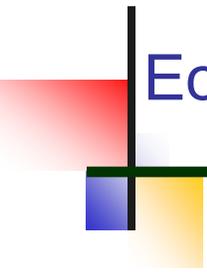


## Lecture 5

### Public Expenditures Theory and Practice – Part 2

Expenditure and Efficiency: Public Goods and Externalities



# Economics and Public Finance – This session outline

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## **Chapter 2: Public expenditure theory and practice**

2.2. Public expenditure and efficiency: public goods and externalities

2.2.3. Private *versus* public production and provision of goods

2.2.4. Externalities and mixed goods

# Economics and Public Finance – Readings

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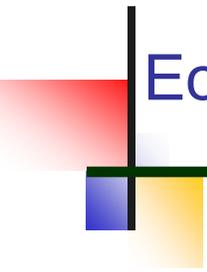
- Readings:

Stiglitz, J. Rosengard (2015). *Economics of the Public Sector*, 4<sup>th</sup> ed. W. W. Norton Company, Inc. **chapter 6** Externalities and the environment, pg.129-132 and 138-143

**Summary Book Chapter 3** (translation) of Pereira and Nunes *Economia e Finanças Publicas: da teoria à pratica*. Almedina

## Readings Portuguese:

- Chapter 3 of Pereira et al. *Economia e Finanças Publicas (6<sup>a</sup> edição)* and
- Chapter 3 of Pereira and Nunes *Economia e Finanças Publicas: da teoria à pratica*. **Almedina**



## Economics and Public Finance – Core topics

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- Public provision *versus* private provision.
- Externalities: definition and graphical analysis.
- Mixed goods: definition and graphical analysis.
- Marginal cost/benefit (external, private, social).
- Pigouvian taxes/subsidies: definition and graphical analysis.
- Equilibrium price and optimal price in the presence of externalities.
- Equilibrium quantity and optimal quantity in the presence of externalities.

## EPF – Forms of production and provision of goods (1/4)

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- **Production:**

- Entity responsible for the production and/or maintenance of the good.

- **Provision:**

- The means by which citizens gain access to the good.

## EPF – Forms of production and provision of goods (2/4)

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- **Public provision**

- Public provision is funded by the budget of a public entity (government or local authority), essentially through taxes.
- Users do not pay a price for its use (funding is indirect, through taxes).

- **Private provision (\*)**

- Private provision is funded through a price, fees and charges that should reflect the marginal or average cost of production.
- Users pay for the provided good or rendered service (**the user pays principle**).

**(\*) The entity that produces and provides the good can be either public or private (please refer to the next page).**

## EPF – Forms of production and provision of goods (3/4)

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- **Public production**

- In public production the productive process and/or maintenance of the good is undertaken by a **public entity**.

- **Private production**

- In private production the same process is ensured by a **private entity**.

## EPF – Forms of production and provision of goods (4/4)

- There are 4 possible combinations.

		Provision	
		Private	Public
Production	Private	1	3
	Public	2	4

## EPF – The example of the “*Jardim da Estrela*”

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- **Public production and provision:**
  - This collective equipment apparently “free of charge”, which is financed by the local budget, allows free access to all users and its maintenance is carried out by city employees: **case 4.**
- **Private production with public provision:**
  - The landscaping and maintenance services are leased to a private company, but still with free access to all users: **case 3.**
- **Public production with private provision:**
  - Fees are levied every Sunday to avoid excessive congestion/crowding, but still its maintenance is carried out by city employees: **case 2.**
- **Private production and provision:**
  - Exclusion in consumption is possible (a price is charged): property, maintenance and management privately held: **case 1.**

# Economics and Public Finance – Externalities (1/3)

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- **Definition**

- There is an **externality** whenever
  - *the action of an individual meaningfully affects the well-being of other individuals, and this effect is not transmitted through a pricing system.*
- Externalities can be:
  - **Positive/negative,**
  - **Consumption/production,**
  - **Few/many agents.**

- **External marginal cost (benefit):**
  - A negative (positive) externality generates a **marginal external cost (benefit)** that is the additional cost (benefit)
    - of *producing one additional unit of that good*, imposed on all affected economic agents.

- **Marginal private and social cost (benefit)**
  - A **negative externality** induces a gap between the **private marginal cost (PMC)** and the **social marginal cost (SMC)**.
  - A **positive externality** induces a gap between the **private marginal benefit (PMB)** and the **social marginal benefit (SMB)**.

# Economics and Public Finance – Externality Theory

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- **In the presence of externalities, the market outcome is inefficient**
  - With a free and competitive market, quantity and price such that  $PMB = PMC$
  - Social optimum is such that  $SMB = SMC$
- ⇒ Private market leads to an inefficient outcome (1st welfare theorem does not work)

## For **production externalities**:

- Negative production externalities lead to over production
- Positive production externalities lead to under production

## For **consumption externalities**:

- Negative consumption externalities lead to over consumption
- Positive consumption externalities lead to under consumption

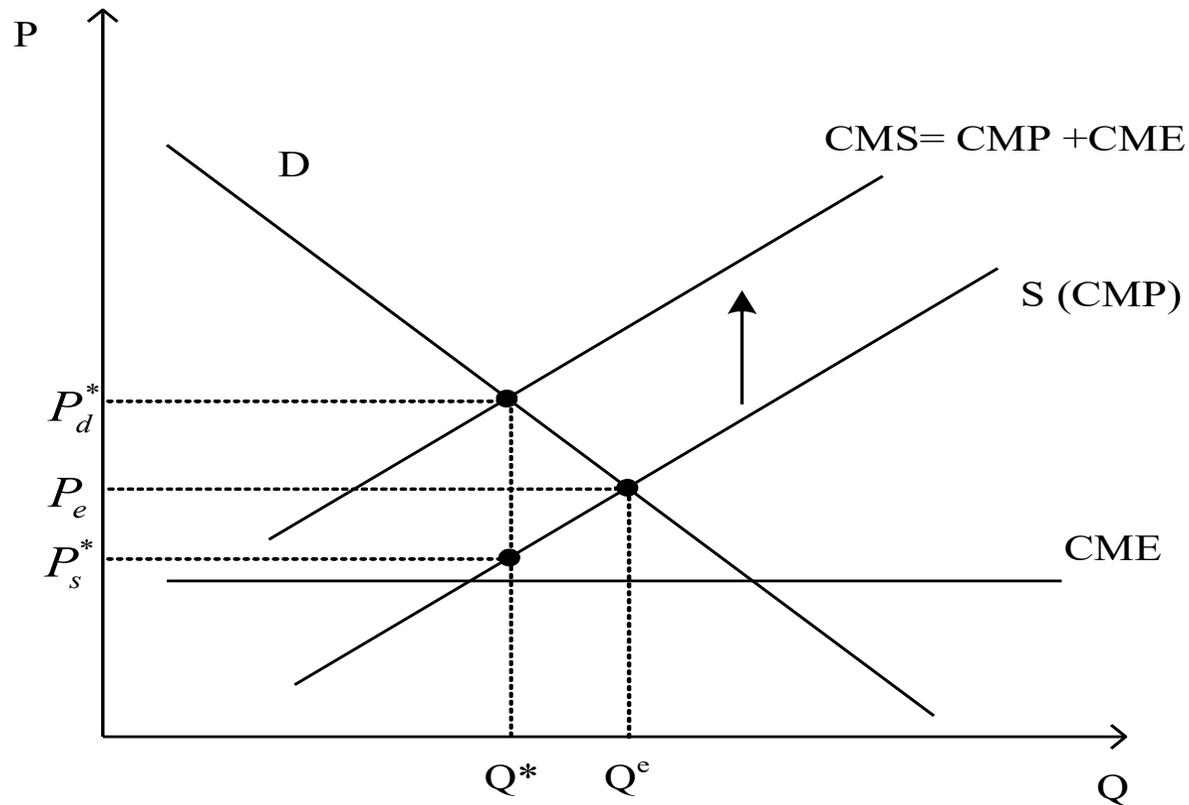
## Economics and Public Finance – A negative externality

- **Example: The environmental pollution caused by the production of steel (\*)**
  - The market equilibrium price (CMgP) is **lower** than the optimal price (CMgS):
    - $P_e = \text{CMgP} < P^* = \text{CMgS} = \text{CMgP} + \text{CMgE}$
  - The quantity of equilibrium is **greater** than the optimal quantity:
    - $Q_e = Q(P_e) > Q^* = Q(P^*)$

**(\*) Please refer to the Figure in the next page.**

# Economics and Public Finance – Graphical analysis

## An example of a negative externality of production



## EPF – Negative externalities and fiscal taxation

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- To address a negative externality:
  - a **Pigouvian tax is levied**:
    - It is a per unit tax (by unity of *production*) that equals the marginal external cost *at an efficient level of output*:
      - **$t = CMgE (Q^*)$**

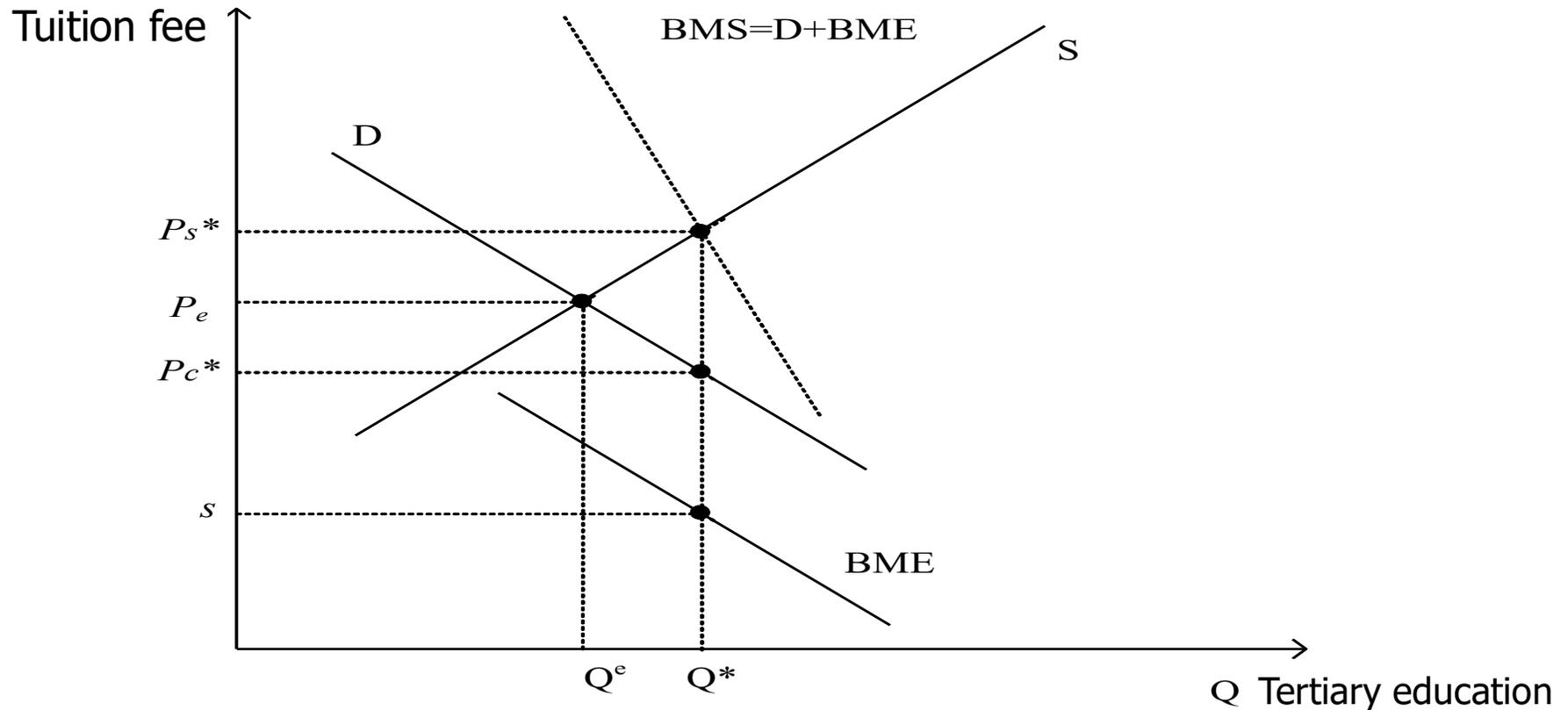
## Economics and Public Finance – A positive externality

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- **Example: Higher education is a mixed good**
  - The possibility of exclusion exists.
  - There is (partial) rivalry in consumption.
    - *Other examples: schools, museums, municipal swimming pools.*
- **Note:**
  - Goods should be subsidised in the exact extent of the positive externality
    - *The problem: it is very difficult to accurately measure it.*

# Economics and Public Finance – Graphical analysis

## An example of a positive *externality of consumption*



## EPF – Positive externalities and fiscal taxation

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- To address a positive externality:
  - a **Pigouvian subsidy is given**:
    - it is a per unit subsidy (by unity of consumption) that equals the marginal external benefit *at an efficient level of output*:
      - **$s = \text{BMgE} (Q^*)$**

## Economics and Public Finance – Types of interventions

<b><i>Type of market failure</i></b>	<b><i>Type of intervention</i></b>	<b><i>Examples</i></b>
Public goods	Public expenditure (in goods/services)	National defence Public lighting
Positive externalities	Fiscal benefits/subsidies	Subsidies and exemptions of tax to associations
Negative externalities	Taxes	Tobacco tax
Imperfect competition	Regulation	Communications' <i>regulator</i> ( <i>Autoridade Nacional de Comunicações</i> )
Asymmetric information	Laws and public monitoring	<i>Public agency</i> ( <i>Direção-Geral do Consumidor</i> )