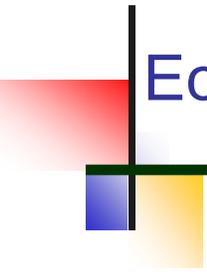


# Economics and Public Finance

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## Lecture 9

### Public Revenues: Theory and Practice – PART 3



# Economics and Public Finance – This session outline

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## **Chapter 3: Public revenues: theory and practice**

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### 3.3 Tax revenues and equity

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3.3.4. Progressive, proportional and regressive taxes

3.3.5. Legal and economic incidence of taxes

3.3.6. Conflict between efficiency and equity

# Economics and Public Finance – Readings

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- Readings English:
- Stiglitz, J. Rosengard (2015). *Economics of the Public Sector*, 4<sup>th</sup> ed. W. Norton Company, Inc **chapter 18 Tax Incidence** (p.538-548 tax incidence in competitive markets) , **and Chapter 19** (pp. 574-584 deadweight loss)

Summary Book Chapter 7 (translation) of Pereira and Nunes **Economia e Finanças Publicas: da teoria à pratica. Almedina**

Readings Portuguese:

- Chapter 7 of Pereira et al. **Economia e Finanças Publicas (6<sup>a</sup> edição, p. 239-247. or 5<sup>a</sup> edição, p. 230-237.)** and Chapter 7 of Pereira and Nunes **Economia e Finanças Publicas: da teoria à pratica. Almedina**

# Economics and Public Finance – Core topics

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- Progressive, proportional and regressive taxes.
- Legal and economic incidence of taxes (unitary taxes in competitive markets)
- *Shifting* of taxes.
- Conflict between efficiency and equity.
- *The Laffer curve.*
  
- *Note: we will not discuss nor ad valorem taxes neither taxes in non competitive markets (e.g. monopoly).*

# EPF – Equity and progressive taxes (1/3)

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- Types of Taxation
  - **Progressive taxes**
    - Average tax rate increases as income level increases.
  - **Proportional taxes**
    - The average tax rate remains constant.
  - **Regressive taxes**
    - The average tax rate declines as income increases.
  - Vertical equity is usually associated with the notion of progressive taxation.

## EPF – Equity and progressive taxes (2/3)

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- The **personal income tax** (like the Portuguese “*Imposto sobre o Rendimento das Pessoas Singulares*” or “*IRS*”) is a **progressive tax** since:
  - It is customised.
  - It is based on (net) income without including several charges (such as costs of production, household expenses,...).
  - The average tax rate increases, and it has increasing marginal rates.

## EPF – Equity and progressive taxes (3/3)

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- **Consumption taxes**, like the *value added tax* “VAT” (in Portuguese, *imposto sobre o valor acrescentado*, “IVA”) or the consumption tax “CT” (in Portuguese, *imposto geral sobre o consumo*, “IGC”) are usually regressive taxes, since:
  - They are independent of personal income.
  - There is a higher propensity to consume in lower income classes (the implicit average tax rate decreases with income).
- **Final Note:**
  - *While each particular tax should be judged on its own merits, our most important objective is to examine overall fairness of the taxation system as a whole.*

# Economics and Public Finance – The incidence of taxes (1/6)

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- The distinction between legal incidence and economic incidence of taxes (I)
- **The definition of legal incidence of tax**
  - According to its definition, legal incidence of a tax is established by law or tax code and specifies on which/whom individuals/economic agents or entities taxes are levied, *i.e.*, who bear the legal obligation to remit tax payments to the state (tax payer or taxable person).
  - Examples:
    - An individual's yearly total earnings or personal income is subject to a tax, in this case, the “IRS”.
    - A product sold by a company is subject to a consumption tax, in this case, VAT.

# Economics and Public Finance – The incidence of taxes (2/6)

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- The distinction between legal incidence and economic incidence of taxes (II)
- **The definition of economic incidence of tax**
  - The economic incidence of taxes refers to the individuals/economic agents or entities who actually bear the burden of taxation (the *de facto* taxpayer or taxable person).
    - after all the economic adjustments occurred in the behaviour of economic agents across all affected markets (the designated phenomenon of the “shifting of taxes”).

## Economics and Public Finance – The incidence of taxes (3/6)

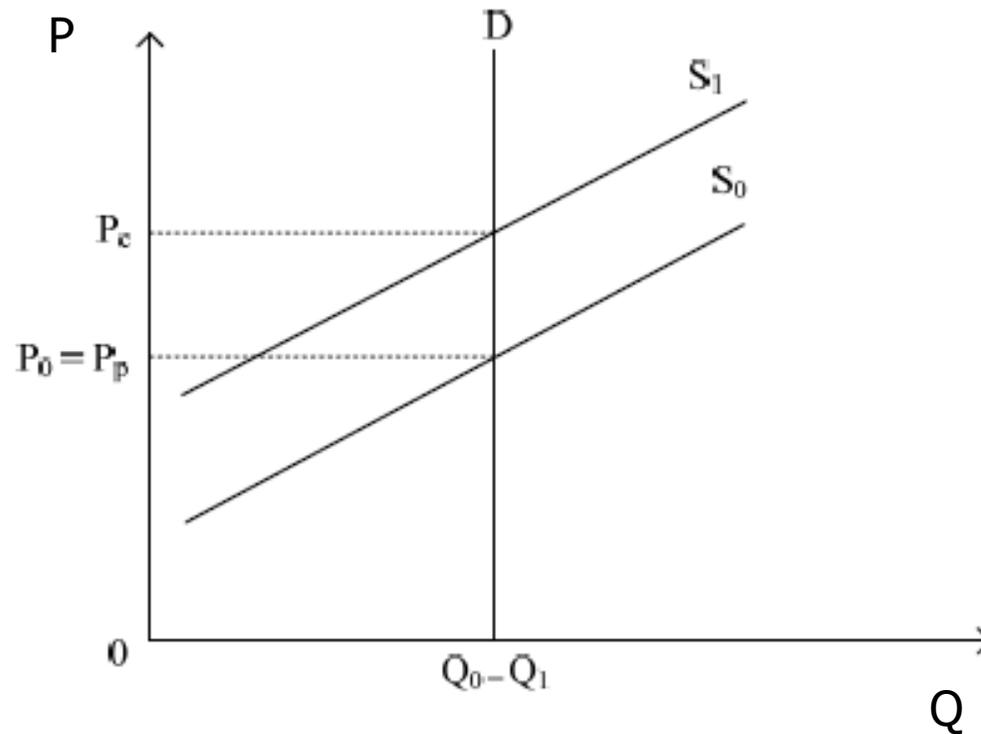
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- *The economic incidence and the shifting of taxes* (assumptions)
  - ***The (effects of) forwards shifting of taxes (\*)***
    - When taxes are fully shifted to consumers or end-users of the taxed product or good by increasing its price.

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

# Economics and Public Finance – Graphical analysis

## The forward shifting of taxes



$$P_c - P_0 = t$$

# Economics and Public Finance – The incidence of taxes (4/6)

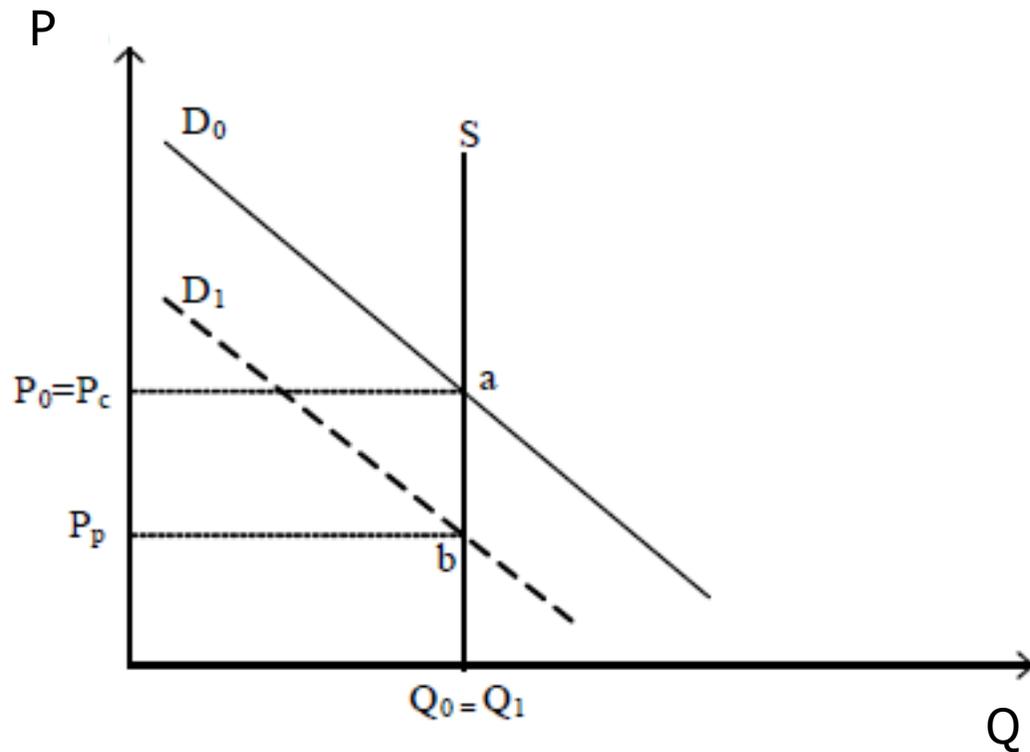
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- The economic incidence and the shifting of taxes (assumptions)
  - **The (effects of) non-shifting of taxes (\*)**
    - When there is a perfect match between the legal taxpayer and the *de facto* taxpayer, *i.e.*, when there is a match between the legal and the economic incidence of taxes.

**(\*) Please refer to graphic in next page.**

# Economics and Public Finance – Graphical analysis

## The non-shifting of taxes



$$P_0 - P_p = t$$

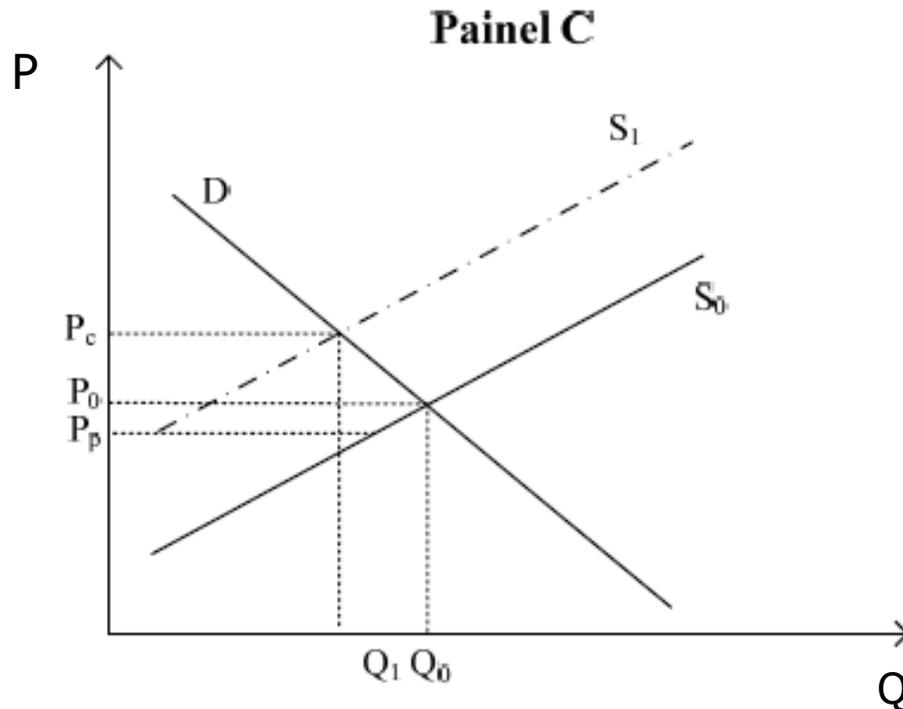
# Economics and Public Finance – The incidence of taxes (5/6)

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- The economic incidence and the shifting of taxes (assumptions)
  - ***The (effects of) shared shifting of taxes (\*)***
    - When consumers and producers split amongst themselves the economic incidence of taxes.

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

# Economics and Public Finance – Graphical analysis



**shared shifting of taxes**

$$(P_c - P_0) + (P_0 - P_p) = t$$

The ratio of the economic incidence of the tax on consumers and producers is identical to the ratio of elasticities of supply and demand (in module)

# Economics and Public Finance – The incidence of taxes (6/6)

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- Some factors explaining the economic incidence of taxes
  - **Types of taxation**
    - per unit, ad valorem, general and selective taxes,...
  - **Types of markets**
    - competitive markets, monopolistic competition,...
  - **Elasticity of supply and demand**
    - Economic agents exhibiting a more rigid demand function will bear the bulk of the burden of taxation.
  - **Open or closed economies**
  - **Duration of the adjustment period**

## EPF – The conflict between efficiency and equity (1/4)

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- Under certain circumstances, there is a **conflict** between efficiency and equity.
  - Example: the **tobacco tax**
    - From the **equity** perspective, this tax is debatable given that it is a **regressive** tax, however,
      - the tobacco tax can be justified for reasons of **efficiency** in view of the fact that it aims at correcting a “negative externality”.

## EPF – The conflict between efficiency and equity (2/4)

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- Trade-offs (I)

- A tax undoubtedly adequate from the equity point of view can be perceived as inadequate regarding efficiency given that
  - The more **progressive** a tax is,
    - the **lower** would be the degree of inequality in the distribution (of income), though the **higher** the generated excess burden tends to be.

## EPF – The conflict between efficiency and equity (3/4)

- Trade-offs (II)

- A tax undoubtedly adequate from the efficiency point of view can be perceived as inadequate regarding equity given that:

- From the efficiency standpoint, it would make perfect sense to heavily tax demand inelastic/rigid goods (Ramsey pricing) even more, although this would not be necessary the case from the equity standpoint.

- Ramsey's Inverse elasticity formula:

$$\frac{\tau_i}{1 + \tau_i} = \frac{\theta}{\lambda} \frac{1}{\epsilon_{ii}}$$

- the tax rate  $\tau_i$  on each good is inversely proportional to its own-price elasticity  $\epsilon_{ii}$  (assuming no cross-price elasticities)

## EPF – The conflict between efficiency and equity (4/4)

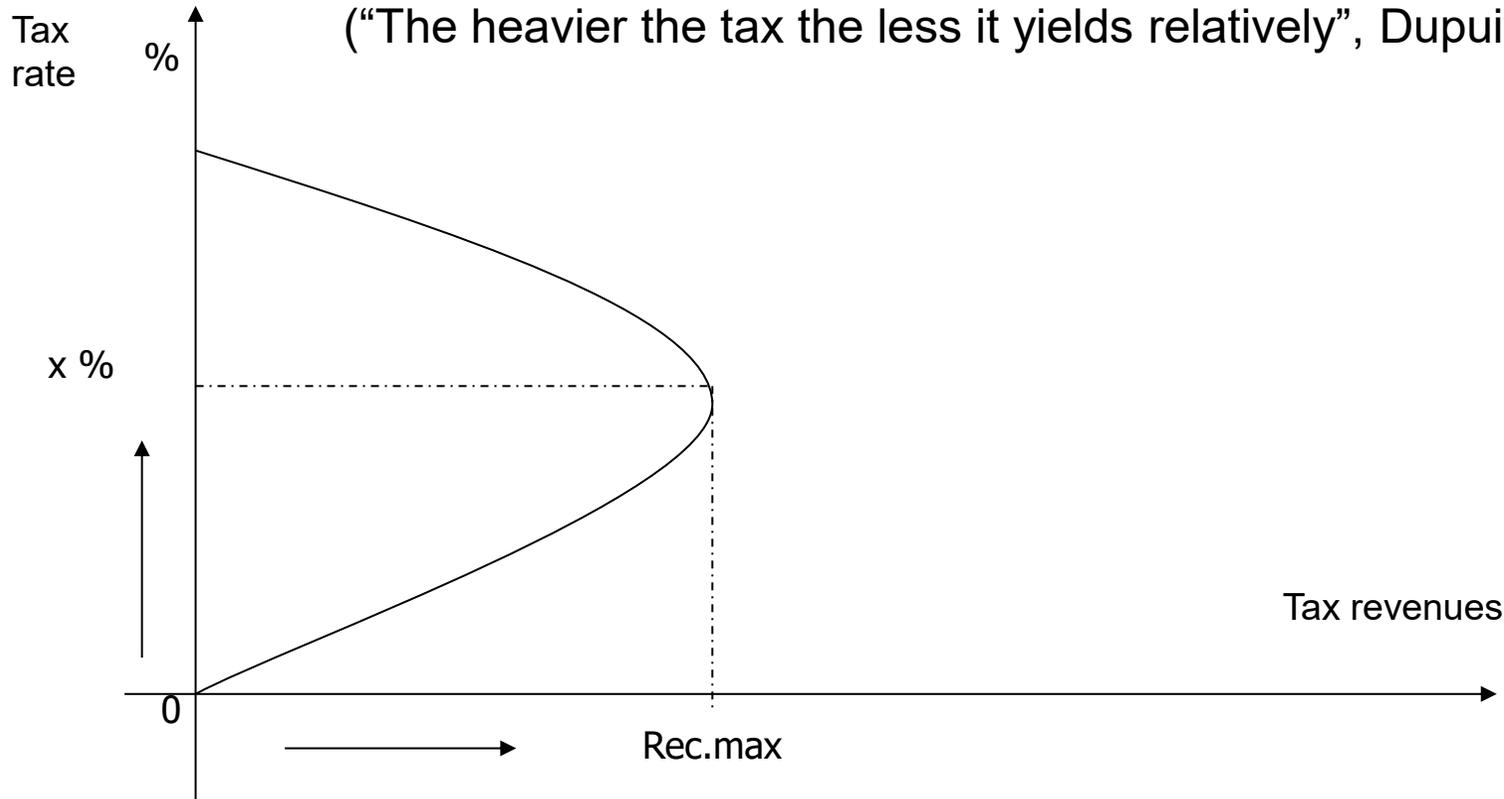
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- Ramsey solution: tax inelastic goods to minimize efficiency costs
  - Necessities likely to be less elastic than luxuries | i.e. set higher taxes for goods purchased by the poor
- Can we include redistributive concerns into taxation theory? **YES**
- There is a “Many-persons Inverse elasticity Ramsey rule” that accounts for both efficiency and redistributive concerns
  - On the one hand, more inelastic goods should be taxed more (**efficiency**)
  - On the other, these goods should be taxed less if they are consumed by low-income people (**equity**)
  - This formally characterises the equity-efficiency trade-off

# Appendix – Dupuit- Laffer - Graphical analysis

- The Dupuit-Laffer curve

- **There is a level of taxation for which tax revenues are maximised.**  
(“The heavier the tax the less it yields relatively”, Dupuit, 1844)



- *The Dupuit-Laffer curve*

- “Si on augmente graduellement un impôt depuis 0 jusqu'au chiffre qui équivaut à une prohibition, son produit commence par être nul, puis croît insensiblement, atteint un maximum, décroît ensuite successivement, puis devient nul.” J. Dupuit, 1844.