

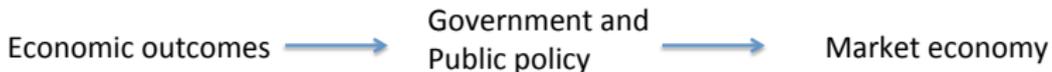
Public Economics

Gaute Torsvik

Department of Economics, University of Oslo

2016

Public economics



Political economy:

How does the economy affect the structure of government and economic policy

Public Economics

Positive (is): Characterize public policy, and how it affects the economy

Normative (ought): Derive optimal policy, given welfare objectives and relevant constraints.

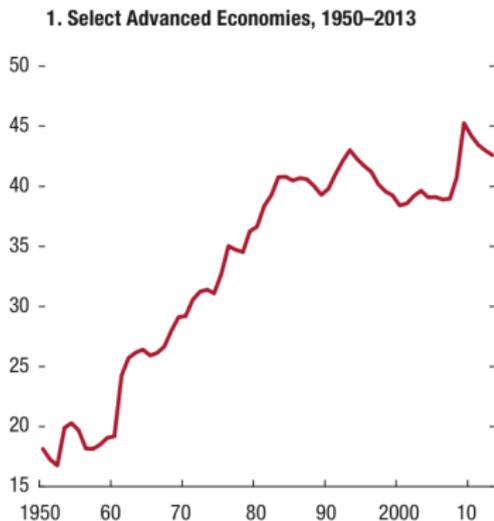
The scale and scope of the public sector

- ▶ Expenditures
- ▶ Revenues
- ▶ Employment

Expenditures

Public expenditures have grown over time

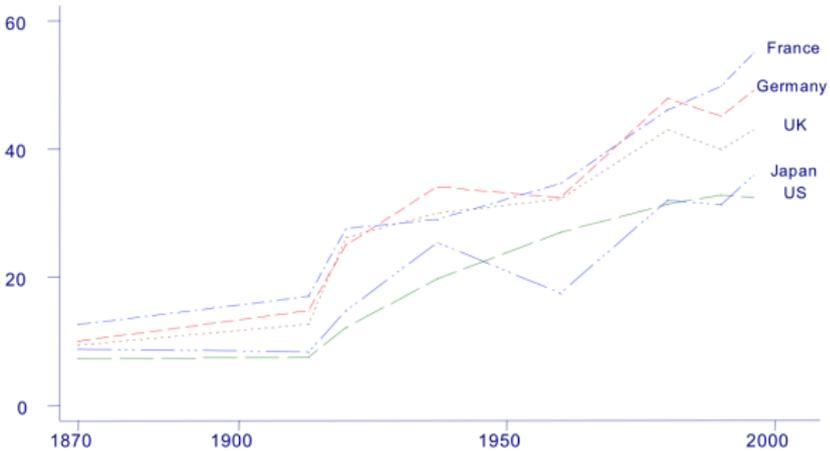
Figure 2.1. General Government Expenditure
(Percent of GDP)



Sources: Mauro and others (2013); and IMF staff estimates.

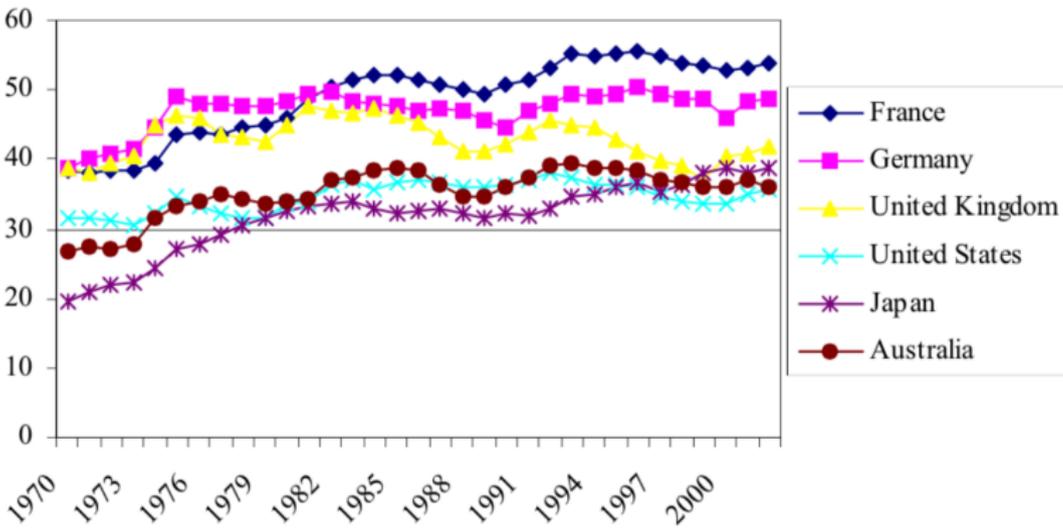
Expenditures

Public expenditures has grown over time



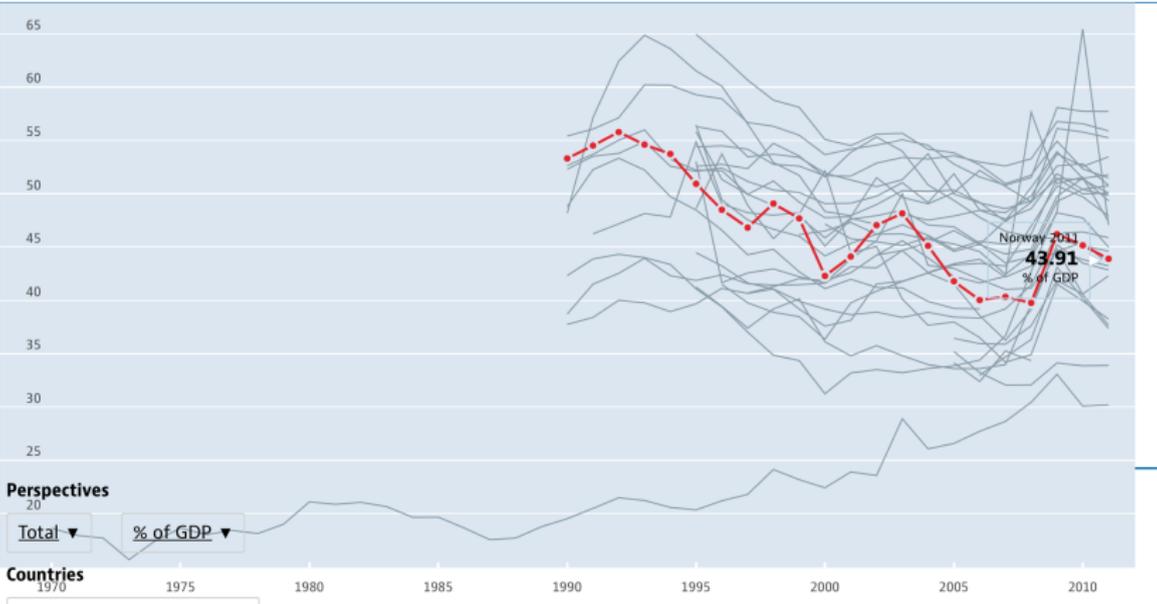
Expenditures

But has stabilized over the last 20 years



Expenditures

Norway: Public expenditures as share of GDP not particularly high in Norway (oil-doped denominator)



The composition of government expenditures

Economic support to individuals with low (no) income is by far the largest expenditure

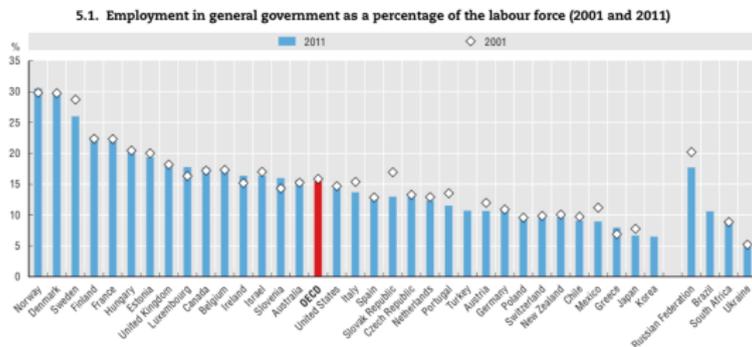
Structure of general government expenditures by function (2008)



Source: OECD National Accounts. [Expenditures by function](#)

Employment in the public sector

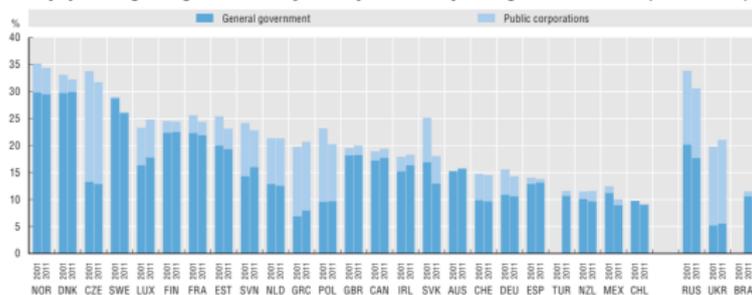
Nordic countries have a relatively large fraction of the work force in public sector



Sources: International Labour Organization (ILO), LABORSTA (database); OECD Labour Force Statistics (database). Data for Korea were provided by government officials.

StatLink <http://dx.doi.org/10.1787/888932942241>

5.2. Employment in general government and public corporations as a percentage of the labour force (2001 and 2011)

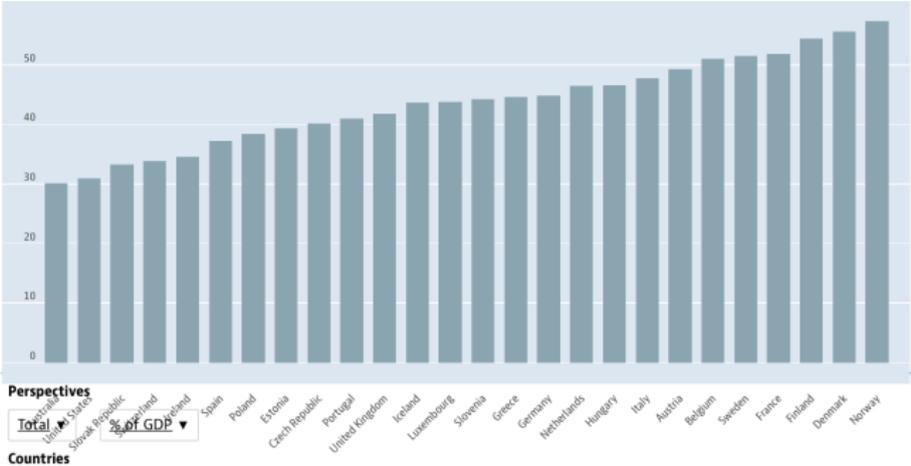


Sources: International Labour Organization (ILO), LABORSTA (database); OECD Labour Force Statistics (database).

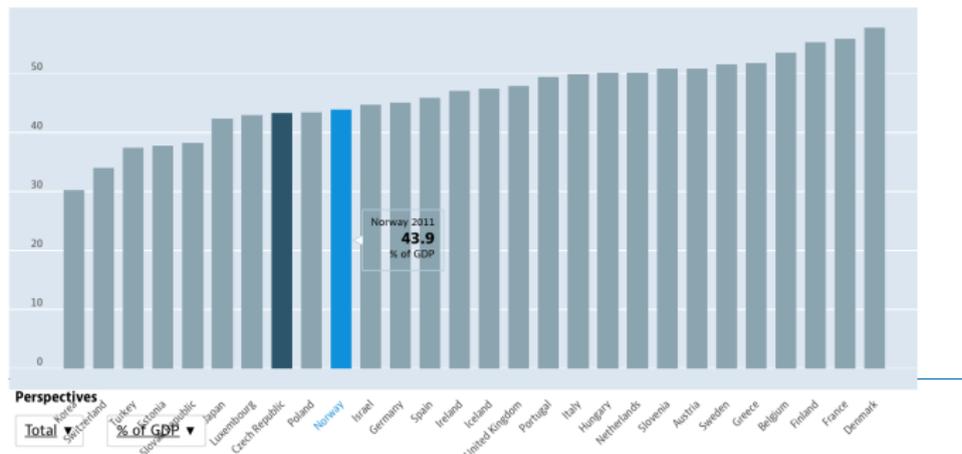
StatLink <http://dx.doi.org/10.1787/888932942260>

Government revenues as fraction of GDP (2012)

High public revenues in Norway

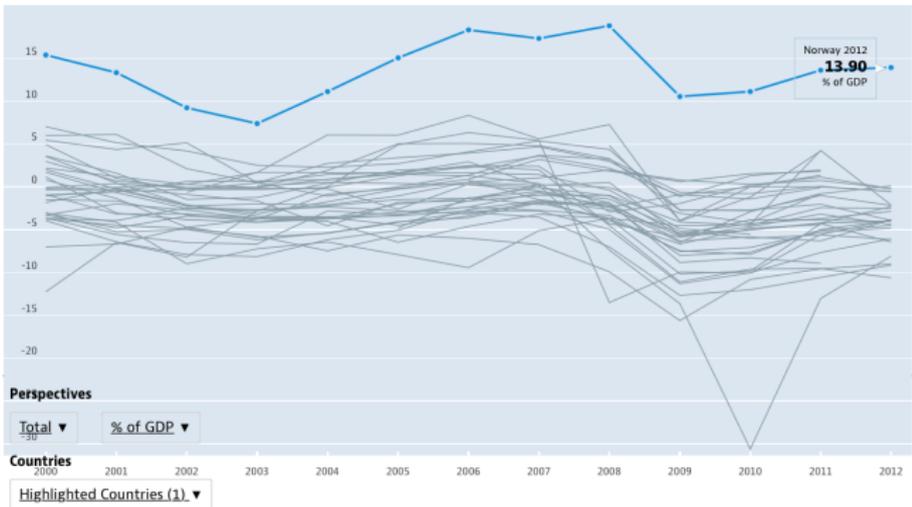


Government expenditures as fraction of GDP (2012)



Deficit surplus

Norway stands out with a high surplus



Tax revenues by types of taxes Norway 2014

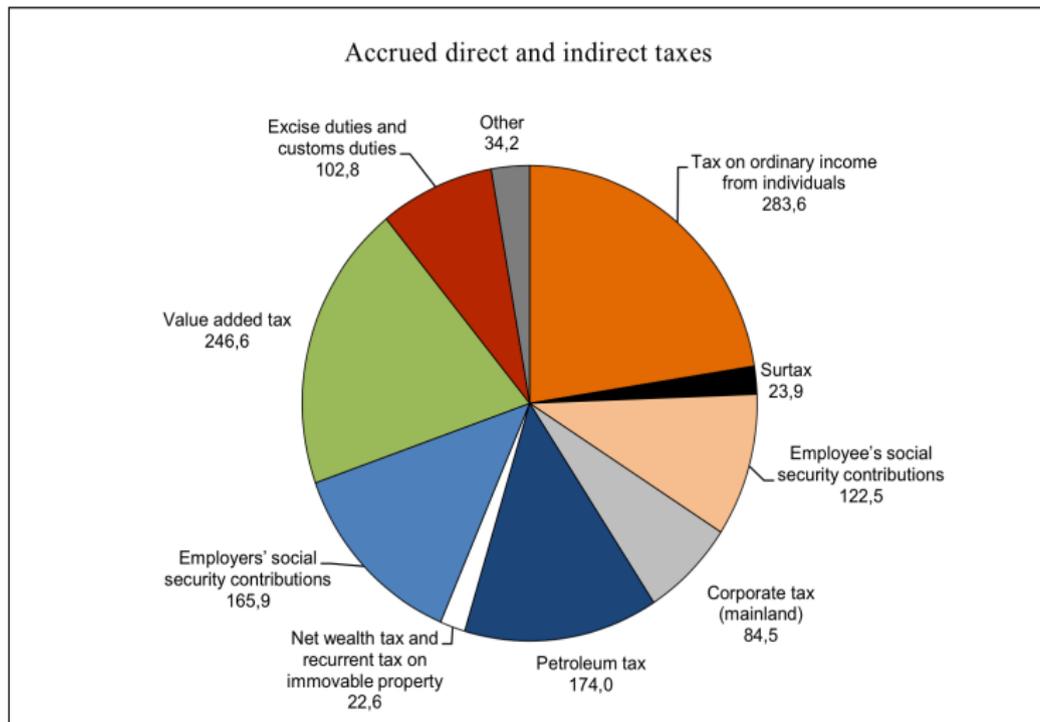


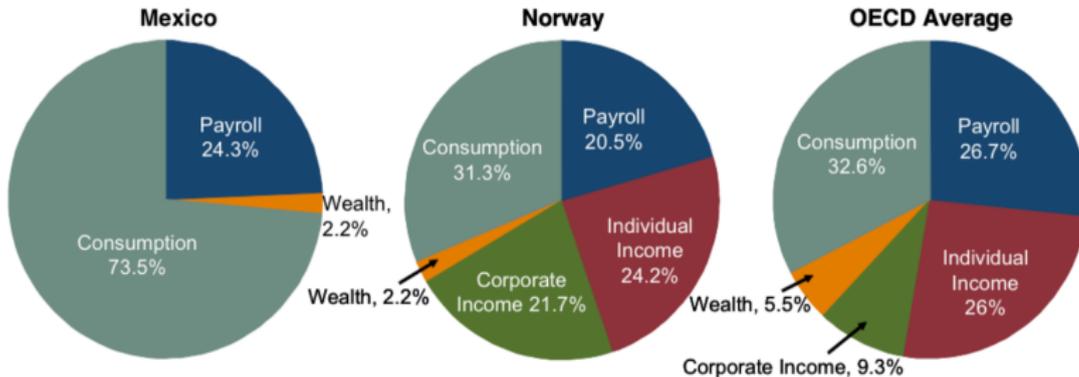
Figure 2.1 Accrued direct and indirect taxes. General government. Estimates for 2014. NOK billion

Source: Ministry of Finance.

Tax revenues in rich and poor countries

Poor countries rely more on consumption taxes than on income taxes

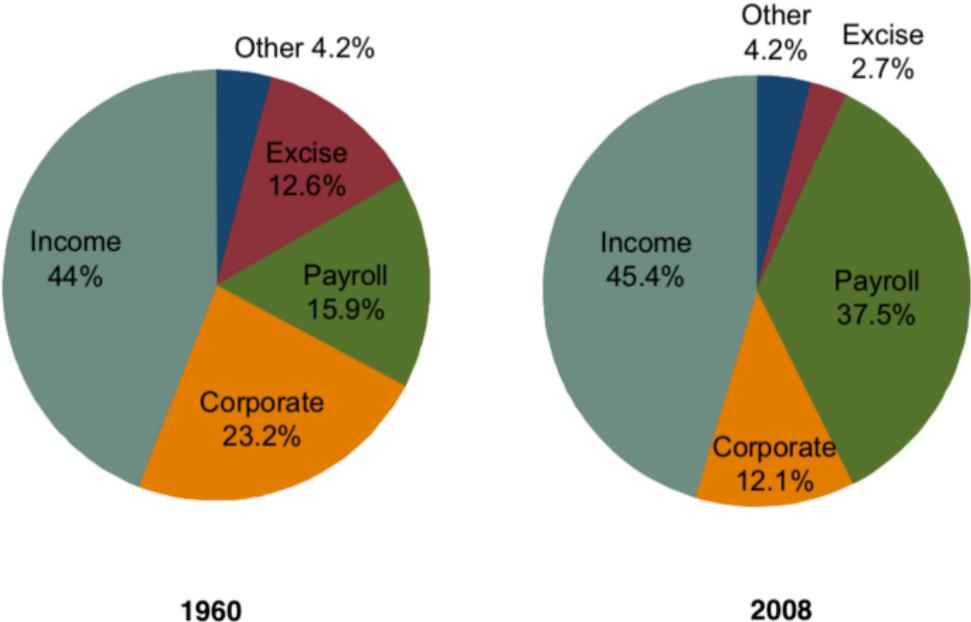
International Tax Revenue by Type of Tax (2001, % of Total)



Source: OECD 2002

Tax revenues in the US

Federal Revenues (% of total revenue)



Why has the public sector grown so much?

- ▶ Different theories (explanations)
 - ▶ development (more demand for public goods, infrastructure, police ... as the economy grows)
 - ▶ Wagner's law (as above + many of the services provided by the public sector have a high income elasticity)
 - ▶ Baumol's law (low productivity growth in the services and constant relative wages implies higher costs in the public sector)
 - ▶ political model (median voter earns less than mean he/she will vote for redistributive taxes (Meltzer 1981))
 - ▶ (read chapter 4 HM)

What is the role of the government in a market economy?

- ▶ Economic activities - production, investment and consumption
- are undertaken in markets. Market decisions are based on prices that balance supply and demand. Governments use public policy (rules, regulation, taxation) to:
 1. Correct market failures
 2. Redistribute income

Market failures

- ▶ Market fails when
 1. markets are missing (externalities, public goods)
 2. sellers or buyers have private information about the quality of the good that is traded
 3. imperfect competition

Government policies to enhance efficiency

- ▶ Standard efficiency arguments
 - ▶ Protect wealth and contracts (police, law and order,..)
 - ▶ Produce public goods
 - ▶ Provide social insurance
 - ▶ Fix externalities (correct prices with taxes, quantity restrictions)
 - ▶ Price regulation in monopolies
- ▶ Behavioral economics:
 - ▶ Individual behavioral failure (Nudge)
- ▶ Redistribute income and wealth

Social optima with Public goods

Max $W(u^1, u^2, \dots, u^H)$ s.t. $F(\mathbf{X}, G) \leq 0$ where $u^h = u^h(\mathbf{x}^h, G)$ and $\sum_h \mathbf{x}^h = \mathbf{X}$ and $F()$ is a general convex production technology and W a social welfare function.

Lagrangian: $L = W(u^1, u^2, \dots, u^H) - \mu F(\mathbf{X}, G)$

f.o.c (1) $x_i^h : \frac{\partial W}{\partial u^h} \frac{\partial u^h}{\partial x_i} = \mu \frac{\partial F}{\partial x_i} \forall h, i \implies MRS = MRT$ for all private goods for all individuals

f.o.c (2) $G : \sum_h \frac{\partial W}{\partial u^h} \frac{\partial u^h}{\partial G} = \mu \frac{\partial F}{\partial G} \implies \sum_h \frac{\frac{\partial u^h}{\partial G}}{\frac{\partial u^h}{\partial x_i}} = \frac{\frac{\partial F}{\partial G}}{\frac{\partial F}{\partial x_i}}$ (Samuelson rule)

How do we find individual willingness to pay for the public good?
How do we finance the public good?

Social optima with externalities

Many ways to illustrate externalities, many types of externalities. Suppose one good (j) pollutes the atmosphere and the impact on all households: $u^h(\mathbf{x}^h, X_j)$ where X_j is the aggregate production of good J . Let $F(\mathbf{X})$ represent a CRS production function.

Lagrangian: $L = W(u^1, u^2, \dots, u^H) - \mu F(\mathbf{X})$

$$\text{f.o.c (1)} \quad x_i^h : \frac{\partial W}{\partial u^h} \frac{\partial u^h}{\partial x_i} = \mu \frac{\partial F}{\partial x_i} \quad \forall h, i \neq J$$

f.o.c (2)

$$x_J^h : \frac{\partial W}{\partial u^h} \frac{\partial u^h}{\partial x_J} + \sum_h \frac{\partial W}{\partial u^h} \frac{\partial u^h}{\partial x_J} = \mu \frac{\partial F}{\partial x_J} \implies \frac{\frac{\partial u^h}{\partial x_J}}{\frac{\partial u^h}{\partial x_i}} = \frac{\frac{\partial F}{\partial x_J}}{\frac{\partial F}{\partial x_i}} - \sum_h \frac{\frac{\partial W}{\partial u^h} \frac{\partial u^h}{\partial x_J}}{\frac{\partial W}{\partial u^h} \frac{\partial u^h}{\partial x_i}}$$

How do we implement this solution; change prices (taxes subsidies), quantity regulation?

Redistribution: equity efficiency trade-off

- ▶ Second Welfare Theorem → with lump sum taxes and transfers we do not have to sacrifice efficiency in order to obtain desired distribution of goods (welfare)
- ▶ But it is very hard to find a tax that does not vary with the choices made by individuals. Government have imperfect information about individuals ability (income potential)).
- ▶ Must tax economic choices (various types of income, consumption, commodities) → taxes distort prices and creates inefficiency. (MRS is not equal to MRT for all goods, or the MRS between different goods are not equal across individuals).
- ▶ What determines the efficiency loss associated with taxation and how do we tax to minimize that loss.