Principles of Economics II

Introduction

Fall 2021
Mitri Kitti

Welcome!

Teacher: Mitri Kitti

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TA and review sessions: Amin Mohazab

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Lectures: Mon 13–15, Tue 10–12

Review Session: Thu 14–16

Course organization

Course homepage

- mycourses.aalto.fi -> my own courses-> Principles of Economics II
- Lecture slides, problem sets, return of problem sets

Textbook

- CORE-team: The Economy: www.core-econ.org/the-economy
- Relevant chapters indicated in the Syllabus of the course

Lectures

- Indicate the central content in the textbook and develop some themes further

Learning objectives

Principles of Economics (4 separate units) aims to

- Provide an overall view of economic activity in modern societies
- Take a first look at economic modeling and economic analysis
- Give an introduction to the use of data in economics
- Introduce economics behind major societal challenges

Objectives for Part II

- Understand market failures and the role of the public sector
- Understand aggregate economic phenomena

Assessment and grading

Grading

- 80% of your grade is based on final examination (Dec 16)
- 20% of your grade based on problem sets

Review sessions: discuss the lecture material and suggested solutions to problem sets

- Answers to problem sets returned via MyCourses
- An ideal place to ask questions regarding course material

It is essential to complete the problem sets!

The course (160h) assumes a large amount of independent work on top of the lectures

How to get the most from the course?

Familiarize yourself with the topic of the lecture in advance

Check that you have understood the main concepts in the lecture

- You can do this using the interactive tools in the textbook and by reviewing the list of concepts provided at the end of each chapter

Concentrate on the most relevant concepts and ideas

- One of the learning goals in this course is that you should learn to identify the key ideas
- Lecture material and problem sets are designed with this in mind

Feedback

You will get feedback on

- Performance in the problem sets
- Performance in the final examination

We want to get your feedback

- During lectures: ask questions! If you do not understand something, many others will have the same problem
- After lectures: I am available for short questions immediately after class and can set up an appointment for longer ones
- In review sessions
- A questionnaire during the course and after the course

Outline for the course (tentative)

Lecture 1–2: Markets, efficiency and public policy. Unit 12 (and Unit 22)

Lecture 3–4: The labour market: Wages, profits, and unemployment. Unit 9

Lecture 5: Economic fluctuations and unemployment. Unit 13

Lecture 6–7: Unemployment and fiscal policy. Unit 14

Lecture 8–9: Inflation, unemployment, and monetary policy. Unit 15

Lecture 10–11: Technological progress, employment, and living standards in the long run. Unit 16

Lecture 12: Recap

Principles of Economics II

Lecture 1: Markets, efficiency and public policy

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Outline

- **Causes of market failure:** **External effects, public goods, common pool resources, asymmetric information, incomplete contracts…**
- **Possible solutions:** **Private bargaining, government policies, public provision**
- **The limits of markets:** **should all goods be allocated via markets?**

Context

- **In Principles I, you looked at behaviour of buyers and sellers under different market conditions, and conditions under which the competitive equilibrium is Pareto efficient**
- **Sometimes markets may allocate resources in a Pareto-inefficient way (market failure)**
  - What are the sources of these inefficiencies?
  - How can governments solve the problem?

Do I have too few or too many socks?

Do I have too few or too many socks?

Answer: I have exactly the right amount of socks!

How do I know?

Because I alone get the benefits and I alone bear the costs

There is no reason to think that anybody would know better

Do we have too little or too much pollution?

Do we have too little or too much pollution?

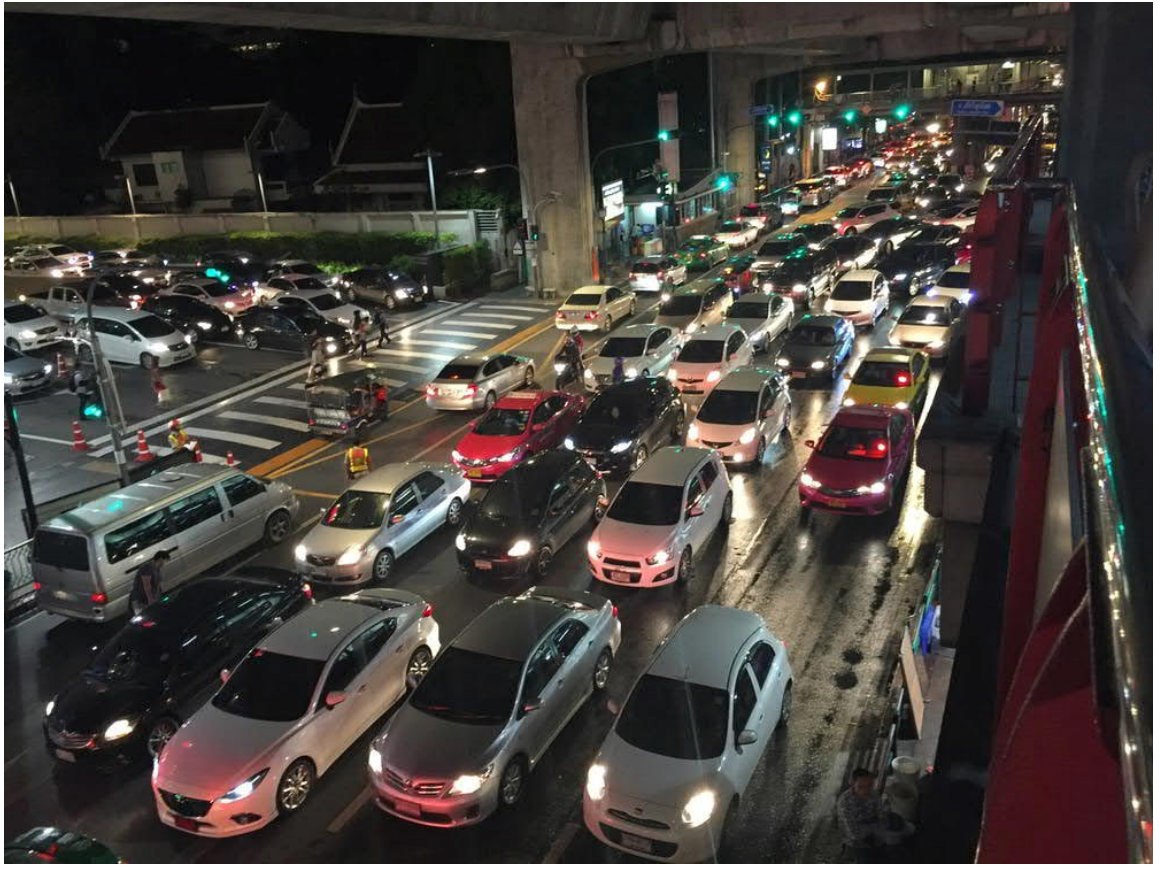
Answer: we can be pretty sure that we have too much pollution

How do we know?

Because a polluter does not bear the full costs of his/her activity

- Some costs spillover to others
- Pollution externality or spillover

Do we have too few or too many cars in downtown Helsinki at 4pm on a Friday?



Are people taking too few or too many flu shots?

Other examples of market failure

- **Pesticides in the Caribbean (textbook example)**
  - Banana plantation owners used harmful pesticides to reduce costs and increase their profits, but contaminated the local seafood
- **Overuse of antibiotics**
  - People overuse antibiotics when other treatments would be better, which creates bacteria-resistant pathogens
- **R&D investments**
  - Other firms benefit from innovations by one firm

Why do markets fail?

Conditions for markets to work well:

- Private property - the rights to the thing bought/sold
- Institutions e.g. government, court system - enforce property rights
- Ability to write complete and enforceable contracts that can be evaluated in a court of law
- Social norms – respecting property rights

Markets fail when property rights are missing, incomplete, or are difficult to enforce with a contract

Property rights: Who owns John Moore's spleen?

Story

- 1976 J. Moore working as a surveyor on the Alaska Pipeline was diagnosed with hairy-cell leukemia
- 1986 Dr. David Golde at UCLA filed a patent based on John Moore's cells extracted from his spleen (at the time the patent was valued $3 billion!)
- Moore sued Golde and UCLA for using his tissue without permission (J. Moore became the first person ever to assert a claim over his own tissues)

The resolution (by California supreme court 1990)

- Tissue separated form one's body is no longer property of the person
- Reasoning: opposite resolution would hinder scientific advance

External effects

External effect (externality, spillover)

External effect = an effect of an economic decision that is not specified as a benefit or liability in the contract

- Can be negative (pollution, congestion) or positive (vaccines)
- Also called spillovers, externalities

Leads to Pareto-inefficiency

- Negative externality: the social cost of the activity is higher than the private cost
- Positive externality: the social benefit of the activity is higher than the private benefit

Incentives

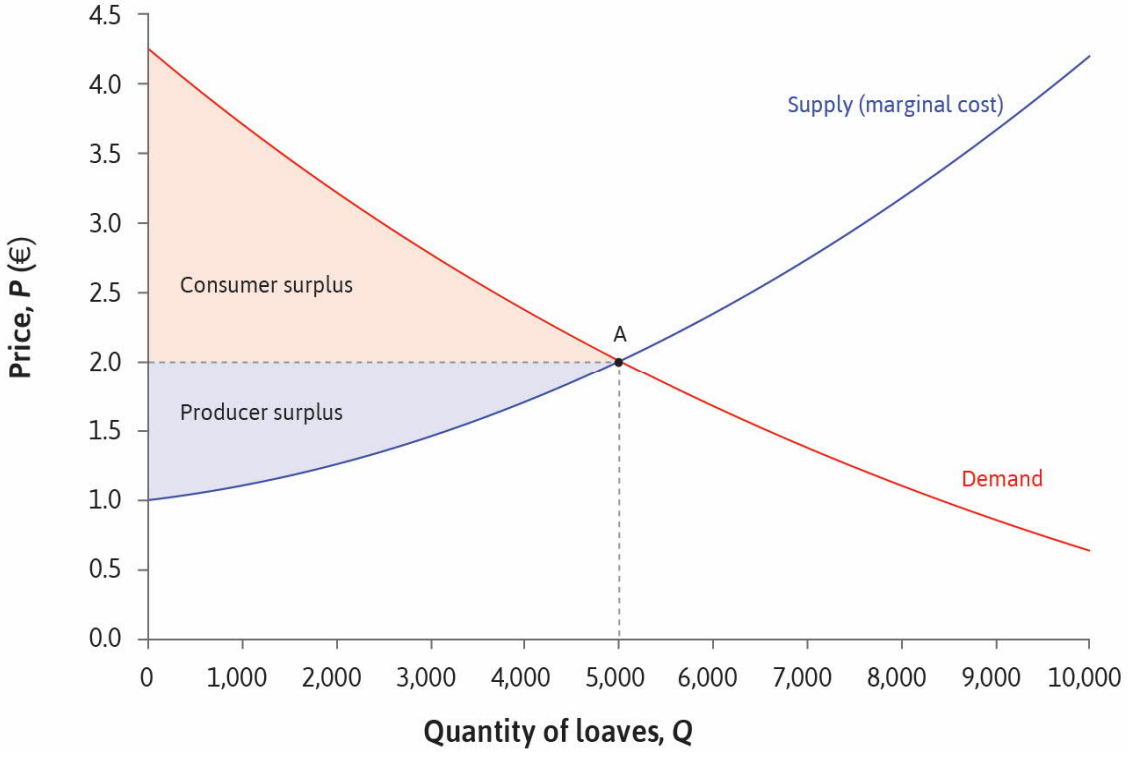
- **If we want to know whether we have too much or too little of some activity, we need to look at the incentives faced by the relevant decision-makers**
- **Ask:**
  - Do they bear all the costs of their activity or do some costs spillover to others?
  - Do they get all the benefits of their activity or do some benefits spillover to others?
- **If not, there is an externality problem**

Competitive equilibrium with no external effects

A market maximizes consumer and produces surplus

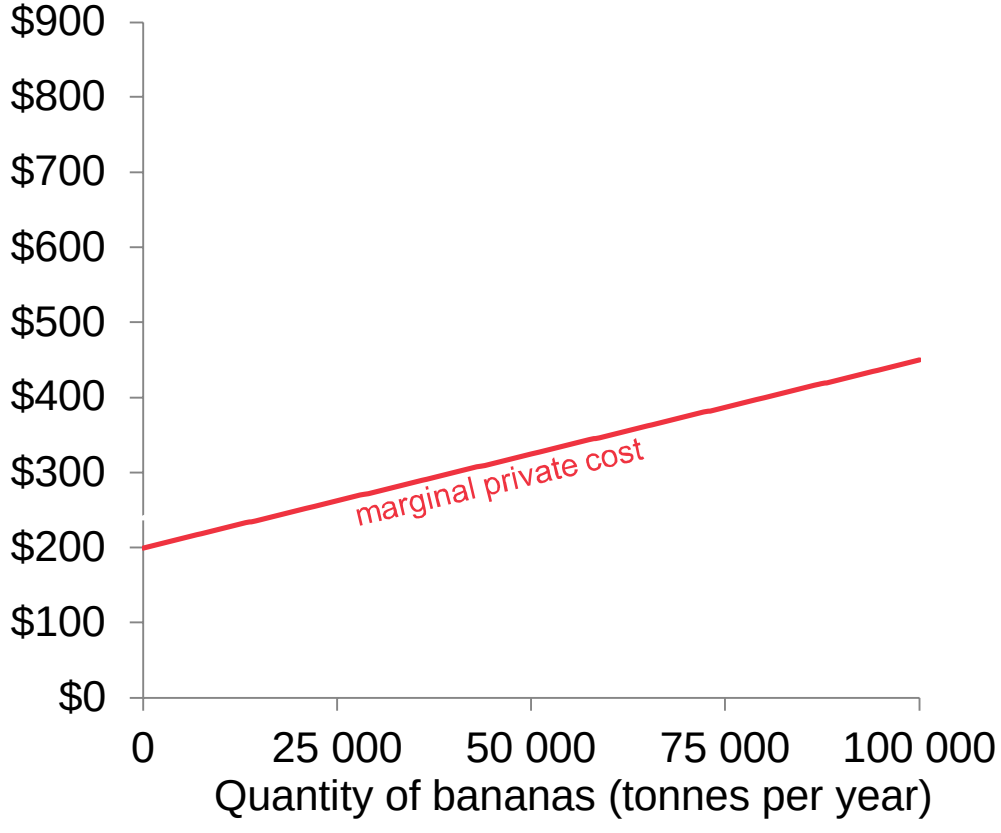
Let's use this familiar framework to see what happens when there are negative externalities

Pesticide pollution example: banana plantations use a pesticide that washes to through rivers to the coast hurting the livelihood of local fishermen



Negative externality

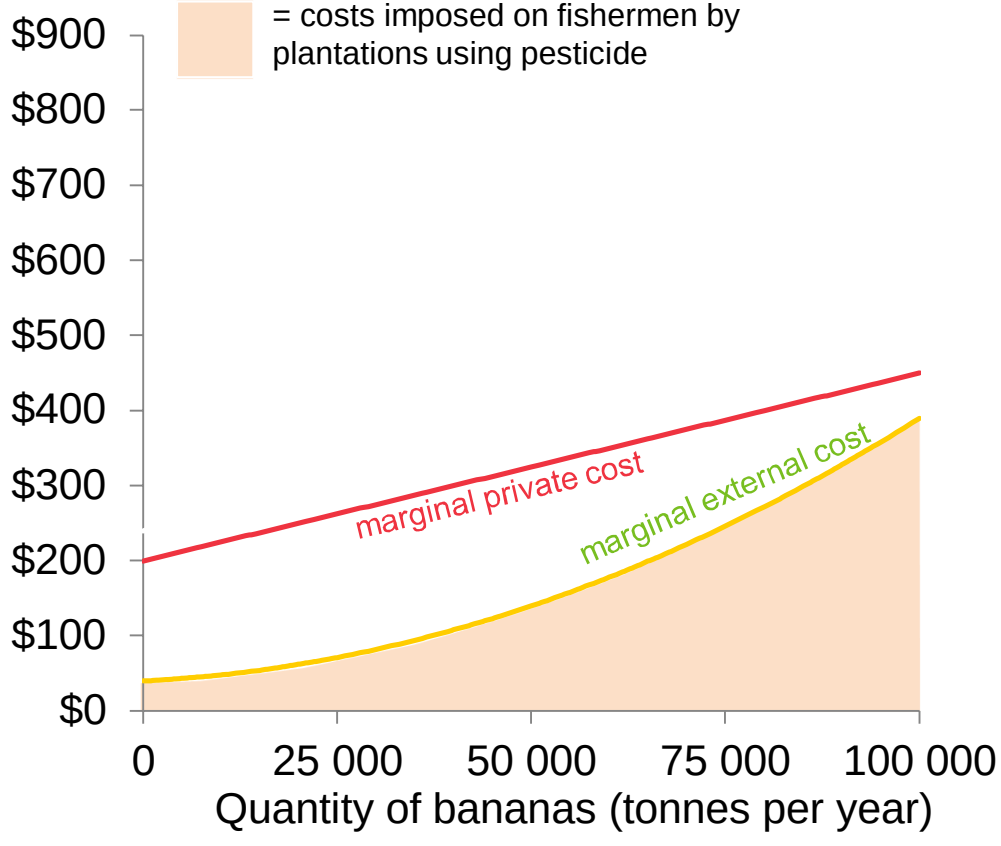
Marginal private cost (MPC) = marginal cost to decision-maker (plantation owners)



Negative externality

Marginal private cost (MPC) = marginal cost to decision-maker (plantation owners)

Marginal external cost (MEC) = costs imposed by decision-maker on society (fishermen)

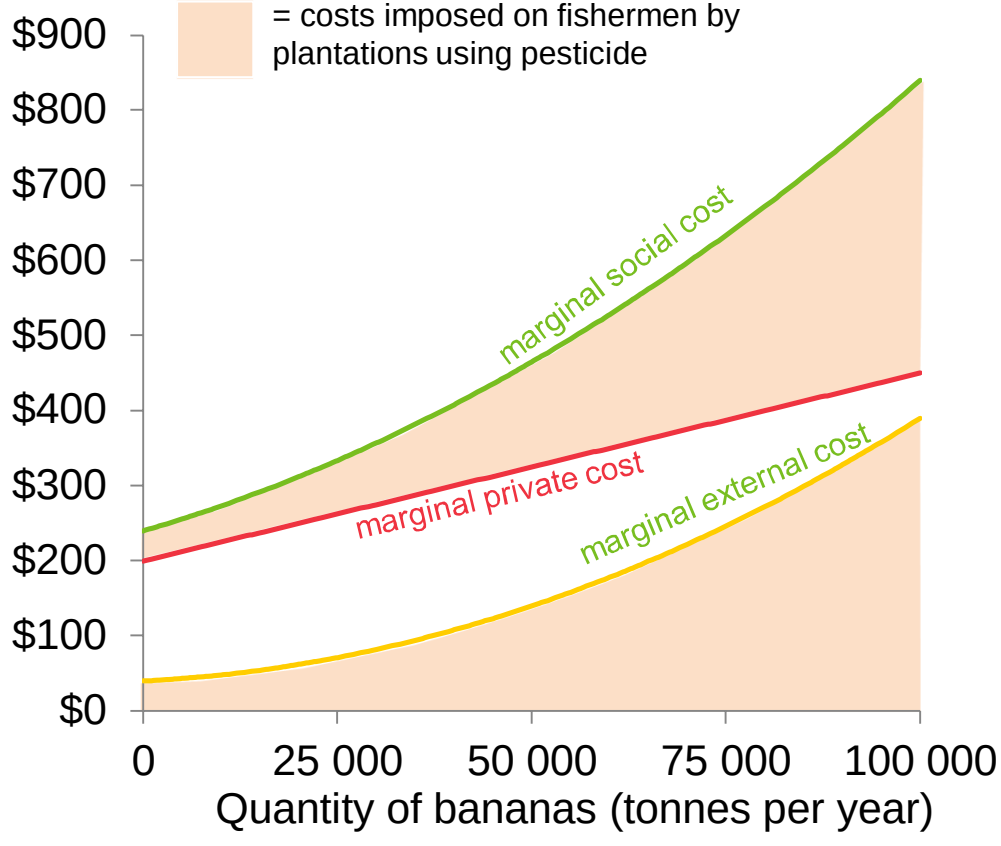


Negative externality

Marginal private cost (MPC) = marginal cost to decision-maker (plantation owners)

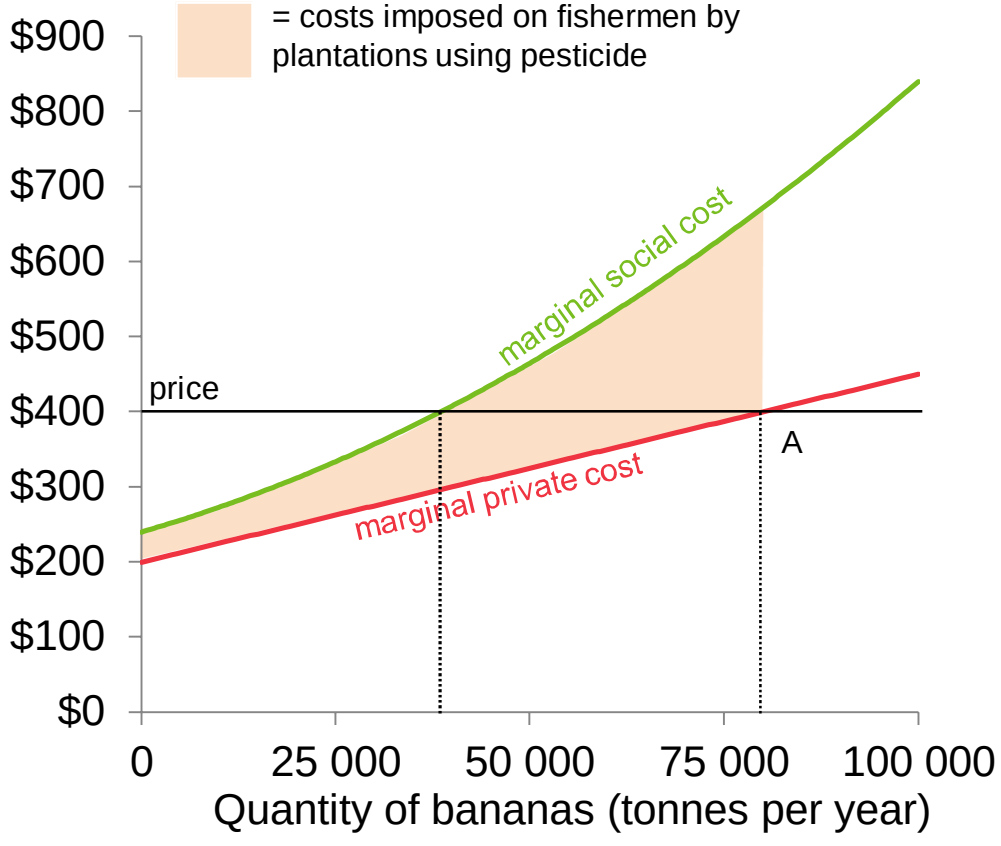
Marginal external cost (MEC) = costs imposed by decision-maker on society (fishermen)

Marginal social cost (MSC) = MPC + MEC (full cost to society)



Negative externality

Plantation owners maximize profits in competitive markets so that price = marginal private cost (A)



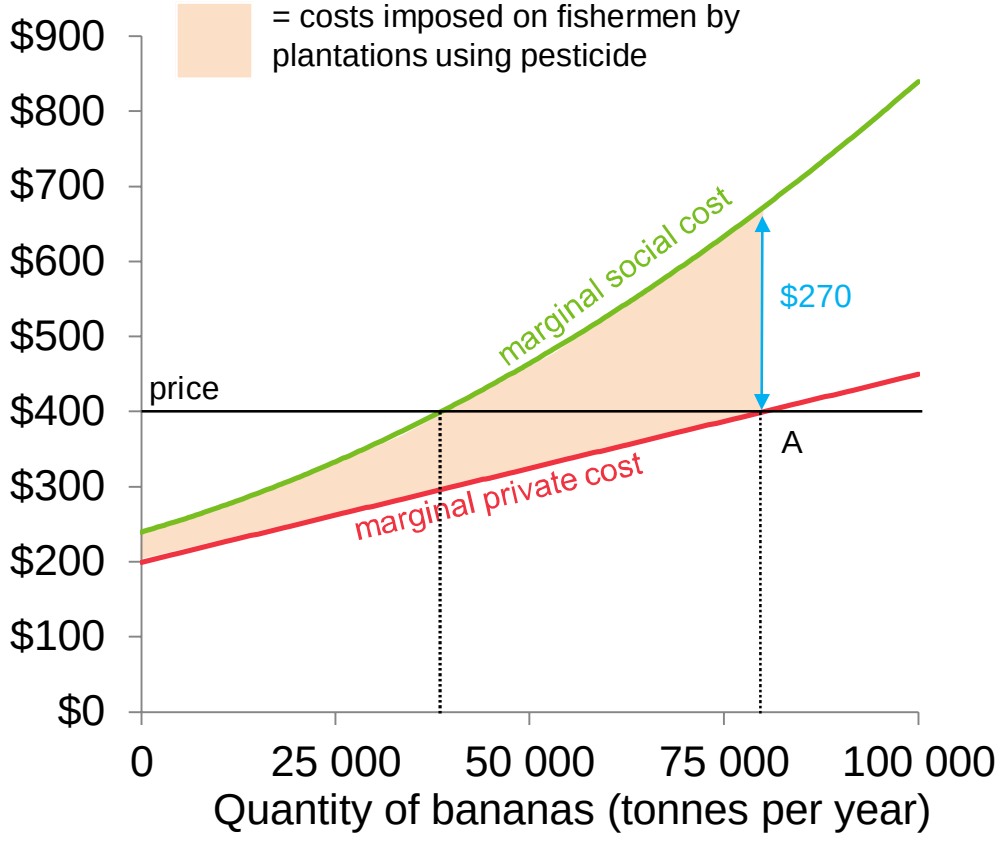
Negative externality

Plantation owners maximize profits in competitive markets so that price = marginal private cost (A)

But this is not Pareto-efficient

To see why, imagine that the fishermen could persuade the plantation owners to produce one tonne less

The fishermen would gain $270, but plantations would lose hardly anything

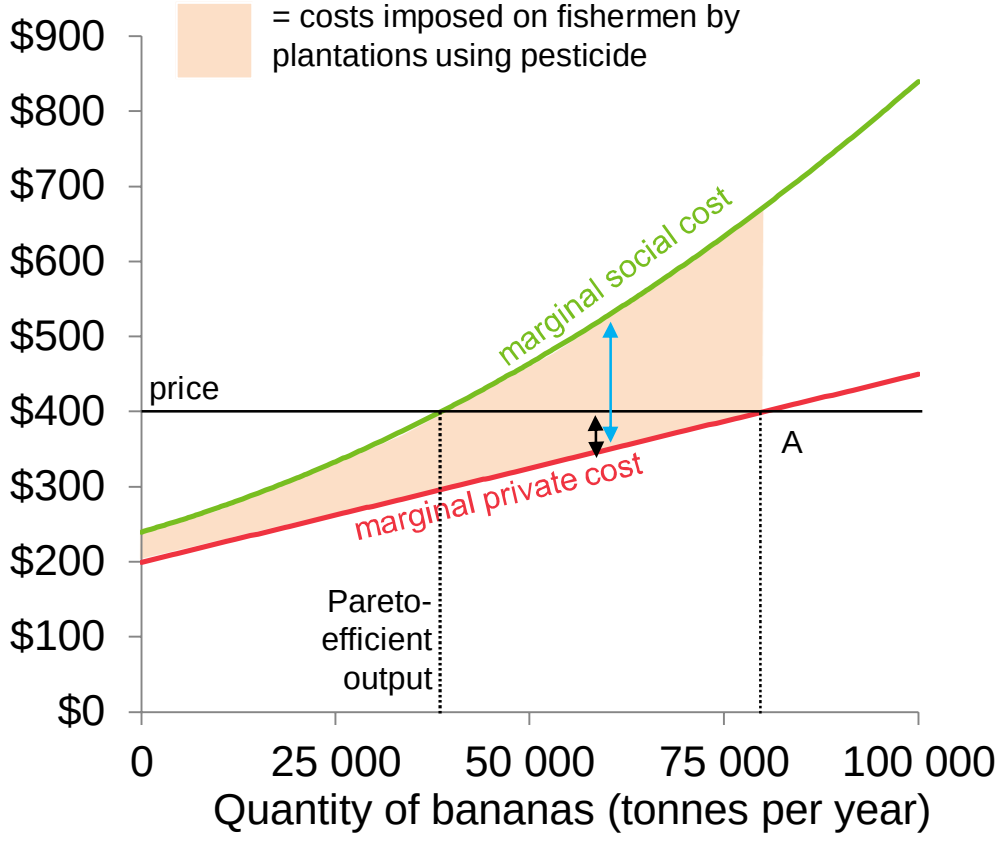


Negative externality

Moving from 79,999 to 79,998 would also benefit both groups

Using this argumentation, we can see that the point where price is equal to marginal social cost is Pareto-efficient

At this point, production is 38,000 tonnes and beyond this point it is not possible to make both plantations and fishermen better off



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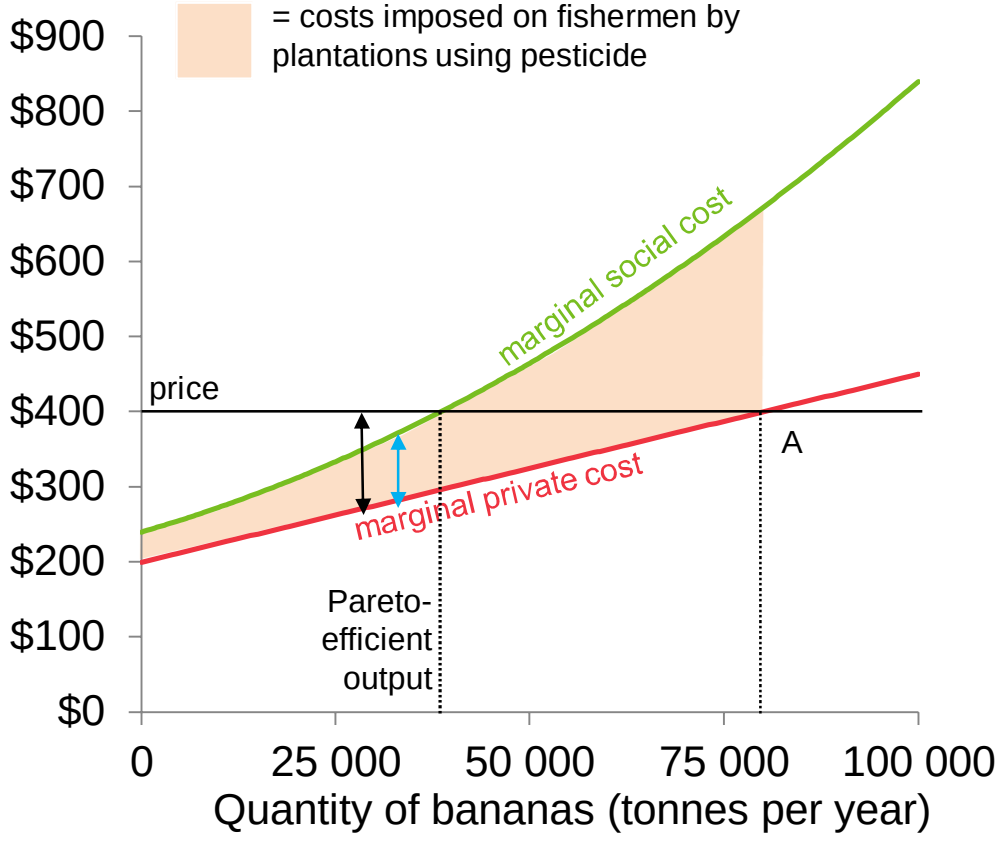


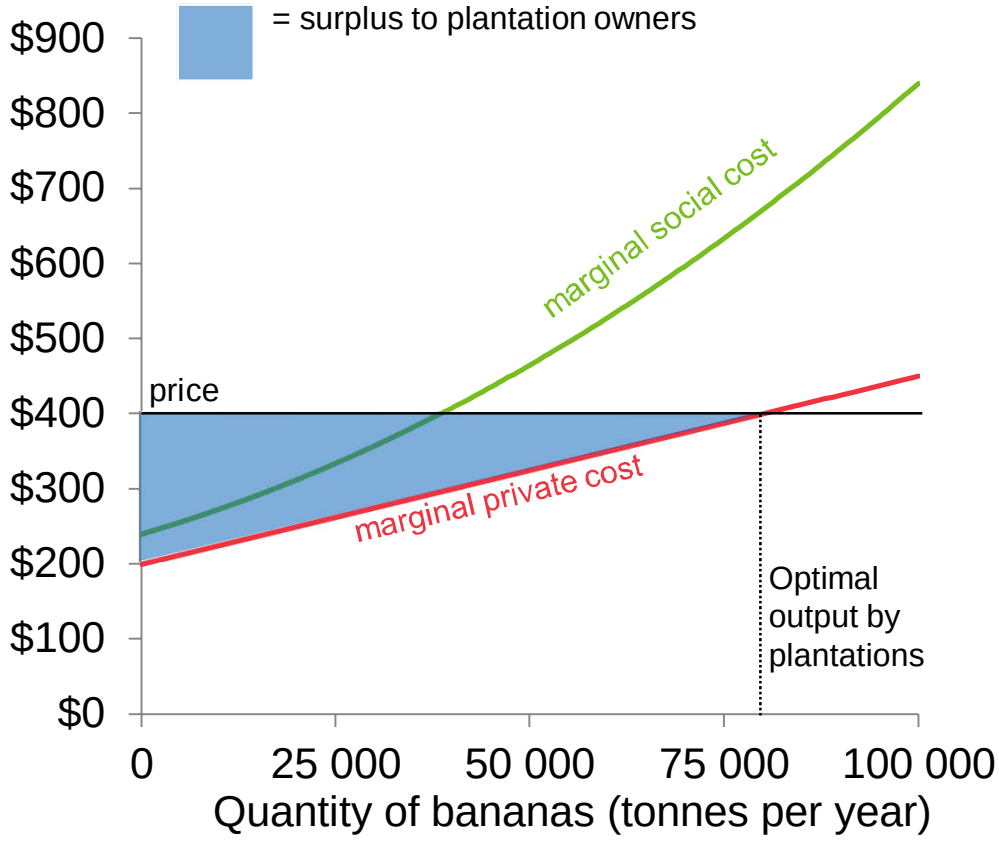
Solution #1: Bargaining

- **Pareto improvement is possible: what are the different ways of achieving it?**
- **We already saw that fishermen could pay the plantation owners to produce less, and both would be better off**
- **This insight suggests a remedy that could be implemented in the real world**
- **Coasean Bargaining:**
  - Legally assign property rights to the externality (e.g. the right to pollute, the right to clean water)
  - Private bargaining between parties involved will result in a Pareto-efficient allocation regardless of which party has the property rights, in the absence of transaction costs

Bargaining solution

Pesticide use is legal

Plantation owners maximize profits in competitive markets so that price = marginal private cost



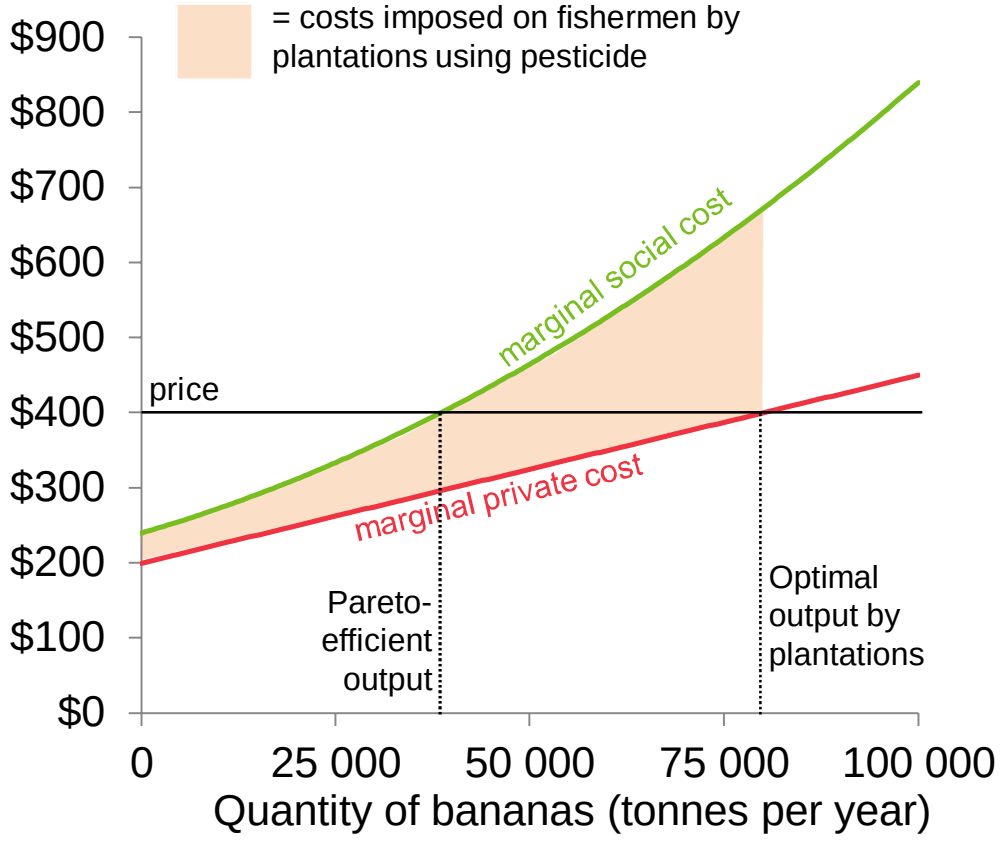
Bargaining solution

Pesticide use is legal

Plantation owners maximize profits in competitive markets so that price = marginal private cost

But the Pareto-efficient output would occur when price = marginal social cost

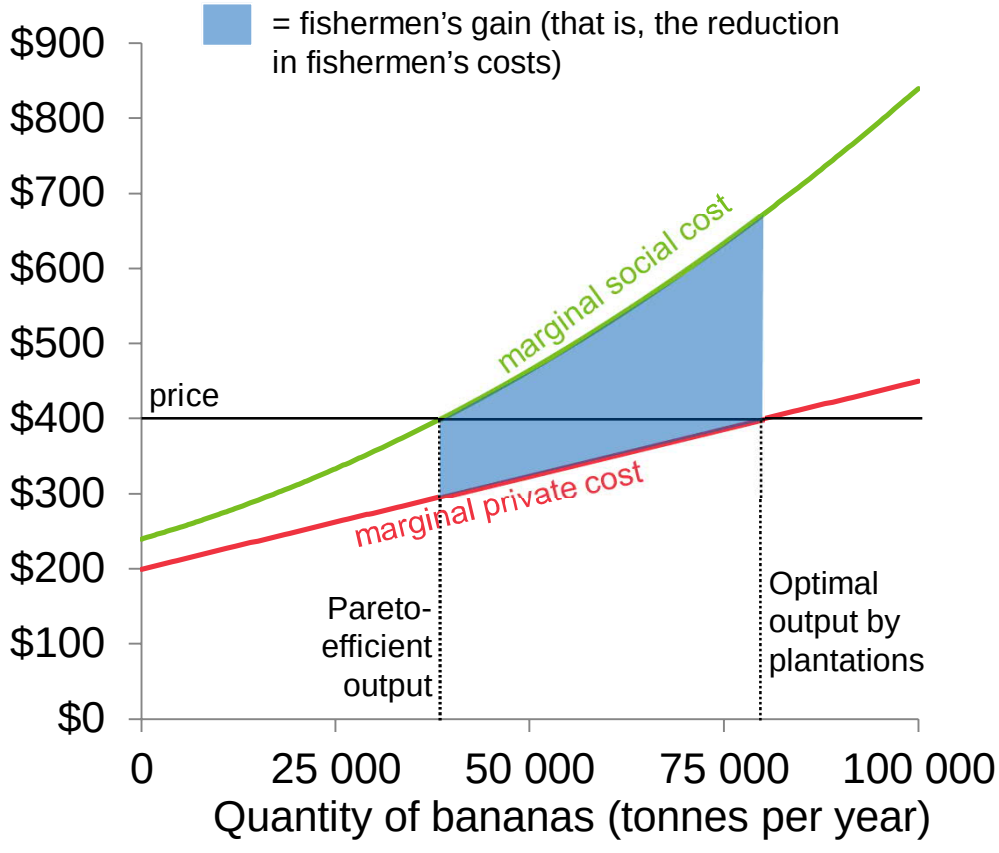
Plantation owners produce more than the Pareto-efficient amount because they do not consider the harm to fishermen from the pesticide use



Bargaining solution

What would happen if we move to the Pareto-optimum?

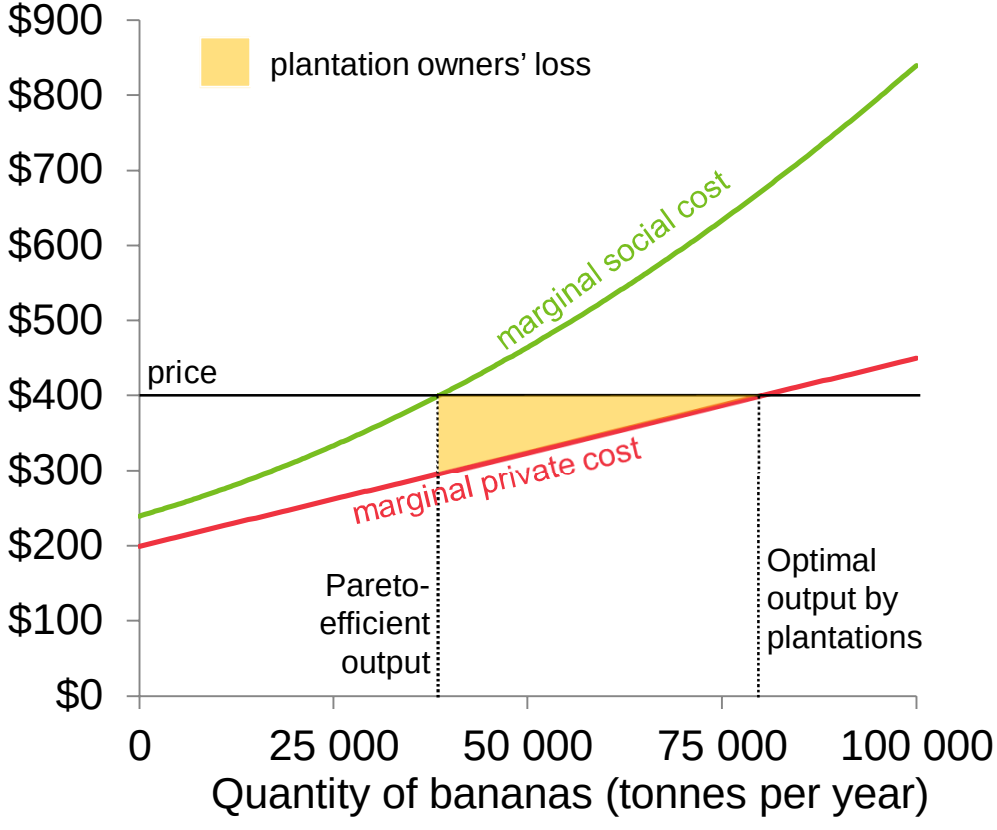
- Fishermen would gain



Bargaining solution

What would happen if we move to the Pareto-optimum?

- Fishermen would gain
- Plantation owners would lose

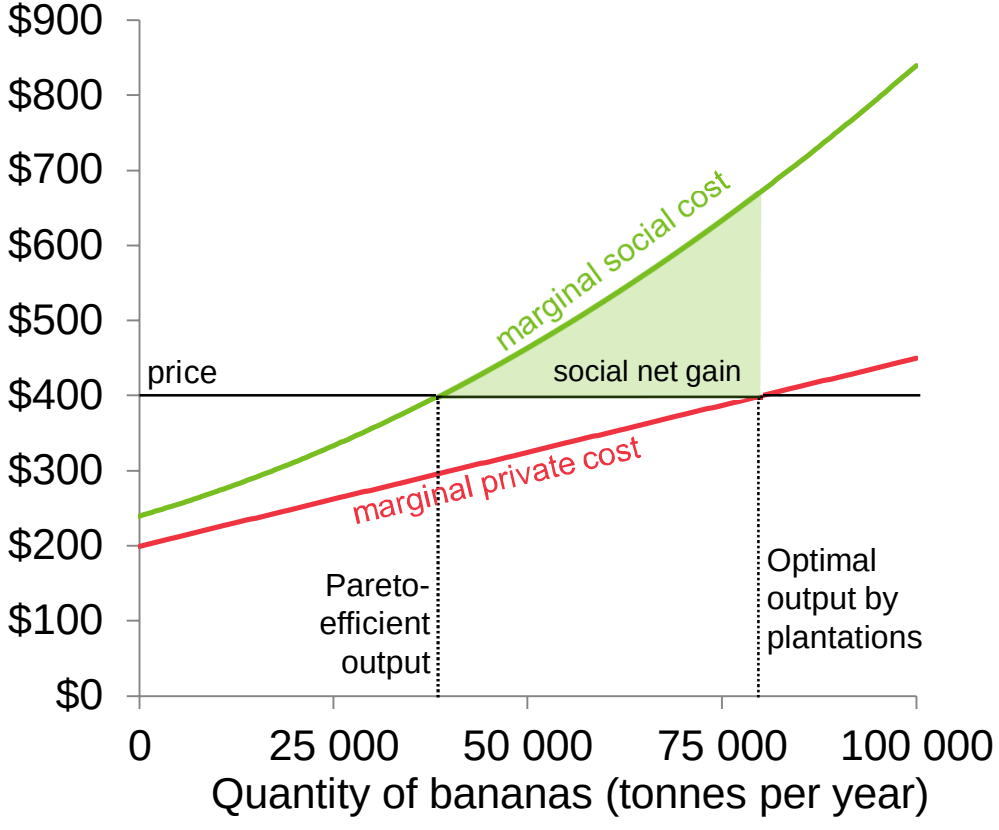


Bargaining solution

What would happen if we move to the Pareto-optimum?

- Fishermen would gain
- Plantation owners would lose
- **But less than the fishermen would gain!**

There is a net social gain that parties could share by reducing production, because the fall in plantations' profit is smaller than the gain for the fishermen



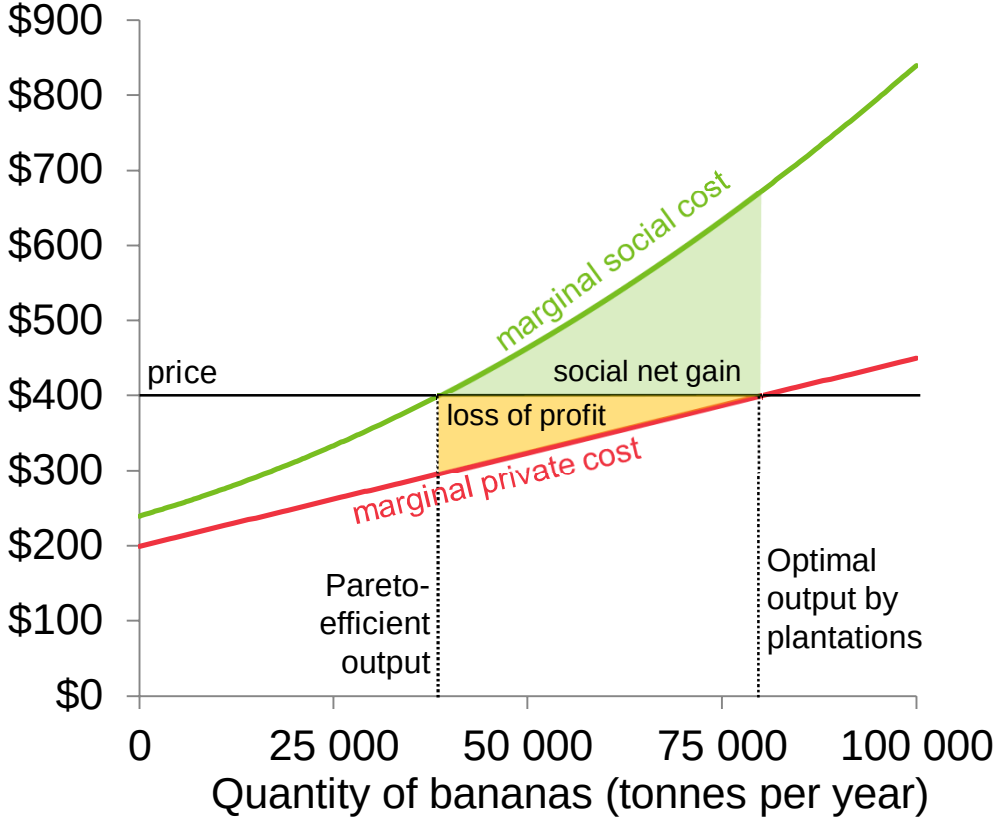
Bargaining solution

Plantation owners' **minimum acceptable offer** (minimum compensation) = lost profits

- Equally well-off producing 80,000 and producing 38,000 + receiving the minimum compensation

Fishermen's **reservation option** (maximum compensation) = the sum of yellow and green areas

Actual compensation depends on relative bargaining power



Practical limits of bargaining – transaction costs

- **Impediments to collective action – finding a representative and agreeing on how to split the gains within each party**
- **Missing information – calculating the exact costs imposed on each fisherman and each plantation's contribution to pollution**
- **Enforcement – it may be difficult for a court to determine whether plantations have complied or not**
- **Limited funds – fishermen may not have enough money to pay plantations the compensation required**

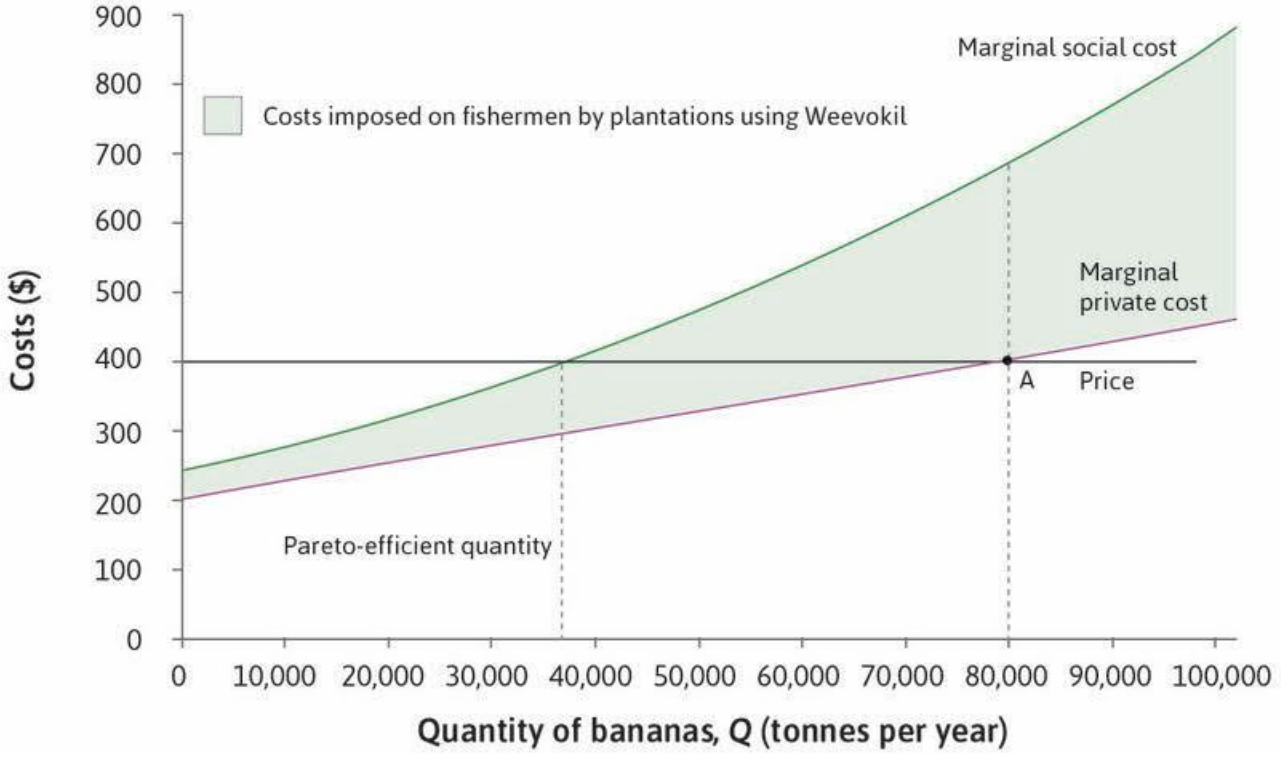
Solution #2: Government policies

1. **Regulation of production:** **cap at socially optimal amount**

2. **Pigouvian tax/subsidy:** **tax/subsidy on firms generating negative/positive external effects**

3. **Enforcing compensation** **for affected parties**

Example: pollution tax

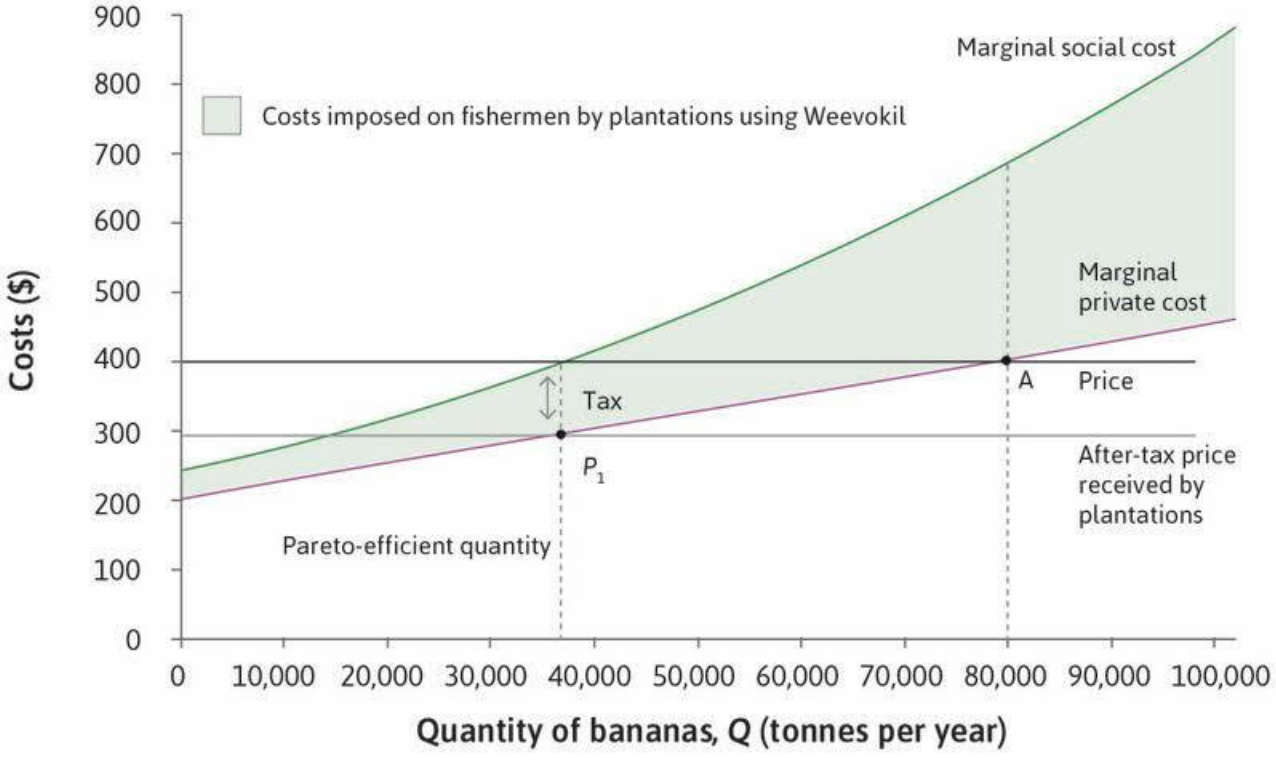


Example: pollution tax

Government puts a per-unit tax on output, equal to the MSC

Profit-maximising producer chooses output where MPC = after-tax price, which is the socially optimal output

The tax forces producers to face the full cost of their decisions

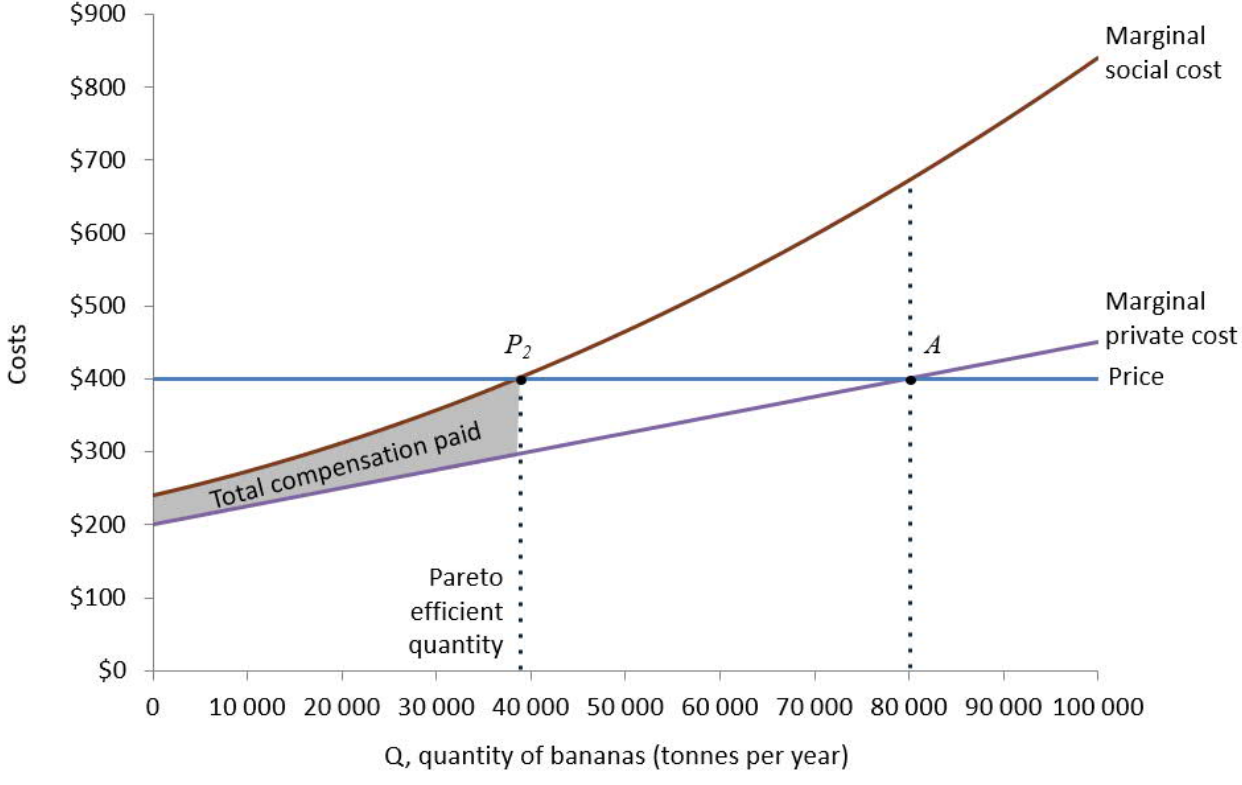


Example: compensation

Government requires plantation owners to pay fishermen compensation for each tonne produced

Required compensation is equal to the difference between the MSC and the MPC (grey area)

Fishermen are fully compensated, and producers choose the socially optimal level of output



Distributional issues

- **These government policies have different distributional effects**
- **Question on this in the first problem set**

Practical limits of policies

Similar limitations to those for private bargaining:

- Missing information – government may not know the exact compensation needed to correct the problem
- Measurement – Marginal social costs are difficult to measure
- Lobbying – The government may favour the more powerful group, in which case it could impose a Pareto-efficient outcome that is unfair

Trial and error

Public goods

Private goods

Rivalry:

- Consumption by one individual prevents others from consuming the same good
- If I'm wearing my jeans, no one else can wear them (food, housing, phones etc.)

Excludability:

- It is possible (and desirable) to exclude other users
- There are well-defined property rights

Example: Asteroid deflection

Example: Asteroid deflection

Source: MRUniversity: https://mru.org/courses/principles-economics-microeconomics/public-goods-example-asteroid-defense

Example: Asteroid deflection

- **Unlike jeans, asteroid deflection is not excludable**
  - If there is a system in place, you benefit regardless of whether you paid for it or not
  - You cannot be excluded from enjoying the benefits
- **In addition, your payment to the privately produced deflection system will not decide whether there is such a system**
- **Only two cases to consider**
  - Either enough other people pay and there is a system
  - Or not enough other people pay and there is no system
- **You get jeans, only if you pay for them. But the deflection system does not depend on your contribution at all!**

Example: Asteroid deflection

- **Everyone has an incentive to freeride or take advantage of the fact that other people are paying for the deflection system**
- **This is why producing jeans can be profitable for a private firm, but producing an asteroid deflection system cannot**
- **The system will not be produced in free markets => market failure**

Public goods

Challenges for markets

- Non-excludability means that it is difficult to charge users (the free rider problem)
- Non-rivalry means that it would not be desirable to exclude anyone!

Note on terminology:

- The public sector produces a lot of different goods (health care, housing etc.), but only some are actual public goods
- These are not public goods even though they are provided by the public sector
- These are publicly provided private goods!

Private and public goods

	Rival	Non-rival
Excludable	**Private goods** (*food, clothes, housing*)	**Club goods** (*subscription TV, WiFi, knowledge subject to intellectual property rights*)
Non-excludable	**Common-pool resources** (*fish stocks, common grazing land, public roads*)	**Public goods** (*national defence, public broadcasts, rules of calculus*)

Club goods

Netflix: marginal cost for an additional viewer is zero, but the price is €7.99

- There are people who would be willing to pay, say, 7€, but they will not get the service because Netflix cannot price discriminate

Should the government or the public sector provide the service?

- Pros and cons?

Common-pool resources

Tragedy of the commons:

- The tendency of any resource that is not owned, and hence non-excludable, to be overused and undermaintained

Example: Why has the tuna stock collapsed?

- Nobody wants the tuna to go extinct (not the consumers nor the fishermen)
- Because people eat more sushi?
- But why aren't chickens in danger of going extinct?

The answer: nobody owns the tuna, but farmers own the chicken

- Incentives matter!

European Journal of Political Economy
Volume 38, June 2015, Pages 140-152

Common pool problems in voluntary municipal mergers

Tuukka Saarimaa ✉, Janne Tukiainen [1] ✉

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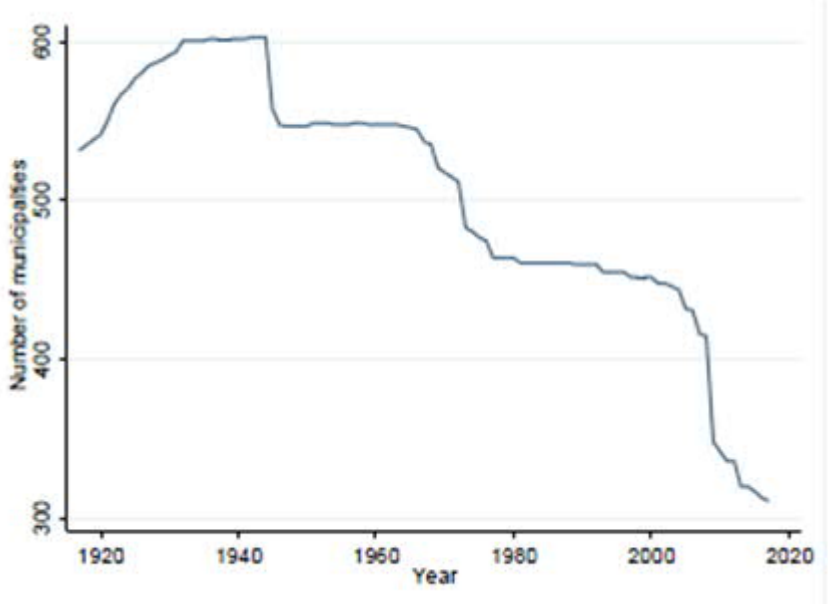
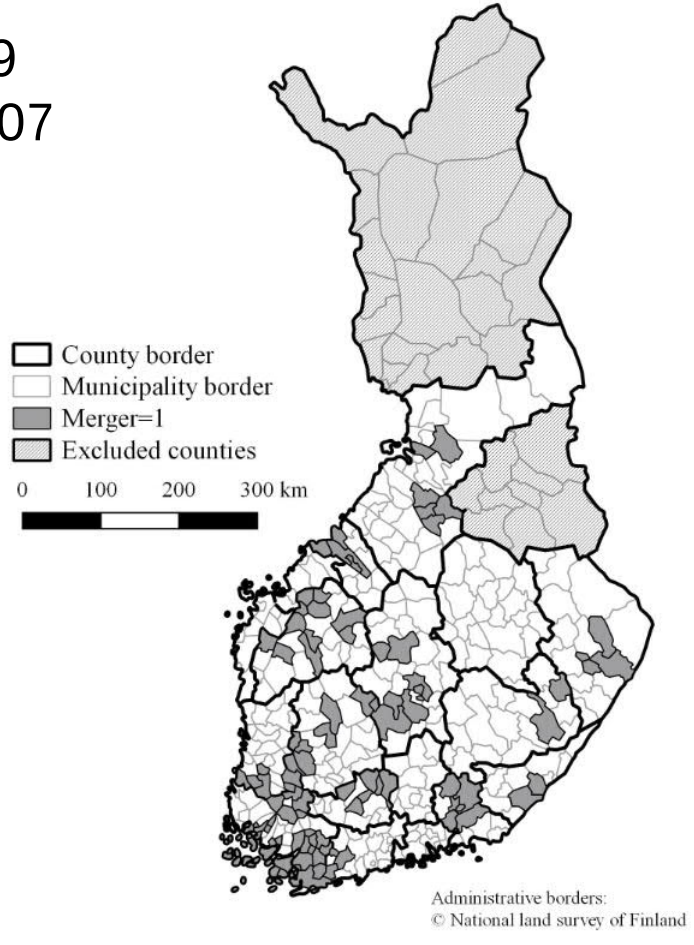
Background

At the start of 2009, 32 mergers (involving 99 municipalities) took place; decided in 2006–07





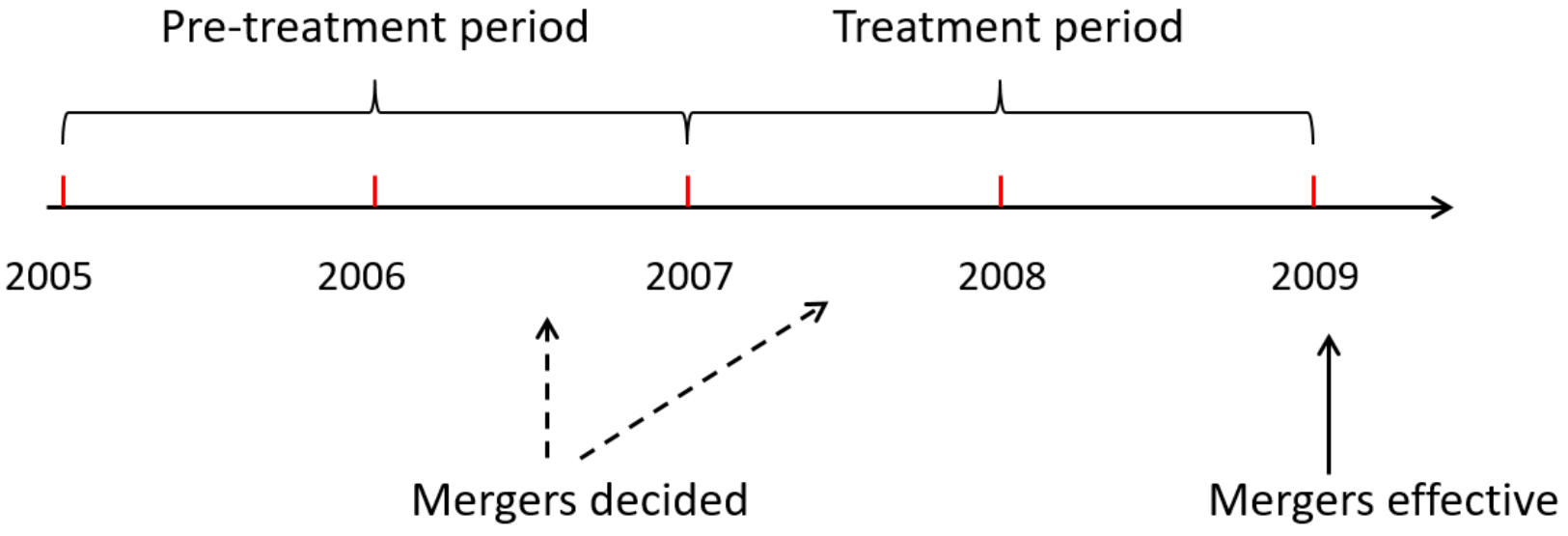
Common pool

Municipality mergers create a temporary common pool problem

- After deciding to merge, municipalities remain autonomous before the merger for 1–2 years
- During this time, municipalities can invest in projects that benefit their citizens using debt-financing
- After the merger, the debts are consolidated and all taxpayers in the merging municipalities are responsible to repaying them

A small group benefits and costs are shared among a larger group => common pool problem

Merger timeline



Who has incentives free-ride?

- **Incentives:**
  - Some incentives for all that merge, but stronger for relatively small municipalities
  - We define a measure of free-riding incentives for municipality *i* in merger *j* as

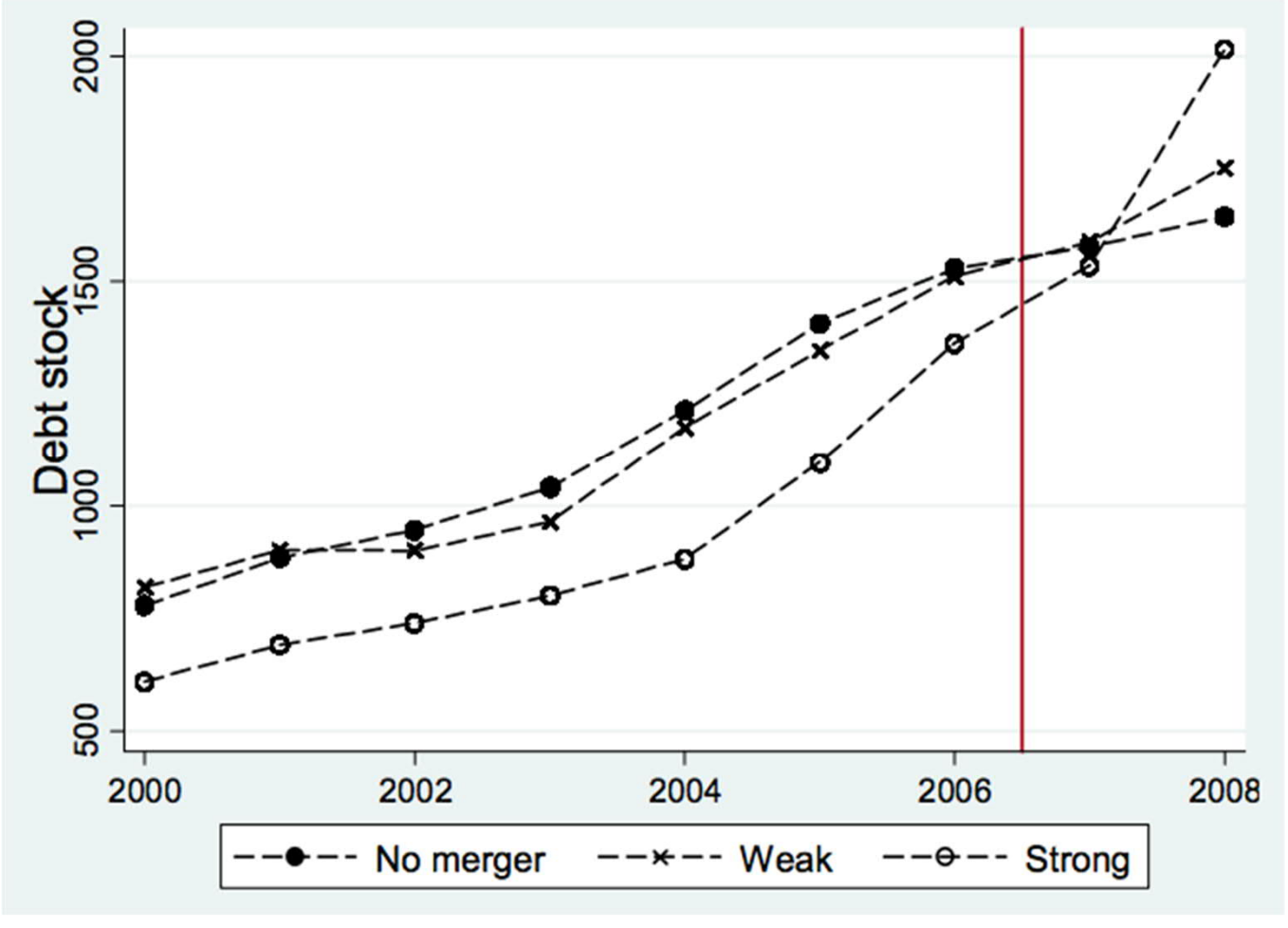
    $$freeride_i = 1 - taxbase_i / taxbase_j$$

  - Idea: municipality *i* internalizes $taxbase_i / taxbase_j$ of the social marginal cost of borrowing
  - Higher values of freeride imply stronger free-riding incentives
  - We compare municipalities with high and low values of *freeride* and the no-merger group

Difference-in-differences method

- **Assumption: in the absence of treatment, the difference between treatment and control groups is constant over time (parallel or common trends)**
- **With this assumption, we can use observations on treatment and control groups before and after the treatment to estimate a causal effect:**
  - Difference pre-treatment is ‘normal’ difference
  - Difference post-treatment is ‘normal’ difference + causal effect of treatment
  - Difference-in-differences is the causal effect

Results – Municipal debt (€ per capita)



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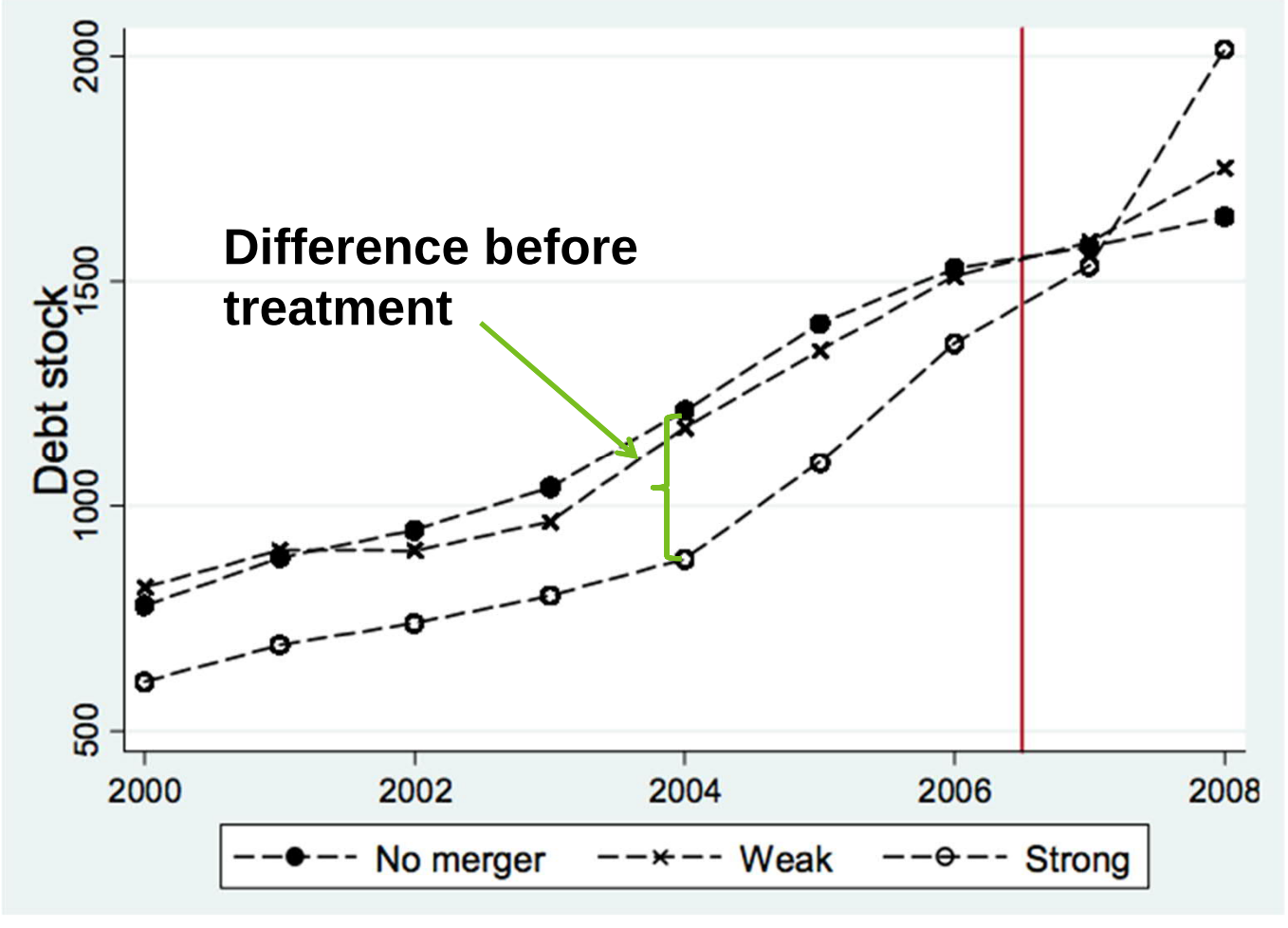

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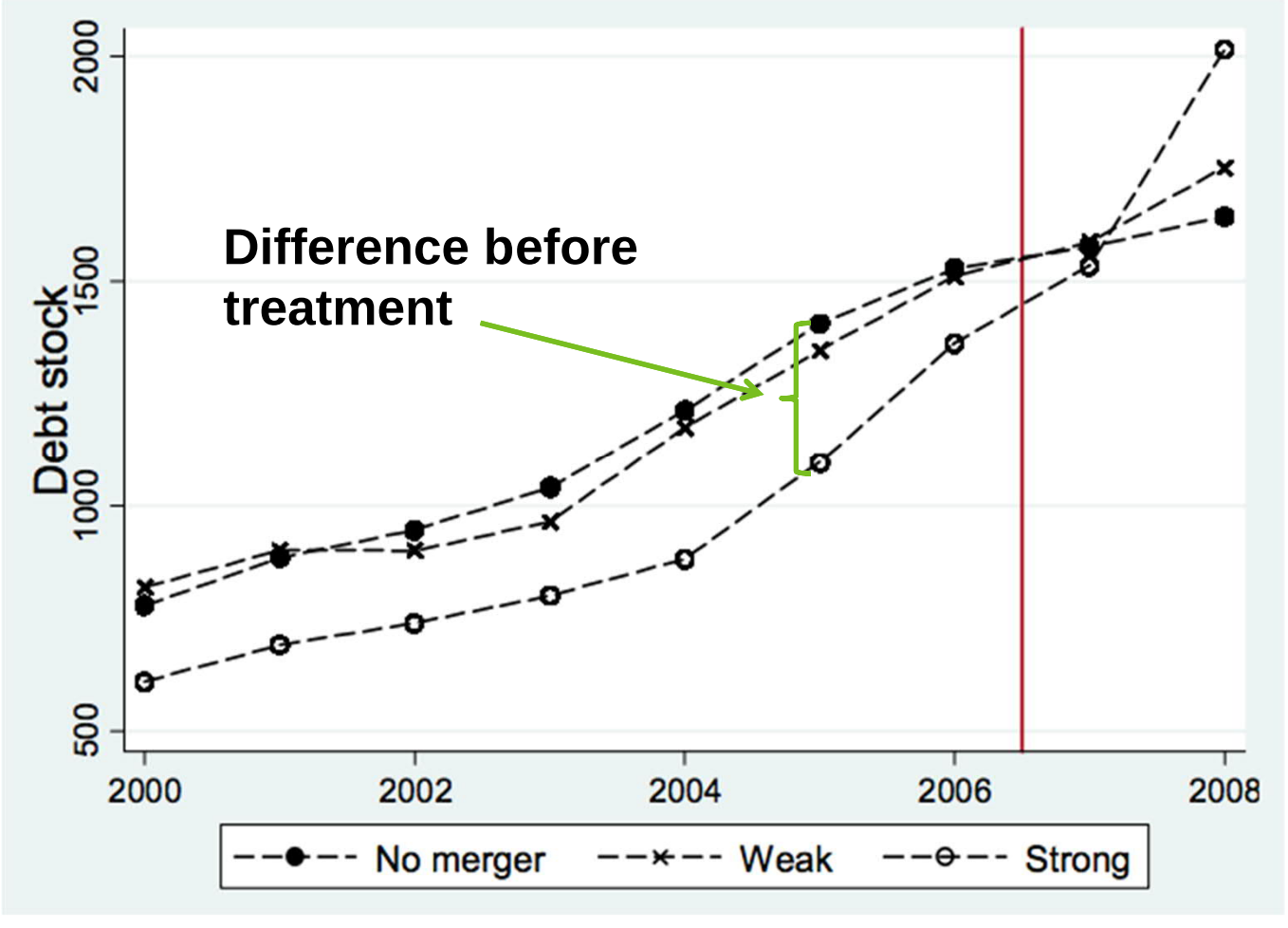

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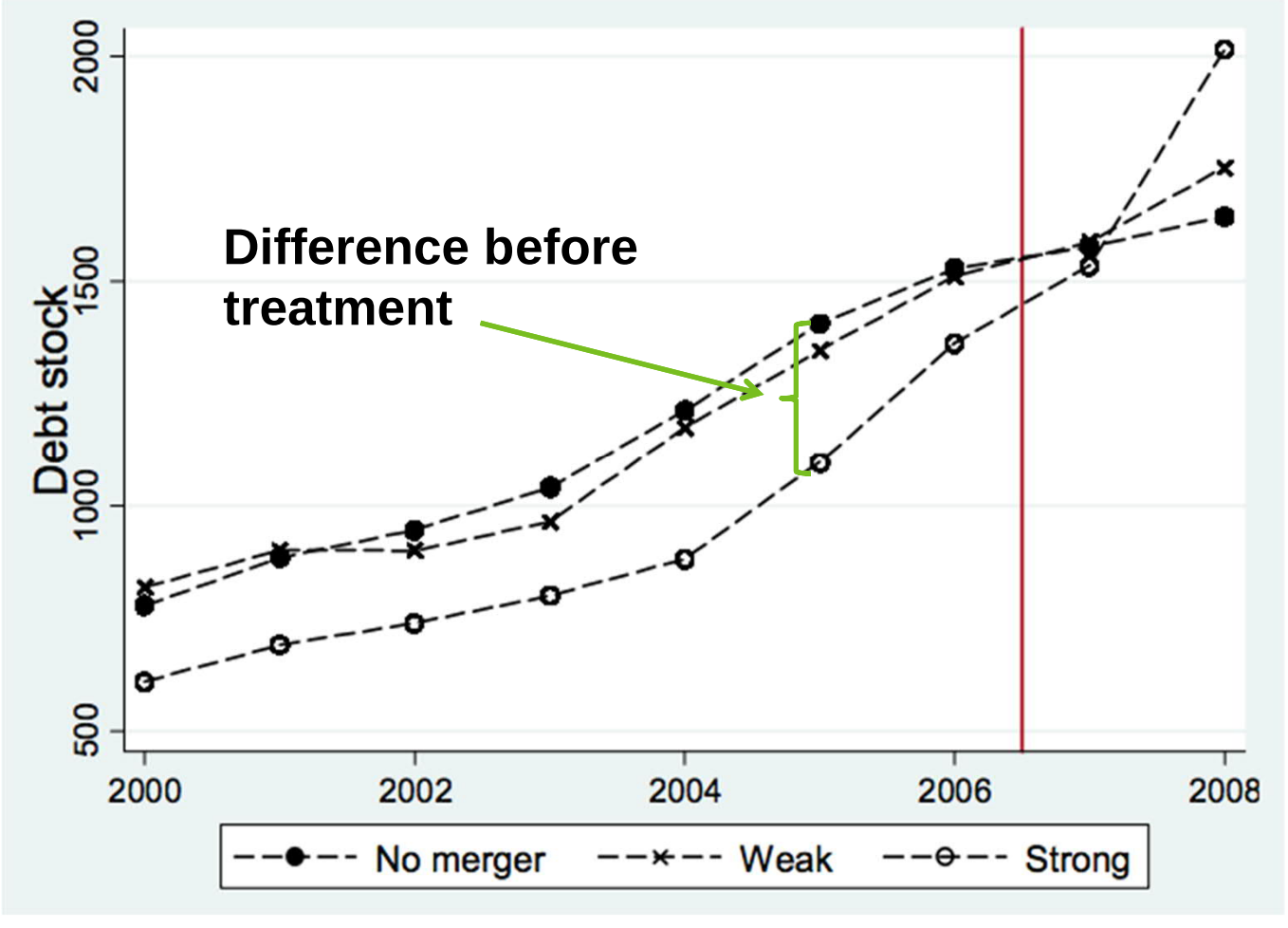
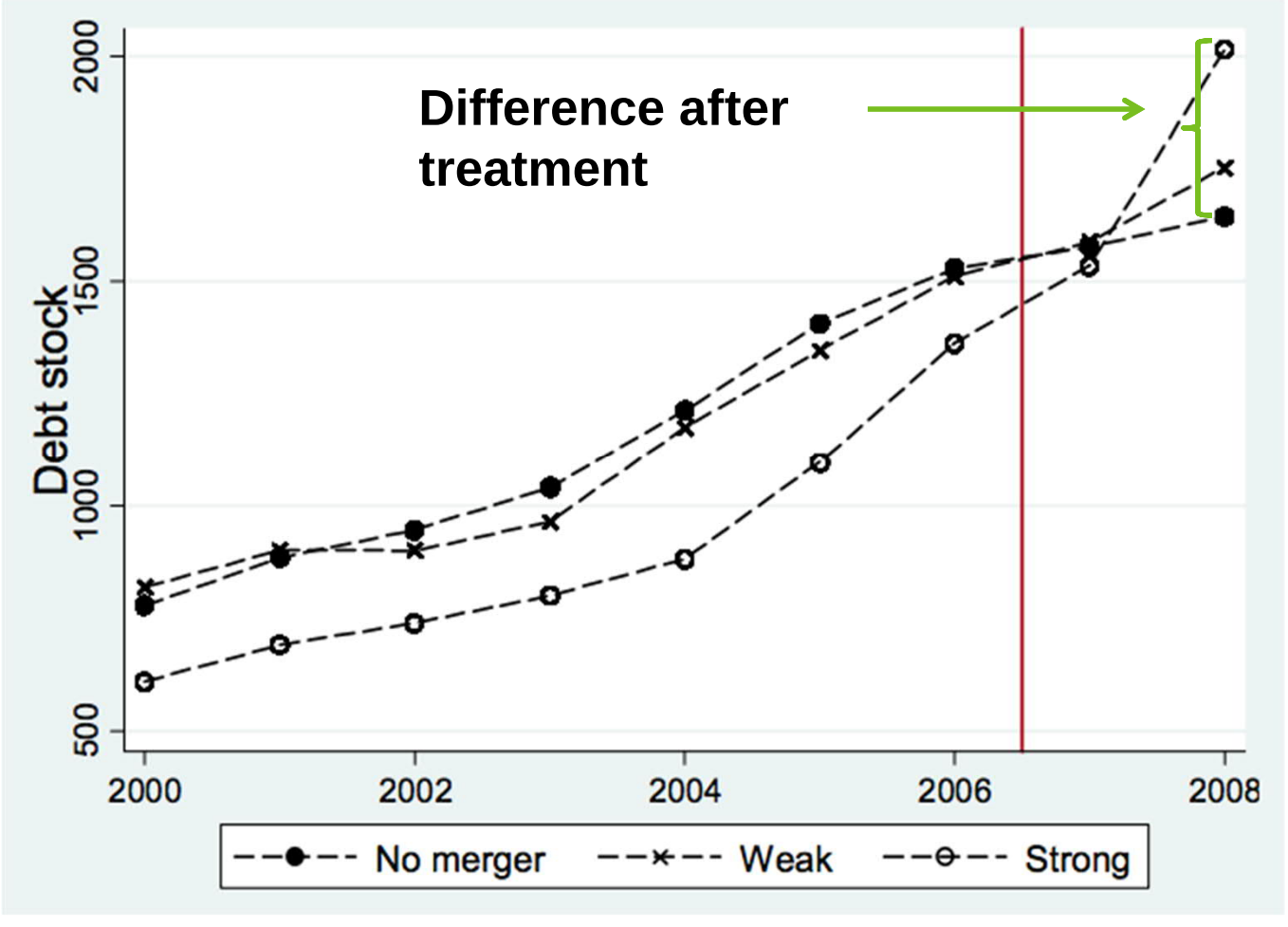


It seems that the debt stock has developed quite similarly in control and treatment groups before mergers were decided

Driven by common macroeconomic shocks, for example

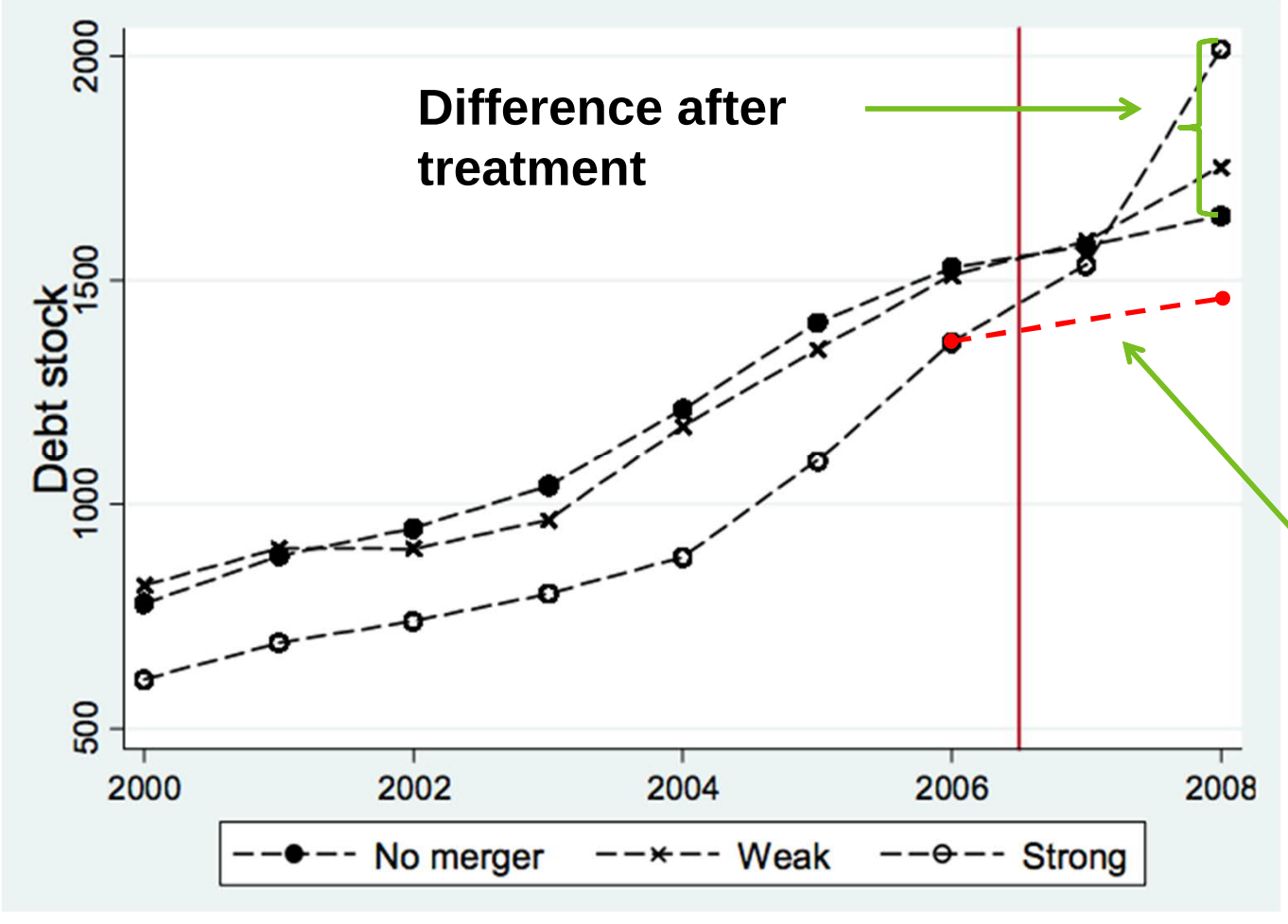
Results – Municipal debt (€ per capita)



But starting from 2006, the debt stock starts to increase much more rapidly in the merger group that had strong incentives to free ride

Are there other explanations for this?

Results – Municipal debt (€ per capita)

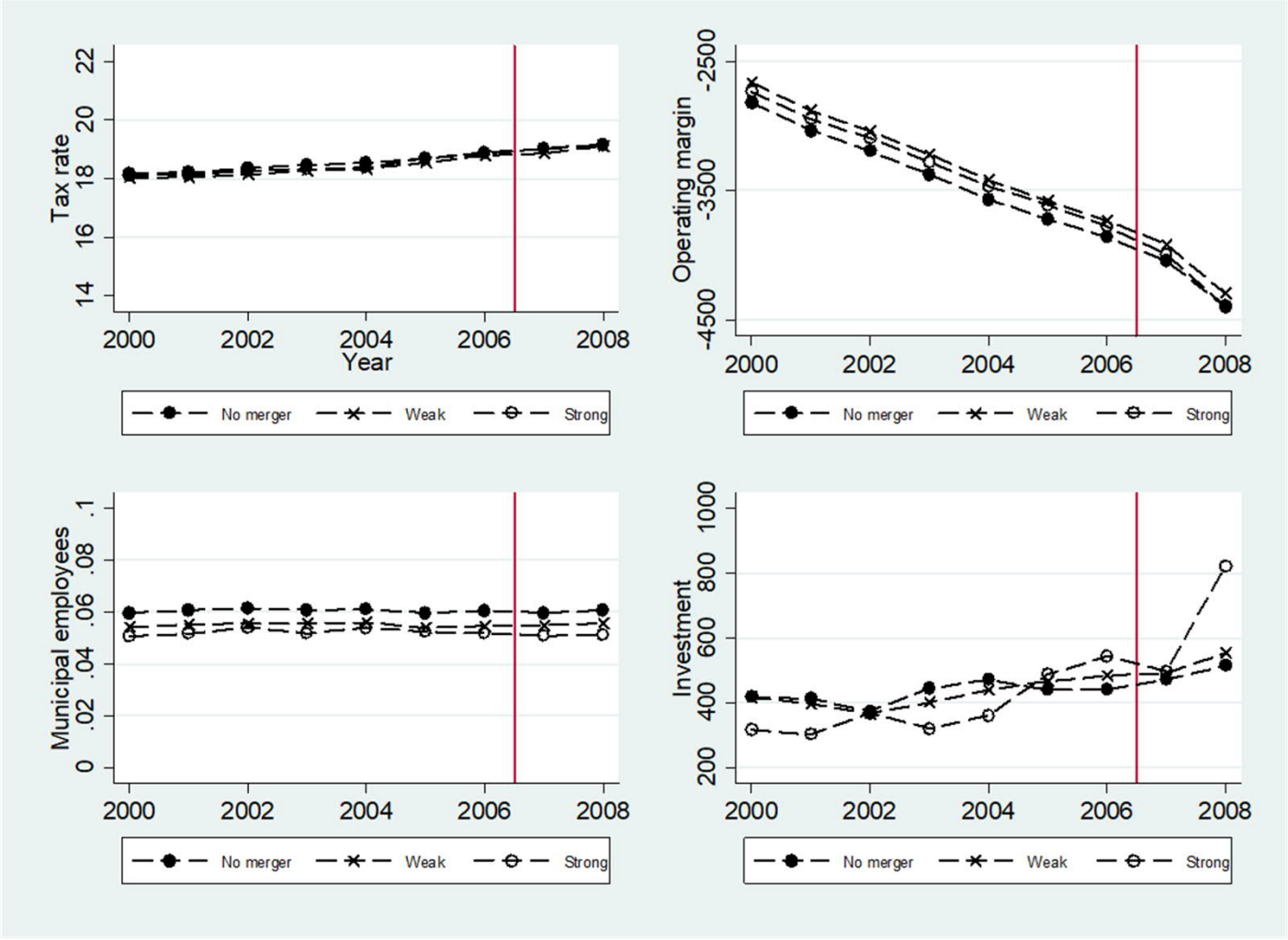


Counterfactual trend in the treatment groups

This would have the debt trend without freeriding incentives

Assumption!

Where did the money go?

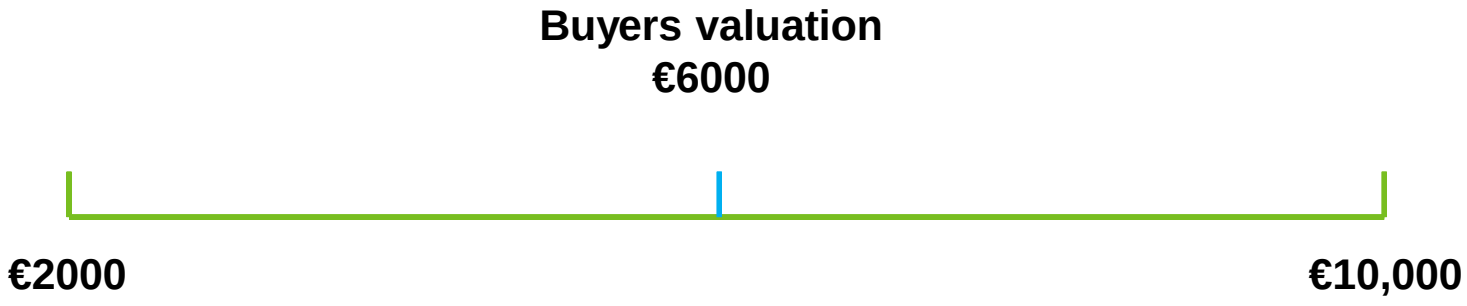


Asymmetric information

Asymmetric information

- **When information is asymmetric, one party knows something relevant to the transaction, but the other party does not**
- **Two forms of asymmetric information:**
- **Hidden action – leads to a moral hazard problem**
  - Example – Involuntary unemployment because employers cannot observe employees' exact work effort (Unit 6)
- **Hidden attributes – leads to an adverse selection problem**
  - Example – Buyers of second-hand cars do not know all the attributes of the car e.g. quality, but the sellers do
  - "I don't want to belong to any club that would accept me as a member"

Market for lemons (Akerlof 1970)



Market for lemons (Akerlof 1970)

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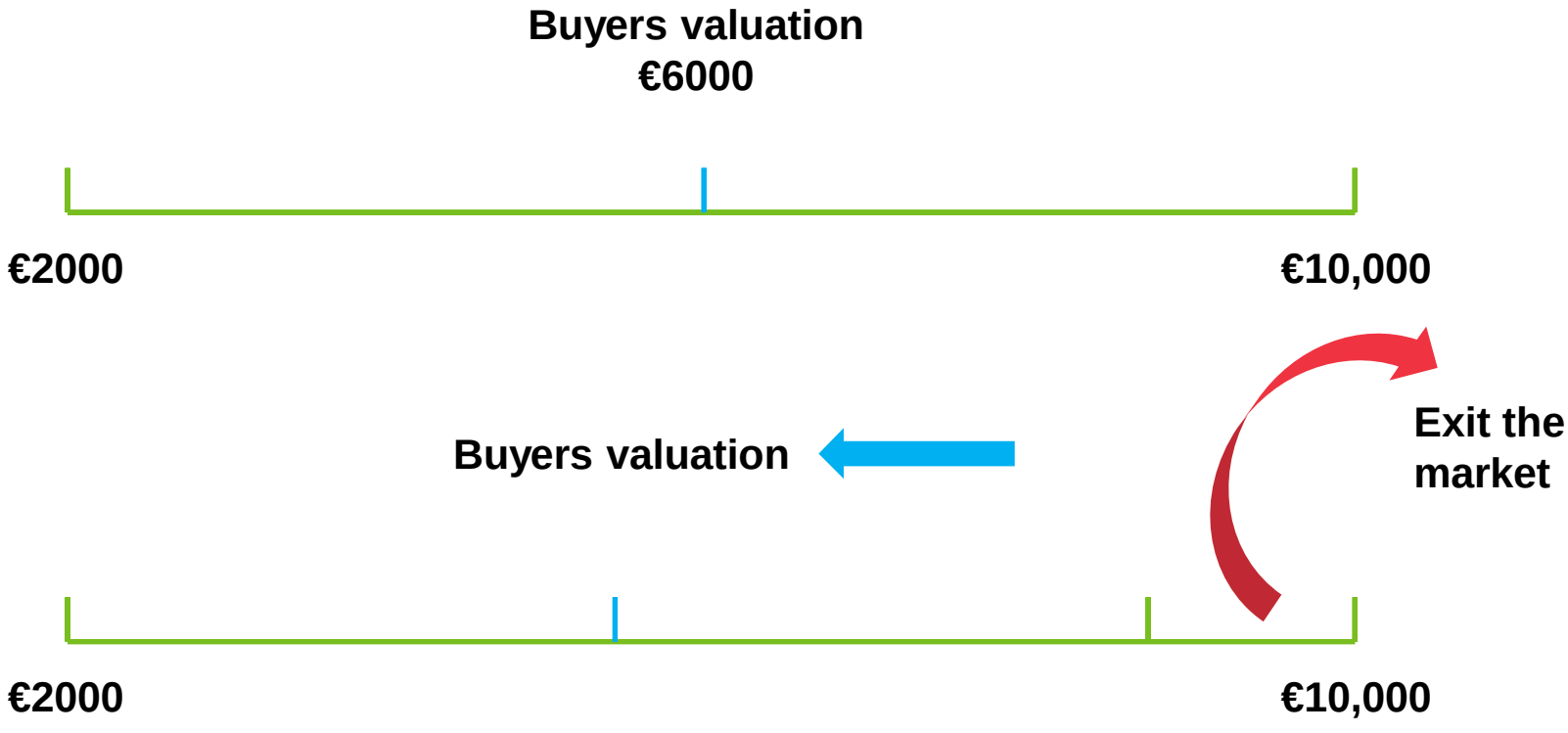

Example #1: Health insurance

- **Insurance company cannot observe the health of the people buying insurance**
- **Buyers know their health status and the less healthy are more likely to buy**
  - To be profitable, the company must charge prices high enough and only the less healthy people are willing to buy
  - This adverse selection means that most people buying insurance already know they have a health problem
  - There is a missing market: many (healthier) people who would like to buy insurance will remain uninsured

Example #2: Car insurance

- **Any form of insurance also has a hidden action problem – the buyer may take more risks now that he/she is insured**
- **Example – purchasing full coverage against damage may make someone more careless in driving**
  - Insurance companies can put some limits in a contract, but cannot enforce other types of behaviour e.g. driving speed
  - This moral hazard problem is another principal-agent problem, and we can also think of it in terms of external effects (being careful gives external benefits to the company)

Example #3: The banking system

Borrowing and lending is another principal-agent problem in which the borrower's decisions have external effects on the lender

- For this reason, poor borrowers are often credit-constrained or credit-excluded, which is a form of credit market failure (Unit 10)

Another form of credit market failure is the banks themselves:

- If they take risks and go bankrupt, other banks (whom they have borrowed from) will bear some of the costs
- Governments will also bail out banks that are 'too big to fail', which incentivizes risk-taking behaviour

Resolutions to adverse selection

Regulation

- Obligatory insurances
- Consumer protection

Signalling

- Credit ratings
- Guarantees

Levelling the information asymmetries

- Public credit ratings
- Controlling access to investigate quality of products (e.g. used car auctions)

What else?

- Smart contracts? Social incentives?

Decision	How it affects others	Cost or benefit	Market failure (misallocation of resources)	Possible remedies	Terms applied to this type of market failure
A firm uses a pesticide that runs off into waterways	Downstream damage	Private benefit, external cost	Overuse of pesticide and overproduction of the crop for which it is used	Taxes, quotas, bans, bargaining, common ownership of all affected assets	Negative external benefit, environmental spillover
You take an international flight	Increase in global carbon emissions	Private benefit, external cost	Overuse of air travel	Taxes, quotas	Public bad, negative external effect
You travel to work by car	Congestion for other road users	Private cost, external cost	Overuse of cars	Tolls, quotas, subsidised public transport	Common pool resource, negative external effect
A firm invests in R&D	Other firms can exploit the innovation	Private cost, external benefit	Too little R&D	Publicly funded research, subsidies for R&D, patents	Public good, positive external effect
An employee on a fixed wage decides how hard to work	Hard work raises employer's profits	Private cost, external benefit	Too little effort; wage above reservation wage; unemployment	More effective monitoring, performance related pay, reduced conflict of interest between employer and employee	Incomplete labour contract, hidden action, moral hazard
Someone who knows he has a serious health problem buys insurance	Loss for insurance company	Private benefit, external cost	Too little insurance offered; insurance premiums too high	Mandatory purchase of health insurance, public provision, mandatory health information sharing	Missing markets, adverse selection
Someone who has purchased car insurance decides how carefully to drive	Prudent driving contributes to insurance company's profits	Private cost, external benefit	Too little insurance offered; insurance premiums too high	Installing driver monitoring devices	Missing markets, moral hazard
Borrower devotes insufficient prudence or effort to the project in which the loan is invested	Project more likely to fail, resulting in non-repayment of loan	Private benefit, external cost	Excessive risk; too few loans issued to poor borrowers	Redistribute wealth; common responsibility for repayment of loans (Grameen Bank)	Moral hazard, credit market exclusion
Bank that is "too big to fail" makes risky loans	Taxpayers bear costs if bank fails	Private benefit, external cost	Excessively risky lending	Regulation of banking practices	Moral hazard
A monopoly, a firm producing a differentiated good, or a firm with declining AC sets P>MC (Unit 7)	Price is too high for some potential buyers	Private benefit, external cost	Too low a quantity sold	Competition policy, public ownership of natural monopolies	Imperfect competition, decreasing average costs, natural monopoly

Limits to markets

Should markets allocate everything?

- **Arguments against using markets for everything:**
  - Repugnant markets: creating a market for certain goods/services would violate ethical/social norms e.g. slavery, kidneys
    - *However, see: https://www.youtube.com/watch?v=r7vzgexzXOk*
  - Other institutions may be more effective e.g. governments, families
  - Market mechanisms may crowd out norms of social preferences
  - Merit goods: goods that should be available to everyone, independently of their ability to pay e.g. education

Boundaries of firms

Sir Dennis Robertson (1923): *Firms are like islands of conscious power in this ocean of unconscious cooperation, like lumps of butter coagulating in a pail of buttermilk*

Ronald Coase: relative costs of the “make it” and “buy it” options determine the boundaries

Contract theory

- Hold up problem: cooperation would be efficient, but asymmetry in the bargaining power makes it infeasible

Summary

Sources of market failure

- External costs or benefits
- Public goods, common pool resources
- Asymmetric information (hidden action/hidden attributes)
- Limited competition ($P > MC$, Principles I)

Possible solutions

- Regulation, taxation, compensation, public provision, antitrust policy

Limits to markets – not every good should have a market