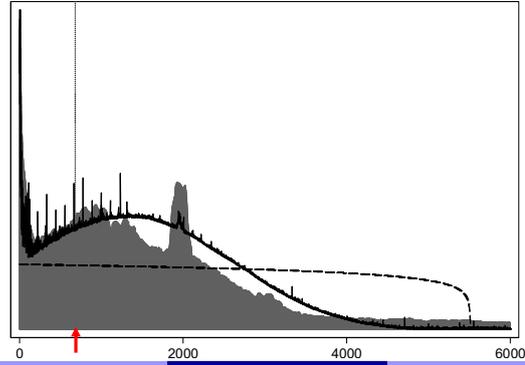
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Imitation Learning vs. Field Data - Day 7



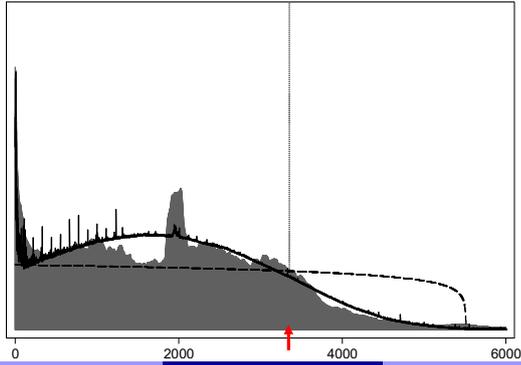
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Imitation Learning vs. Field Data - Day 14



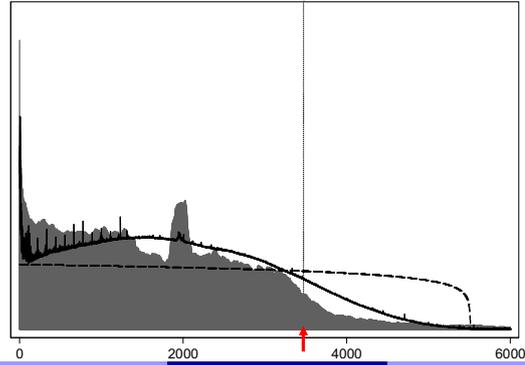
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Imitation Learning vs. Field Data - Day 21



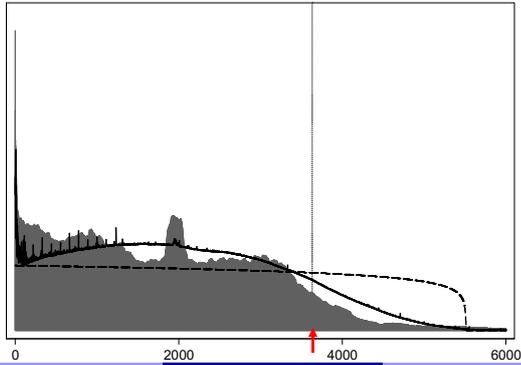
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Imitation Learning vs. Field Data - Day 28



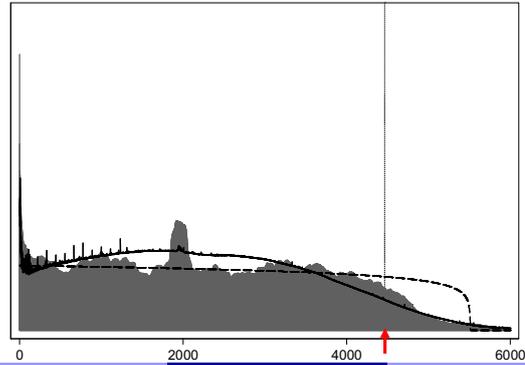
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Imitation Learning vs. Field Data - Day 35



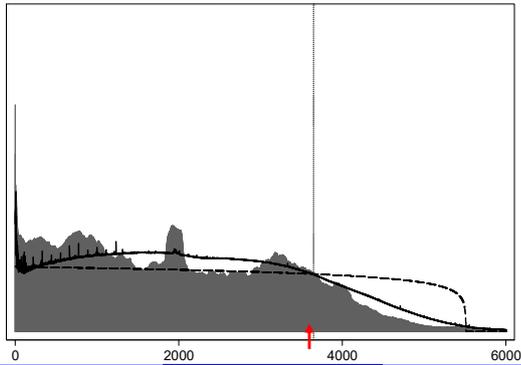
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Imitation Learning vs. Field Data - Day 42



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## Imitation Learning vs. Field Data - Day 49



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What is Economics?

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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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