

# Externalidad y bienes públicos

## Clase 13

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Semestre: Otoño 2015

# Agenda

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1. Fallas de mercado
2. Externalidades
3. Bienes públicos
4. Derechos de propiedad y política de gobierno

# CUANDO LA SOLUCIÓN DESCENTRALIZADA FALLA



# Cuando fallan los mercados

- Las industrias santiaguinas vierten sus residuos en el río Mapocho.
- El Mapocho vierte sus aguas en el Maipo que desemboca cerca de Llole.
- Los pescadores locales sufren cuantiosas pérdidas debido a la elevada mortandad de peces a causa de la contaminación.
- Exigen compensaciones y regulaciones.
- El representante del gremio de los industriales de Santiago argumenta que actuando las empresas bajo libre competencia, no se debe ninguna compensación porque el mercado siempre es eficiente.
- ¿Quién tiene la razón?

# Cuando fallan los mercados

- **Externalidades**: positivas y negativas. Costos y beneficios privados y sociales.
- **Bienes públicos**: rivalidad y exclusión. Bienes privados, monopolios naturales, recursos comunes.
- Derechos de propiedad y la tragedia de los comunes. *Free riders*.

Una externalidad es ....

# Una externalidad ocurre cuando

- La actividad de un agente afecta directamente el bienestar de otro agente,

y

- Este efecto no es transmitido por los precios de mercado

# Ejemplos de externalidades

## Externalidades:

- Una firma contamina el aire al producir
- El perro de un vecino hace más segura nuestra casa

## Sin externalidades:

- Un negocio con música metal debe reducir sus precios para mantener a sus clientes
- McDonalds implementa una oferta, forzando a Burger King a tener una oferta también



# Ejemplos de externalidades

*Externalidades negativas* dañan a otros

- Ejemplo: una planta química contamina un lago afectando su belleza y seguridad para la salud de sus visitantes

*Externalidades positivas* ayudan a otros

- Ejemplo: un profesor se vacuna contra la influenza y reduce la probabilidad de contagiar a sus estudiantes

# Public goods and externalities can be similar

Externalities are *unintended* costs or benefits to the community, whereas public goods have *intended* benefits to the community (Mishan, 1971)

ie: **If you hire security, it has externalities. If your block hires security, it is a public good**

It is still useful to examine them independently in practice

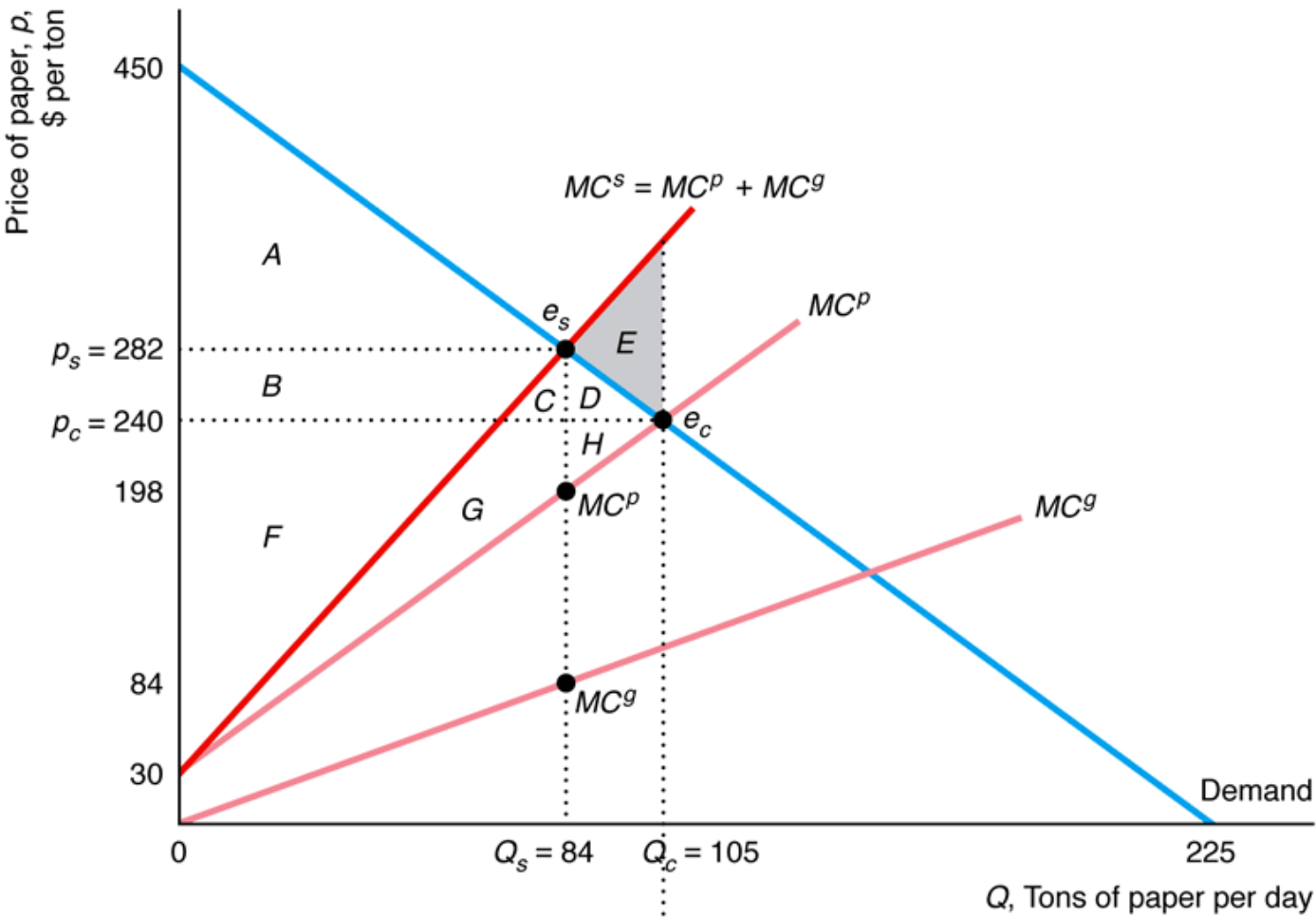
# The Inefficiency of Competition with Externalities

- Competitive firms and consumers do not have to pay for the harms of their negative externalities, so they create excessive amounts.
- Producers and individuals are not compensated for the benefits of a positive externality, so too little is produced.
- Nonoptimal production is the primary result of externalities.

# The Inefficiency of Competition with Externalities

- Consider a paper mill that produces paper in a way that pollutes the air and water.
- The firm's ***private cost*** is the cost of production only (direct costs of labor, energy, and wood pulp), but not the indirect costs of the harm from pollution.
  - Intersection of private MC and market demand yields the competitive equilibrium.
- The firm's true ***social cost*** is the private cost **plus** the cost of harms from externalities.
  - Intersection of social MC and market demand yields the socially-optimal equilibrium.

The competitive equilibrium,  $e_c$ , excludes externalities and involves overproduction & DWL relative to the social optimum,  $e_s$ .



	Social Optimum	Private	Change
Consumer surplus, CS	A	A + B + C + D	B + C + D
Private producer surplus, $PS_p$	B + C + F + G	F + G + H	H - B - C
Externality cost, $C_g$	C + G	C + D + E + G + H	D + E + H
Social producer surplus, $PS_s = PS_p - C_g$	B + F	F - C - D - E	-B - C - D - E
Welfare, $W = CS + PS_s$	A + B + F	A + B + F - E	-E = DWL

# Regulating Externalities

- Competitive markets produce too many negative externalities, so government intervention may provide social gain.
  - A governmental limit on the amount of pollution that may be released is called an emissions standard.
  - A tax on air pollution is called an emissions fee.
  - The government can also control pollution indirectly through quantity restrictions or taxes on outputs or inputs.

# Emissions Standard

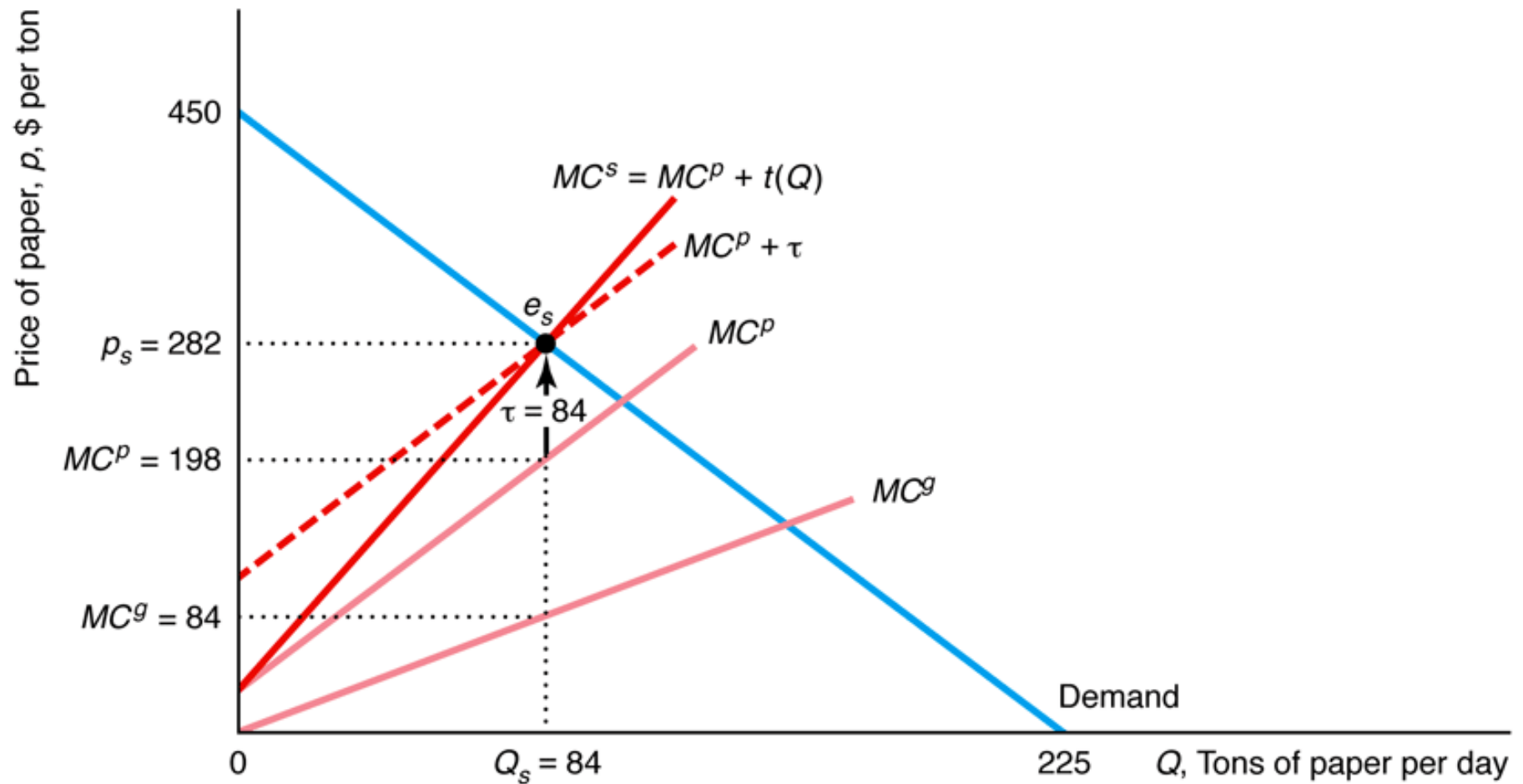
- How does the government achieve the social optimum using an emissions standard?
- The government doesn't usually know enough to set quantity restrictions on output optimally.
  - This would require knowledge of how marginal social cost, the demand for the product, and pollution vary with output.
- Even if the government knew enough to set optimal regulation, enforcement would still be difficult.

# Emissions fee

- How does the government achieve the social optimum using an emissions fee?
- The government may impose costs on polluters by taxing their output or the amount of pollution produced.
- The output tax causes a firm to internalize the externality or bear the cost of the harm inflicted on others.



- An emissions fee is a tax on output equal to MC of gunk so that after-tax MC induces socially-optimal behavior.



# Efectos en bienestar de contaminación en mercado competitivo

- Ver solución algebraica (Tarea voluntaria)

# Allocating Property Rights to Reduce Externalities

- A property right is an exclusive privilege to use an asset.
- Instead of emissions fees and standards, an indirect approach to dealing with externalities is for the government to assign a property right.
- If nobody holds a property right for a good or bad, the good or bad is unlikely to have a price.
  - Nobody has property rights to the air we breathe and pollution, a bad, has no price.

# Allocating Property Rights to Reduce Externalities

- The Coase Theorem states that the optimal levels of pollution and output can result from bargaining between polluters and their victims if property rights are clearly defined.
- Example:
  - Chemical plant and boat rental company share a small lake
  - Chemical firm dumps by-products that only smell bad, but are otherwise harmless, into the lake
  - Boat rental firm's business is hurt because peoples' dislike for the smell means they are only willing to rent if the price is low.

Un bien público es ....

# Hasta aquí.....

- We have seen that the role of government in promoting efficiency is to intervene in the pricing mechanism of goods that create externalities.
- Now we will investigate a class of goods where it is usually more efficient for the government to supply instead of the private sector.
- Public Goods = (Law and Order, defence, refuse collection, roads, education, public health,...)

# Definition

A Public Good has 2 properties:

- (1) If it has been provided to one consumer it is difficult/impossible to stop another from enjoying it too.

“Non-Excludable”

- (2) The amount of the good I enjoy has no affect on the amount you enjoy.

“Non-rival”

# Rivalry and Exclusion

Four categories: private good, open-access common property, club good, and public good

	<i>Exclusion</i>	<i>No Exclusion</i>
<i>Rivalry</i>	<i>Private good:</i> apple, pencil, computer, car	<i>Open-access common property:</i> fishery, freeway, park
<i>No Rivalry</i>	<i>Club good:</i> cable television, concert, tennis club	<i>Public good:</i> national defense, clean air, lighthouse



# CONSEQUENCES

- Non-excludable:
  - Very difficult for the private sector to provide it and make a profit: Basic Research, Information, R&D
- Non-rivalry:
  - Do not want to exclude people as it is inefficient: The marginal cost of them getting the good is zero and they get positive benefit.

# The Free Rider Problem

The fundamental problem of all public goods is I'd rather someone else paid for the public goods I consumed.

This is called the [free-rider problem](#).

# Prisoners' Dilemma in Action

Imagine it costs £4 to provide a clean street **outside** my house.

Either I or my neighbour can pay for it. We both value clean streets at £3.

If one of us pays £4 we are both better off.

	He Pays	He Doesn't Pay
I Pay		
I Don't Pay		

# Prisoners' Dilemma in Action

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**Nota:** dos aseadores no cambian el beneficio total vs. un aseador

	He Pays	He Doesn't Pay
I Pay	$(-1, -1)$	$(-1, 3)$
I Don't Pay	$(3, -1)$	$(0, 0)$

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# Prisoners' Dilemma in Action

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**Equilibrio de Nash:**  
solución privada  
sin coordinación

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I Don't Pay	$(3, -1)$	$(0, 0)$

# Prisoners' Dilemma in Action

Ahora, si nos coordináramos y compartiéramos el gasto: contrataríamos un aseo y pagaríamos 2 cada uno, recibiendo 3 de beneficio (beneficio neto = 1 por persona)

Solución privada  
con coordinación  
(à la Coase)

Equilibrio de Nash:  
solución privada  
sin coordinación

	He Pays	He Doesn't Pay
I Pay	(1,1)	(-1,3)
I Don't Pay	(3,-1)	(0,0)

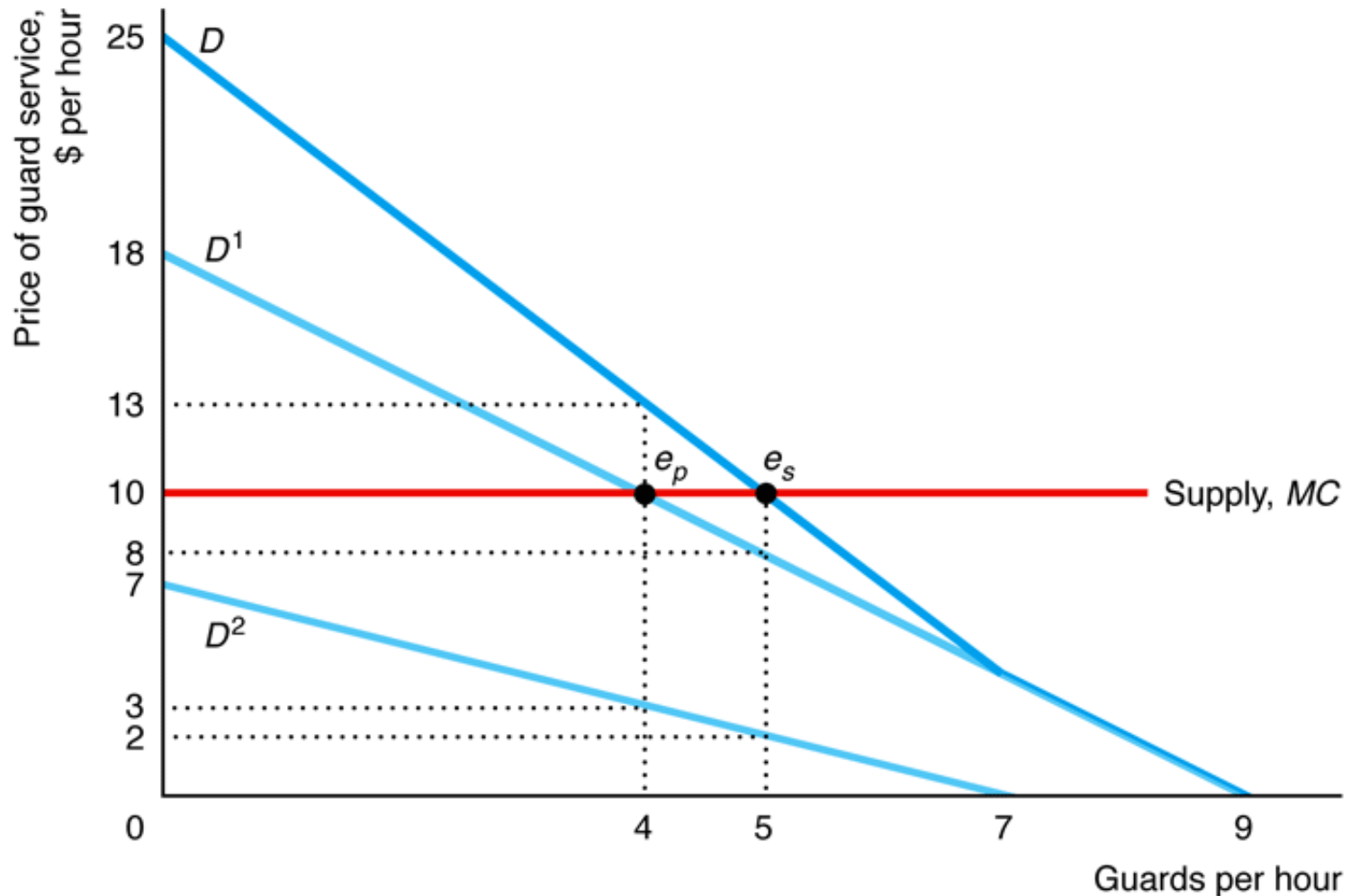
# The Free Rider Problem

Si los costos de coordinación son altos, porque hay muchos participantes, el Estado debe proveer el bien público.



# Bienes públicos

Demand for mall security guard services by two mall tenants.



# Reducing Free Riding

Free riding can be reduced in several ways:

- Social pressure to contribute reduces free riding and may result in minimal provision of some public goods.
- Firms can merge into a single firm and thereby internalize the positive externality.
- Privatization (exclusion) also eliminates free riding because access to the good is restricted.
- Compulsion to avoid free riding may come in the form of contracts and taxes.