Lecture 4

Public Expenditures Theory and Practice – Part 1

Normative Theories about the Role of the Public Sector

Economics and Public Finance – This session outline

Chapter 2: Public expenditure: theory and practice

2.1. Some normative theories about the role of the public sector

2.1.1. Market failures

2.1.2. Market injustices

2.2. Expenditure and efficiency: public goods and externalities

2.2.1. Public goods *versus* private goods

2.2.2. The optimal provision of public goods

Economics and Public Finance – Readings

- Readings:

Stiglitz, J. Rosengard (2015). ***Economics of the Public Sector***, 4th ed. W. W. Norton Company, Inc. **chapter 5** Public Goods and Public Provided private goods, pg. 102-109 and 116-121

Summary Book Chapter 3 (translation) of Pereira and Nunes (2022) Economia e Finanças Publicas: da teoria à pratica. Almedina

Readings Portuguese:

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

Economics and Public Finance – Core topics

- Market failures
- *Private, public and mixed goods*
- *Characteristics of goods: Rivalry and Exclusion*
- Pure public good
  - Definition
  - Marginal willingness to pay
  - The optimal (efficient) provision of public goods: The "**Samuelson condition**"
  - And free riders
- Tax prices for public goods

Economics and Public Finance – The normative arguments (1/4)

- Markets play a central role in the economy particularly in the production of private goods:
  - Under **ideal circumstances** markets ensure an efficient resource allocation (**Pareto Optimality**).

- However, there are four reasons that explain **market failures**
  - **Non-competitive markets**
  - **Public goods**
  - **Externalities**
  - **Asymmetric information**

Economics and Public Finance – The normative arguments (2/4)

- **The notion of market failure**
  - Situation where a good or service
    - that affects **the well-being of individuals** (argument of the utility function) or the **costs of a company** (the argument of the production function),
      - for which **there is at least a price**, at which **some agents are willing to sell and others are willing to buy**, *but*…

a) ….there is no market for that good. (**Total market failure)…**

b) ….or there is a market but the quantity exchanged (in market equilibrium) is less than the optimal quantity. (**Partial market failure)**

Economics and Public Finance – The normative arguments (3/4)

- Market failures are **inefficiencies**.

- **First justification for some form of state intervention in a mixed economy** (to be developed in the following lectures) is to improve the efficiency in resource allocation.

Economics and Public Finance – The normative arguments (4/4)

- **But**
  - Even though markets provide an efficient allocation of resources, **markets can be unfair.**
    - The levels of well-being resulting from free markets **depend on the initial distribution** of property rights.

  - **Second justification for some form of state intervention in a mixed economy** is
    - to attain a fairer society (more discussion about the several definitions of the concept of **equity** in further lecture)

Economics and Public Finance – Types of goods (1/8)

- It is important to distinguish between different types of goods:
  - Public goods
  - Private goods
  - Mixed goods
- This classification is based on two distinct characteristics:
  - **Rivalry in consumption**
  - **Exclusion**

- **To summarize: Public Goods have no rivalry, Private Goods have total rivalry and Mixed Goods partial rivalry.**

Economics and Public Finance – Types of goods (2/8)

- **Rivalry in consumption**
- When the consumption of a good by an individual prevents the consumption of that good by another individual, the good is said to be **rival in consumption**.
  - Example: Eating a custard pie.
- If two individuals (1 and 2) wish to consume a rival good X, total consumption is the sum of the individual consumptions.
  - **X1+X2=X.**
- **The consumption of private goods is rival.**

Economics and Public Finance – Types of goods (3/8)

- **Non-rivalry in consumption**
- When the consumption of a good by an individual in no way diminishes the available good for other individuals, the good is said to be **non-rival in consumption**.
  - Example: a lighthouse.
- If 2 individuals (1 and 2) wish to consume a non-rival good Y, total consumption equals the individual consumptions:
  - **Y1=Y2=Y.**
- **The consumption of pure public goods is non-rival.**
- **Note:** Some collective goods have, up to a point, non rivalry in consumption, but after some level of use, they present congestion (partial rivalry) They are **mixed goods. Examples?.....**

Economics and Public Finance – Types of goods (4/8)

- **Exclusion**

- A good is subject to **exclusion** whenever it is possible to exclude individuals from its consumption.

- There is the possibility of exclusion in **private goods**
  - The exclusion mechanism is the market itself through the pricing system.

Economics and Public Finance – Types of goods (5/8)

- **Conditions to enforce exclusion**

  - **Legal possibility**: property rights
    - Example of a legal impossibility: private access to the Portuguese beaches.
  - **Technological viability**:
    - Example of a technological impossibility: public lighting.
  - **Economic reasonability**:
    - Example of an economic non-reasonability: a non-congested bridge.

Economics and Public Finance – Types of goods (6/8)

- **The notion of pure public good**

  - A **pure public good** is one that for all individuals
    - **is non-rival in its consumption,**
    - **exclusion is either not possible, or not desirable (if possible).**
  - A pure public good being non-rival in its consumption means that the **additional cost** of having other individuals consuming the good is **zero.**
    - Rationing non-congested goods is inefficient.

Economics and Public Finance – Types of goods (7/8)

- **Public goods and market failures**
  - Competitive markets (with voluntary provision)
    - either fail to provide any amount of public goods,
    - or fail to provide **efficient** quantities of public goods.
  - **The main reason is that**
    - **Non-rivalry in consumption** and **free-riding behaviour** of individuals,
      - that can benefit without paying or contributing.

Economics and Public Finance – Types of goods (8/8)

- **Examples of public goods**:
  - National defence
  - Public lighting
  - Non-congested bridge

- **Why exclusion is not desirable?**
  - There are no benefits and (huge) costs are at stake.

Economics and Public Finance – Provision of public goods (1/3)

- **Marginal willingness to pay for a public good** equals how much an individual is willing to pay for an additional unit.
- Replace private good by public good (missiles)
- $MRS_{m,c}^{Marie}$ = # cookies Marie is willing to give up for 1 extra missile
- $MRS_{m,c}^{Carlos}$ = # cookies Carlos is willing to give up for 1 extra missile
- In net, society is willing to give up $\boldsymbol{MRS_{m,c}^{Marie} + MRS_{m,c}^{Carlos}}$ cookies for 1 missile
- Social-efficiency-maximizing condition for the public good is:

$$MRS_{m,c}^{Marie} + MRS_{m,c}^{Carlos} = MC_m$$ **Samuelson Condition**

Economics and Public Finance – Provision of public goods (2/3)

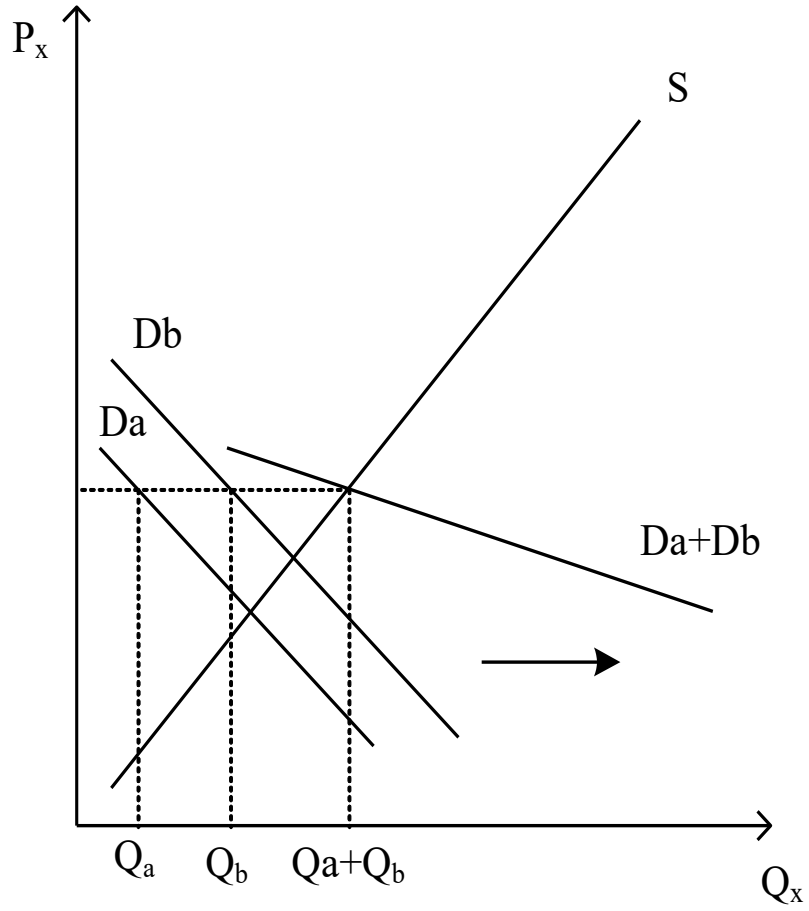
- **Optimal or efficient provision**
  - is the quantity, for which the sum of all marginal willingness to pay for the public good, equals the marginal cost of production (the "Samuelson condition" 1954),
  - **Notice**: at the optimum, the marginal cost is set equal to the sum of the MRSs rather than being set equal to each individual MRS (optimal provision of private goods).
  - Private provision of public goods is inefficient due to the free-rider problem (see next slides)

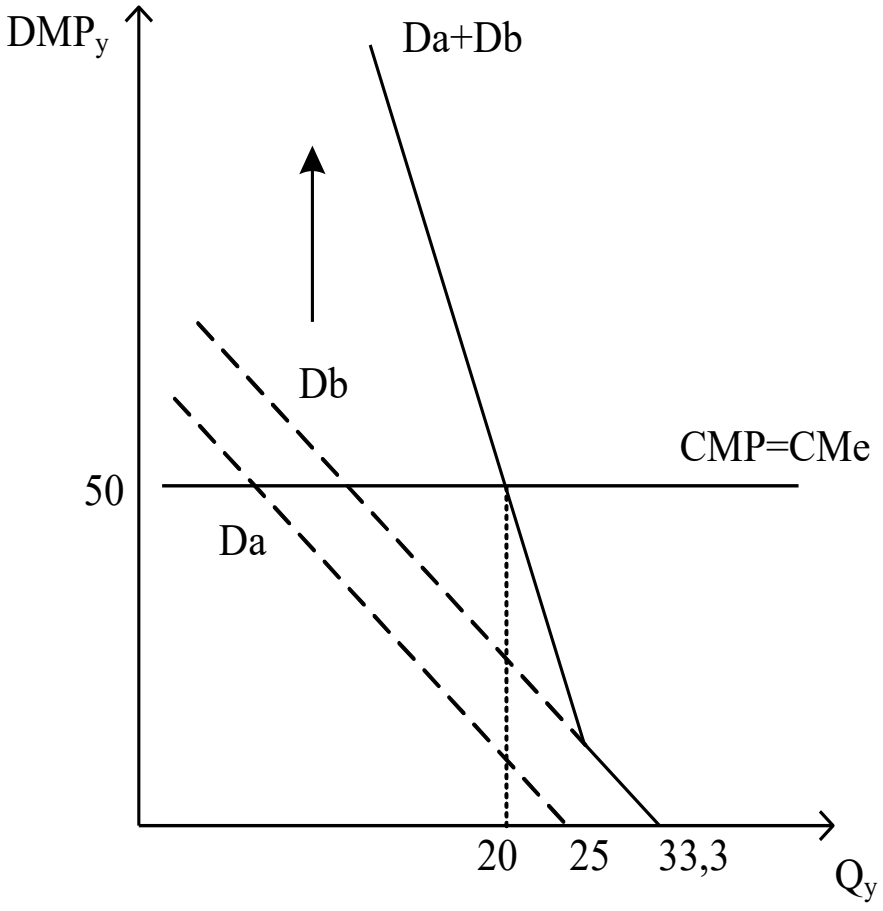
Economics and Public Finance – Graphical analysis

- **The provision of a private good (x) and a public good (Y)**
  - **Private good** (X)
    - Total demand equals the horizontal sum of all individual demands.
  - **Public good** (Y)
    - Total demand equals the vertical sum of all ("pseudo") individual demands (marginal willingness to pay).
- In both cases: efficiency is given by
  - **D = S (Price = MC).**
- **In competitive markets** (under some assumptions)

Economics and Public Finance – Graphical analysis

Private good (X) ***versus*** **Public good (Y)**





Public good *versus* Private good: differences

In a private market for an homogeneous good, consumers adjust quantities to the market price identical for all individuals.

In public goods, there are no markets, consumers consume the same quantity (even valuing differently the public good) and tax prices are different.

In competitive markets for private goods (under some assumptions) the *equilibrium* is *efficient.* In public goods, market equilibrium (if there are markets) is inefficient.

Economics and Public Finance – Provision of public goods (3/3)

- **Problem**:
  - Disclosure of individual preferences and free-riding behaviour;
  - Not easy (not possible) to determine the marginal willingness to pay.

- **Consequence**:
  - There is no market (there are no *real* prices nor demand, however it can be mentioned something about "***tax prices***")
    - **Individual tax price** is the "price" formulated in terms of additional taxes to pay for each additional unit of the public good (please refer to graphic in slide 20).
    - *Note: in general each individual has a different tax price (e.g. zero tax price for non taxpayers, Lindhal prices). In theory it could have uniform prices (per capita tax)*

Private provision of public goods

- First, there might not be a market for certain goods
- If there is a market, private sector provision is such that $MRS^i_{m,c} = MC_m$ for each individual i so that $\sum_i MRS^i_{m,c} > MC_m$

⇒ Outcome is not efficient, could improve the welfare of everybody by having more missiles (and less cookies)

- **Free rider problem**: when an investment has a personal cost but a common benefit, selfish individuals will underinvest.
- Because of the free rider problem, the private market undersupplies public goods

⇒ Goods with positive externalities are under-supplied by the market