## Lecture 1.A: Introduction to Public Economics

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## **Practical Informations**

## • One course, four professors

- Antoine Bozio
- Julien Grenet
- Thomas Piketty
- Gabriel Zucman

## Related courses at PSE

- Economic History (Thomas Piketty)
- Economics of Economics of Public Intervention (Philippe Gagnepain and Stéphane Gauthier)
- Ageing and Public Policy (Antoine Bozio)

### • How to reach me?

- E-mail : antoine.bozio@ipp.eu
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- Please send an email to make sure I am available

## **Practical Informations**

## • Reading list in the syllabus

- Articles with \* are mandatory reading
- Feed your intellectual curiosity

## Tutorials

• TA : Elvin Le Pouhaër,

elvin.lepouhaer(at)psemail.eu.

- 3 sessions, 3 problem sets
- 1 session to revise materials before the exam

## Evaluation

- Two problem sets marked  $(\frac{1}{3} \text{ of final grade})$
- Exam at the end of term  $(\frac{2}{3}$  of final grade)
- Material : slides and articles with \*
- Example of past exams on the web site

## Public Economics In Search of Good Government

#### Figure 1 – The Effects of Good Government



SOURCE : Wikipedia ; Ambrogio Lorenzetti, "Effeti del buon governo in città", 1338–1340, Palazzo Pubblico, Sala della Pace Siena.

## What is Public Economics?

## • What's in a name?

- "Political economy" (18th c.)
- "Public finance" (19th c.)
- "Public economics" (1960s)

## • Public finance vs public economics

- In the U.S., still "public finance", but very different from *finances publiques*
- Public economics is about the economics of the public sector (cf. German *Staatswirtschaft*)

### • Aiming to answer two types of questions :

- (i) How do government policies affect the economy? (positive approach)
- (ii) How should government policies be designed to attain certain objectives? (normative approach)

## Political Economy (18th c.)

## • The Classics

- Adam Smith, John Stuart Mill, David Ricardo, Jean Charles de Sismondi, Jeremy Bentham (see Musgrave, HPE, 1985)
- Tariff policy
- Public goods
- Taxation

### • Adam Smith in The Wealth of nations (1776)



- "Canons of taxation"
  - 1 Equality
  - 2 Certainty
  - 3 Convenience of payment
  - 4 Economy of collection

## Schools of public finance (19th c.)

## • German school, "Staatswirtschaft"

• Economists more favorable to public sector, so-called "pulpit socialists" (*Kathedersozialismus*)

e.g., Werner Sombart, Adolph Wagner, Gustav von Schmoller

## French school

- Marginal calculus, public sector pricing, optimal taxation
- Engineers working in public utilities (Ponts, Mines, EDF)
  e.g., Jules Dupuit, Maurice Allais, Marcel Boiteux (Kolm, 2010)
- Italian school, "Scienza delle Finanze"
  - Marginal utility, the State as nexus of interests e.g., Antonio de Viti de Marco, Maffeo Panteleoni
- Stockholm school, "Stockholmsskolan"
  - Macroeconomic stabilisation, welfare states
    e.g., Knut Wicksell, Gunnar Myrdal, Bertil Ohlin, Erik Lindahl

## Public Economics (20th c.)

## • Welfare economics (1950s)

- Musgrave, Vickey, Boiteux, Samuelson, Arrow, Debreu (see Dreze, 1995)
- Arrow-Debreu general equilibrium model
  - theorems of welfare economics
- Theoretical progress with mathematical analysis (1970s)
  - optimal public good pricing
  - optimal taxation

## • Three "branches" of government (Musgrave 1959)

- Macroeconomic stabilization
- 2 Resource allocation to address market failures
- Income redistribution

## Public Economics (20th c.)

- Public Economics (1970-80s)
  - Split with macroeconomics (in the 1970s)
  - Launch of the *Journal of Public Economics* in 1972 (Atkinson, Stiglitz, Feldstein)
  - Atkinson and Stiglitz's textbook *Lectures in Public Economics* (1980)
  - Launch of the Handbook of Public Economics in 1985

## • Applied Public Economics (2000s)

- Focus on empirical approaches with more attention to institutional details
- Identification of causal impacts, policy evaluation
- Challenge to link theory to empirical estimates

## Why choose Public Economics?



"I admit to more than only a scientific motivation; intelligent and civilized conduct of government and the delineation of its responsibilities are at the heart of democracy. (...)

[It] requires an understanding of the economic relations involved; and the economist, by aiding in this understanding, may hope to contribute to a better society."

Richard A. MUSGRAVE

Preface to The Theory of Public Finance. A Study in Public Economy (1959)

## Why choose Public Economics?

## Relevance

- Public economics is about improving economic welfare
- Public economics is about good government
- Public policies affect millions of people

#### **2** A dynamic academic field

- At the frontier in applied microeconomics : cf. "credibility revolution" (Angrist and Pischke, 2010)
- Tight integration of theory and data
- Large use of big data
- Strong interactions with other fields : labour, behavioural economics, I.O., macro, etc.

## Empirical methods in public economics

## **1** Quasi-experimental methods

- Variety of methods : DiD, event-studies, RDD, RKD, bunching, etc.
- Emphasis on non-parametric graphical techniques : "Show me the graph !"

## **2** Sufficient statistics approach

- Structural vs reduced-form debate (Rosenzweig and Wolpin, 2000)
- Sufficient statistics : theory is used to derived formulas based on empirical estimates (Chetty, 2009)

### **3** Big data have transformed empirical research

- Scanner data on consumer purchases
- Administrative tax data
- Administrative social security data

#### Figure 2 – Language trends in Public Economics



NOTES : The graph shows the frequency of words within different topics as a fraction of all words across topics. The sample comprises all NBER working papers 1975–2018 tagged "public economics" (4676 papers). SOURCE : Kleven (2018), "Language trends in Public Economics" [see slides].

#### Figure 3 – The Rise of Identification



NOTES : The graph shows the fraction of papers that mention the word "identification" in the context of empirical identification. The sample comprises all NBER working papers 1975–2018 tagged "public economics" (4676 papers). SOURCE : Kleven (2018), "Language trends in Public Economics" [see slides].

#### Figure 4 – The Rise of Quasi-Experiments



NOTES : The graph shows the fraction of papers that refer to each type of quasi-experiment. The sample comprises all NBER working papers 1975–2018 tagged "public economics" (4676 papers). SOURCE : Kleven (2018), "Language trends in Public Economics" [see slides].

#### Figure 5 – The Rise of Administrative Data



NOTES : The graph shows the fraction of papers that mention the words "administrative data" in the context of empirical identification. The sample comprises all NBER working papers 1975–2018 tagged "public economics" (4676 papers).

SOURCE : Kleven (2018), "Language trends in Public Economics" [see slides].

Figure 6 – Use of Survey Data in top Journals, 1980–2010



SOURCE : Chetty and Bruich (2012), Public Economics Lectures.

NOTES : "Survey" datasets refer to micro surveys such as the CPS or SIPP and do not include surveys designed by researchers for their study. Sample excludes studies whose primary data source is from developing countries.

#### Figure 7 – Use of Admin Data in top Journals, 1980–2010



SOURCE : Chetty and Bruich (2012), Public Economics Lectures.

NOTES : "Administrative" datasets refer to any dataset that was collected without directly surveying individuals (e.g., scanner data, stock prices, school district records, social security records). Sample excludes studies whose primary data source is from developing countries.

## A broad set of skills required

## Moral philosophy

• What is justice? What is fair?

### Institutional knowledge

- Government policies are complex
- Details matter

### Economic theory

- Welfare economics : micro, macro, IO, etc.
- Optimal tax theory

## • Empirical methods

- Reduced form vs structural approaches
- Ex-ante vs ex-post policy evaluations

## Course outline

- 1.A Introduction to public economics [A. Bozio]
- 1.B Tools of welfare analysis [J. Grenet]
  - 2. Externalities [J. Grenet]
  - 3. Public good [J. Grenet]
  - 4. Commodity taxation [A. Bozio]
- 5./6. Labour income taxation [A. Bozio]
  - 7. Theories of Social and Fiscal Justice [T. Piketty]
  - 8. Capital Income, Inheritance and Wealth Taxes [T. Piketty]
  - 9. Corporate taxation [A. Bozio]
  - 10. Inter. Tax Competition and Profit Shifting [G. Zucman]
  - 11. Tax Evasion : Information, Supply, Norms [G. Zucman]
  - 12. Social insurance [J. Grenet]

## Lecture outline

- I. Public spending and taxation
- II. Rationales of government interventions

## I. Public spending and taxation

- Growth of the State
- 2 Background facts on public spending
- Background facts on public taxation
- 4 Theories aiming at explaining the growth of the State

## Growth of the State

- Minimal state in the 19<sup>th</sup> c.
  - Public spending  $\approx$  10% of GDP
  - Almost no social spending

## • Huge growth in the 20<sup>th</sup> c. in developed countries

- 1920s : States doubled in size compared to 19th c.
- Strong acceleration during the period 1960–1980
- See Lindert *Growing Public* (2004) for detailed documentation about this expansion

#### • High level today, with some heterogeneity

- Public spending today pprox 45% of GDP
- Heterogeneity in the total level :
  - France, Sweden pprox 55% GDP
  - U.S. and Japan  $\approx$  40% GDP
  - China and India  $\approx$  30% GDP
  - Developing countries  $\approx$  20% GDP

#### Figure 8 – Public Spending (% of GDP), 1800–2022



SOURCE : IMF, Public Finances in Modern History Database, June 2024.

#### Figure 9 - Public Spending (% of GDP), 1870-2014



SOURCE : Bozio and Grenet (2010), figure 1. Tanzi and Schuknecht (2000) for period 1870-1960; OECD Historical Statistics (2001) for period 1968-1988; OECD.Stat for period 1989-2014.

#### Figure 10 – Public Spending (% of GDP), 1880–2022



SOURCE : IMF, Public Finances in Modern History Database, June 2024.

#### Figure 11 – Social Spending (% of GDP), 1880–2016



SOURCE : Lindert (2004) for period 1880-1970; OECD Social Expenditures for period 1980-2016.

## The rise of the social State

#### • Emergence of welfare states

- Bismarck's social insurances in Germany (1883)
- Beveridge National insurance plan (1941) in the UK
- Sécurité sociale in France (1945)

#### Variations in welfare states

- Different models of welfare states (Esping-Andersen, 1990)
- Social insurance vs means-tested benefits
- Public social insurance spending explains a large part of overall differences in public spending (notably pension spending)

## Larger view of public interventions

## • Narrow focus of public economics

• Public spending and taxation

#### Overlooked aspects of Government

- Political rights, civil rights, political regimes
- Property regimes, Workers' rights, Labour law
- Monetary regimes

#### • Where is the State biggest? China vs Finland

- Public spending : 32% GDP vs 55% GDP
- Large public ownership of firms vs little

## Background Facts : Distribution of Spending

- United Nations' Classification of the functions of government (COFOC) :
  - Defence
  - Public order and safety
  - General public services
  - Economic affairs
  - Social Protection
  - Health
  - Education
  - Housing and communities amenities
  - Recreation and culture
  - Environment protection

#### Figure 12 – Government Spending by Function in the U.S.



Source : Bureau of Economic Analysis, NIPA Table 3.16

## Figure 13 – Government Spending by Function : France, U.S., South Korea (2010)



Sources : Bureau of Economic Analysis (NIPA Table 3.16); Eurostat (COFOG); OECD.Stat (COFOG)

## Background Facts on Taxation

#### Growing share of government revenue

- From less than 10% in 1880 to 25-30% in 1960
- Between 1965 and 2010 in the OECD area as a whole, the tax burden has risen from 25.5% to 33.8% of GDP

### But large dispersion in 1970s-80s

- Stabilization of low tax countries around 25% GDP (US, Japan)
- Mid-level for UK, Germany around 35%
- Higher level for Nordic and France, around 45%

#### Figure 14 - Tax Revenue (as % of GDP), 1870-2014



 $\label{eq:Source:Piketty (2013) for France; Kleven, Kreiner and Saez (2014), Fig. 2 for UK, US and Sweden, based on Flora (1983); OECD Revenues Statistics since 1965. 34 / 64$ 

#### Figure 15 – Tax Revenue (% of GDP), 1800–2022



SOURCE : IMF, Public Finances in Modern History Database, June 2024.

#### Figure 16 – Tax Revenue (% of GDP), 1800–2022



SOURCE : IMF, Public Finances in Modern History Database, June 2024.

## Issues around the measure of tax burden

#### **1** Not a measure of governments' intervention

- · High tax countries can have low borrowing
- Low tax countries can have high regulation

#### 2 Not a measure of individual's tax burden

- Compulsory pension systems (private or public)
- Progressivity of the tax system

#### Other measurement issues

- Use of tax expenditures
- Taxes paid by Government to itself
- Taxes paid on transfer payments
- See Adema et al. (2011) for details assessment of OECD data

## What constitutes a tax?

- **OECD definition** : "Compulsory unrequited payments to general government"
- A tax or a user fee?
  - User fee : a fee to use a service e.g. road fees, passport/ID fee...
  - TV licence : tax or user fee?

#### • Pension contributions : tax or mandatory savings ?

- UK's National Insurance Contribution
- Sweden's notional accounts
- Singapore's Central Provient Fund (CPF)

## Background Facts : Structure of Revenue

• Five main components of government revenue :

- Personal income tax
- Corporate income tax
- Social security contributions
- Consumption taxes
- Property taxes
- Since the early 1960s, declining share of consumption and property taxes vs. growing share of social security contributions
- Tax structure varies widely across countries

## Figure 17 – Structure of Government Revenue : OECD Average, 2010 vs. 1965



Source : OECD Revenue Statistics (2012), Table C

## Figure 18 – Structure of Government Revenue : France, Denmark, Mexico (2010)



Source : OECD Revenue Statistics (2012), Tables 6, 10 and 12

## Growth of the State literature

## **1** Wagner's law or "law of increasing state activity"

- German political economist Adolph Wagner (1835–1917)
- Observation of increasing share of public sector
- Demand for public goods grows with income (*elasticity* > 1)

## Ø Baumol's cost disease (Baumol, AER 1967)

- Economics of performing arts (Baumol and Bowen, 1966)
- Productivity increases in the private sector
- Public services are labour intensive
- Cost to provide them will increase faster than prices
- S "Ratchet effect theory" (Peacock and Wiseman 1961)
  - Wars increase government spending and taxation
  - Government's intervention is not reversed

## Growth of the State literature

## **4** Leviathan theory (Brennan and Buchanan 1980)

• Governments are controlled by self-interested politician-bureaucrats

#### **5** Political economy

- Democratization, increased political power of the poor
- Increased demand for public goods, redistribution etc.
- Public spending changes matches changes in those with voice (Lindert, 2004)

## **6** Technology and enforcement (Kleven, Kreiner and Saez, 2016)

- Development of firm accountancy, computerization
- Third party reporting (banks, employers, VAT)
- Case of Nordic countries (Kleven, 2014)

# Kleven (JPE, 2014) : How Can Scandinavians Tax So Much?

Table 1 – Tax Revenue and Tax Rates in Scandinavia versusSelected Comparison Countries

	Denmark	Norway	Sweden	Germany	United Kingdom	United States
Tax revenue/GDP	48.2%	42.8%	45.8%	36.3%	35.0%	24.8%
Share of tax revenue Income taxes Property taxes Consumption taxes	64.2% 3.8% 31.6%	70.7% 2.9% 26.4%	68.4% 2.4% 28.8%	68.7% 2.4% 28.4%	54.8% 11.8% 32.8%	70.0% 12.2% 17.9%
Income tax distortions Top marginal tax rate Participation tax rate	69.8% 87.0%	60.8% 77.6%	73.6% 76.7%	59.3% 63.0%	62.7% 55.6%	43.3% 36.6%

SOURCE : Kleven (2014), Tab. 1.

## Figure 19 – Evasion by Fraction of Income Self-Reported in Denmark



SOURCE : Kleven (2014), Fig. 1, from work based on Kleven, Knudsen, Kreiner, Pedersen, and Saez (2011).

## II. Rationales for Government Intervention

### **1** Fundamental Theorems of Welfare Economics

- (i) Failure of first welfare theorem
- (ii) Fallacy of second welfare theorem

References : Arrow (1951); Debreu (1959)

## 2 Roles of Government

- a) Enforcement of property rights and contracts
- b) Correction of market failures
- c) Correction of individuals' failures
- d) Redistribution

## The Basic Criteria of Welfare Analysis

#### Two basic criteria

1 *Efficiency* : how well resources are allocated (size of the pie)

**2** *Equity* : how resources are distributed among individuals

## Optimal taxation approach

- Specify a social welfare function (SWF) and describe policy x which maximizes the SWF(x)
- Optimal taxation approach (Mirrlees, 1970)
- More general approach in public economics (Kaplow, 2008)

## Failure of the First Welfare Theorem

- First Theorem : any competitive equilibrium is Pareto efficient if
  - (i) no externalities or public goods
  - (ii) perfect information
  - (iii) perfect competition
  - (iv) rational individuals

### Rationales for government interventions

- 1 Enforcing contracts and property rights
- 2 Externalities require government interventions
  - e.g., Pigouvian taxes/subsidies, public good provision
- 3 Imperfect or asymmetric information
  - e.g., adverse selection may call for mandatory insurance
- 4 Imperfect competition requires regulation
- 6 Agents are not rational
  - e.g., hyperbolic agents may not save enough

## Second Welfare Theorem Fallacy

- **Theorem 2** : any efficient allocation can be achieved as a competitive equilibrium
  - (i) same conditions as theorem 1
  - (ii) lump-sum taxes/transfers are feasible
- Why fallacy?
  - Lump-sum tax/transfers are not available
  - Hence we do not live in First Best world

## Lump-sum taxes and transfers

## • Definition

• Lump-sum taxes are fixed in amount and are such that no action can reduce their burden.

e.g., poll tax (possibly by age and sex)

- Lump-sum taxes are rare because of information constraints
  - Intrinsic characteristics are not observable e.g., ability is not observable, income is
  - Possible lump-sum taxes are usually unfair e.g., poll tax

### Policy as a second-best problem

- First best : use of lump-sum taxation
- Second best : use of other taxes that might be distortionary
- $\Rightarrow$  Public Economics starts here!

## Roles of Government

- I. Improving efficiency
  - 1 Enforcement of property rights and contracts
  - 2 Correcting externalities
  - **3** Remedying to market failures from asymmetric information
  - 4 Regulating imperfectly competitive markets
  - **6** Correct individual failures (or internalities)
- II. Redistribution

## Enforcement of property rights and contracts

#### • Markets do not exist ex abstracto

• Reputation mechanisms can work on small scale (Greif, 1993)

## • Markets require secured property rights

- Need for legal code, police and justice to ensure that private contracts are enforceable
- Government intervention is critical on a larger scale when economic exchanges become impersonal (Dixit, 2004)
- The enforcement of broad-based property rights is a key determinant of economic growth (Acemoglu, Johnson and Robinson, 2001)

Figure 20 – OLS Relationship Between Secured Property Rights and GDP per Capita



Source : Acemoglu, Johnson and Robinson (2001), Figure 2

## Figure 21 – Settler Mortality, Protection of Property Rights and GDP per Capita



Source : Acemoglu, Johnson and Robinson (2001), Figures 1 and 3

## Market Failure 1 : Externalities and Public Goods

## • Public Goods

 goods that are non-rival and non-excludable in consumption (e.g. national defence)
 ⇒ Because of free riding, too little public goods are produced

## Externalities

- production or consumption of goods and services imposes costs or benefits on others
- not reflected in the prices charged for the goods and services

 $\Rightarrow$  too much of negative externality-generating goods e.g., pollution ;

 $\Rightarrow$  too little of positive externality-generating goods e.g., R&D

## Market Failure 2 : Asymmetric Information

• When some agents have more **information** than others, markets can fail

**Ex 1 :** The market for second-hand cars or "lemons" (Akerlof, 1970). Sellers have private information on the quality of their cars, which is unknown to buyers  $\rightarrow$  sellers of high quality cars withdraw from the market

**Ex 2 :** Adverse selection in health insurance markets. Healthy people drop out of the private insurance market  $\rightarrow$  mandated coverage could make everyone better off

 $\mbox{Ex 3}$  : Credit constraints in the education market  $\rightarrow$  subsidies for education

## Market Failure 3 : Imperfect Competition

- When **markets are not competitive**, there is role for public intervention
  - $\mathsf{Ex}\ 1$  : natural monopolies such as electricity or railways
  - Ex 2 : anticompetitive practices such as collusion between firms or abuse of dominant position (e.g. predatory pricing)
- This topic is traditionally left to courses on **industrial organization** and is not covered in this course

## Correction of "Individual Failures"

- A recent addition to the list of potential failures that motivate public intervention : **people are not fully rational**
- Examples of bounded rationality have been identified by behavioral economics (cf. Kahneman and Tversky, 1979) :
  - Hyperbolic discounting (Laibson, 1997)
  - Overconfidence (Della Vigna and Malmendier, 2006)
  - Default options (Madrian and Shea, 2001)
  - Inattention (Lacetera, Pope and Sydnor, 2012)
- **Public intervention** (e.g. by forcing saving via social security, enforcing the use of seatbelts for drivers) may be desirable
- Conceptual challenge : how to avoid the **paternalism** critique?

## Limitations of Government Intervention

- **Problem :** optimal policies to address market failures are not always implementable
- **Collective choice problems** : governments face the difficult problem of aggregating the preferences of millions of citizens into a coherent set of policy decisions
- **Commitment problems** : some policies may not be perceived as credible by economic agents (e.g. announced government policy of never negotiating with terrorists over the release of hostages)
- Because of **information constraints**, first-best policies can be difficult or impossible to implement, and governments often have to rely of instruments which distort incentives (behavioral responses in the private sector)
  - $\rightarrow$  Second-best policies

## Second Role for Government : Improve Distribution

- Even when the private market outcome is efficient, it may not have good **distributional properties** : markets generally seem to deliver very large rewards to a small number of people
- The choice between different efficient outcomes raises the tricky issue of making interpersonal comparisons, which involve **value judgements**
- A common way of representing such value judgements is the **social welfare function**, a function that maps the set of individual utilities in society into an overall social utility function

#### Figure 22 – Utilitarian Social Welfare Function



#### Figure 23 – Rawlsian Social Welfare Function



#### Figure 24 – General Social Welfare Function



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