Taxation

EC3060 Economics of Policy Issues

Dr Gaia Narciso

What is efficient taxation?

Efficient Taxation

- Efficient taxation minimizes the efficiency losses incurred through the excess burden of taxation when collecting a specified amount of tax revenue

- The solution for efficient taxation is known as the **Ramsey Rule.**

- Suppose that sales taxes can be levied on two goods, A and B

- A rate of tax t_A will be levied on good A
- A rate of tax t_B will be levied on good B

- A government is looking for the **efficient combination** of taxes on the two goods.

- The markets for goods A and B are competitive and supply is at constant cost

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The logic of the Ramsey rule

- The source of the excess burden of taxation is a **substitution** of response between work and free time.
- The magnitude of a substitution is measured by the supply elasticity.

When elasticities are low

- substitution responses are low
- the excess burden of taxation is low

In order to keep the combined excess burden of taxation low, lower taxes should be levied on goods with greater elasticities.

Social Justice and the Ramsey Rule

- The focus of the Ramsey rule is on achieving **efficiency**

- Indeed, the Ramsey rule seems to contradict ideas of social justice
  - Higher taxes on food, housing, spectacles…
  - Lower taxes on designer clothes, yachts, jewelry…

- Efficiency requires keeping substitution to a minimum
- Ramsey rule proposes high tax rates for goods and services that people continue to purchase after taxation has increased the price to buyers
- Lower-income people would bear a higher tax burden

- The Ramsey rule regarding taxation of personal incomes contradicts the idea of social justice

- Consider two individuals:
  - Person 1 is independently wealthy but is prepared to work if paid enough.
  - Person 2 has no source of income other than from work and has to work for a living

- Person 1's labor supply elasticity is higher
- Person 2's labor supply elasticity is lower

- The Ramsey rule proposes that the wealthier person should be taxed at a lower rate than the poorer person

- Why?
- The poorer person has less flexibility when making labor supply decisions

Progressivity and regressivity of an income tax

- Social justice in taxation is associated with progressivity in personal income taxation.

- Progressivity: share of income that an individual pays in taxes

$$\frac{Income\ paid\ in\ taxes}{Income\ earned} = \frac{R}{Y}$$

R: total personal income tax

Y: person's pre-tax income

- Progessive tax: the share of income paid in taxes increases with income
- Regressive tax: the share of income paid in taxes declines with income
- Proportional taxation: the share of income paid in taxes remains constant

- The Ramsey rule seems to suggest that income taxes need to be regressive

- The Ramsey rule requires higher tax rates of taxation on lower incomes

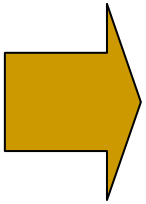
Principles of socially just taxation

- **Horizontal equity**
  - People with the same incomes and same attributes pay the same taxes
  - Equal treatment for equal people
- **Vertical equity**
  - People with different incomes make equal sacrifices when paying taxes
  - Equal treatment of unequal people

Vertical equity

- Two individuals
  - Individual 1: € 1,000 a month
  - Individual 1: € 2,000 a month
- Rule for equal treatment of unequals:
  - Both people will pay the same rate of taxation t_1 on the first € 1,000 earned
  - Individual 2 will pay t_2 on the second € 1,000 earned
- There are two tax brackets

- The **progressivity** of income taxes is achieved through the **increasing** marginal **rates** of taxation that apply to different **tax brackets** as personal **income increases**.



Vertical equity implies progressive taxation

Tax Rates and Tax Bands

Tax rates and bands applicable to your personal circumstance in tax year 2008 and tax year

Personal Circumstances	Tax Year 2008	Tax Year 2009
Single / Widowed without dependent children	€35,400 @ 20%, Balance @ 41%	€36,400 @ 20%, Balance @ 41%
Single / Widowed qualifying for One Parent Family Tax Credit	€39,400 @ 20%, Balance @ 41%	€40,400 @ 20%, Balance @ 41%
Married Couple - one spouse with income	€44,400 @ 20%, Balance @ 41%	€45,400 @ 20%, Balance @ 41%
Married Couple - both spouses with income	€44,400 @ 20% (with an increase of €26,400 max), Balance @ 41%	€45,400 @ 20% (with an increase of €27,400 max), Balance @ 41%

Conflict between efficient and socially just taxation

- If we want efficiency, we need regressive income taxes

- If we want social justice, we need progressive income taxes

Linear Income Tax

- Y: individual's market determined income
- R: value of total tax revenue
- S: income subsidy
- t: proportional tax rate

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- The linear income tax provides social insurance
- The tax structure is progressive, although the marginal tax rate is constant

The choice of the optimal linear tax

- The rate of taxation, t, determines the income transfer *S* paid to everybody

- The value of *S* reflects the extent of social insurance in the tax structure.

- A higher value of S provides more social insurance.
- It also requires higher tax revenue
- More tax revenues implies a higher burden of taxation

- The choice of S in linked to the choice of the tax rate t through the government budget constraint

- *n* individuals in the population

- The government budget constraint is:

$$nS = t\sum_{i=1}^{n} y_i$$

- A government can choose the tax rate to maximize a social welfare function, subject to the budget constraint

- The choice of the tax rate (and *S*) depends on the social welfare function that has been chosen.
  - Rawls : more income redistribution
  - A higher value of the tax rate is required to finance the larger income transfers.

Optimal Income taxation

- Usually marginal tax rates can vary with different levels of income

- Tax rates usually increase with income.

- Suppose we want to determine the general optimal income tax structure that maximizes a social welfare function

- If the rate of taxation were to change with every change in income, we would be looking for an optimal income schedule:

$$t=f(Y)$$

- We are looking for a relationship between the tax rate and income that maximizes social welfare

- The solution to the general optimal taxation problem is a function that tell us how to set the tax rate t for all values of income Y

- Finding an optimal income tax schedule requires a compromise between:
  - **Social justice** (progressive taxation)
  - **Efficiency** (regressive taxation)

- In deciding on a tax schedule, an important question is:

How do taxpayers respond in their work and leisure decisions to the degree of progressivity or regressivity in the income tax schedule?

We need to know the labor-supply behavior.

- The extent of inefficiency is an empirical matter
- The choice of the social welfare function is ideological

The Mirrlees problem

- How to derive an optimal income tax schedule

1. Choose a utility function that represents the preferences of the population for work (or consumption) and leisure

2. Maximize a social welfare function

- Individuals are assumed to have the same utility function (=same preferences)
- Individuals have different abilities to earn income
- The idea is that the income tax affects how people apply their different abilities to productive effort

- There is a problem...

- There is a problem...

  Individuals' abilities are not observable!

- Governments face a problem of asymmetric information

- Governments can only observe personal incomes

Mirrless' question

- If a government were to know
  - the common utility function of the population
  - the distribution of taxpayers' abilities

  - BUT could only observe the incomes that people earn

how progressive or regressive a personal income tax would the government wish to choose?

Mirrless' answer

- It depends!

Mirrless' answer

- It depends!
- The trade-off between efficiency and social justice depends on the efficiency losses through the excess burden of taxation
- The excess burden of taxation depends on the substitution effect (labor-free time)
- The substitution effect depends on the utility function chosen

- Mirrlees found that **no generally valid answer** could be given to the question whether income taxes should be **progressive** or **regressive** at different levels of income

- The choice of the utility function is crucial

- Mirrlees shows that income tax should provide incentives for higher-ability people to work at least as much as lower-ability people

- The optimal income structure should provide an incentive for high-ability people to reveal their superior ability through the greater pre-tax incomes they earn.

1. A government that maximizes tax revenue

- The Mirrlees problem of finding the optimal income tax is based on a view that government seeks only to serve citizens and tax payers

- In the Mirrlees optimal income tax problem, the government maximizes social welfare when deciding on taxation

- How about the principal-agent problem between taxpayers and government?

- How about the principal-agent problem between taxpayers and government?

- Political decision makers do not necessarily use tax revenue to maximize social welfare

- Tax revenue might be spent
  - For personal benefit of people in the government
  - For politically motivated public-spending decisions

- Governments should then have only limited authority to tax, including taxing future generations by borrowing

- Government can be restrained in taxation and borrowing by constitutionals limitations.

- A Leviathan government does not seek optimal taxation to maximize social welfare, but it seeks to maximize tax revenue for its own benefit

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Locational mobility

- Locational mobility can restrain the leviathan government from using its legal monopoly power to tax for its own benefit.

- Rents of governments are eliminated by the **competition among governments** offering people different combinations of taxation and benefits from public spending

- When people move to avoid a leviathan government, the government loses its tax base.

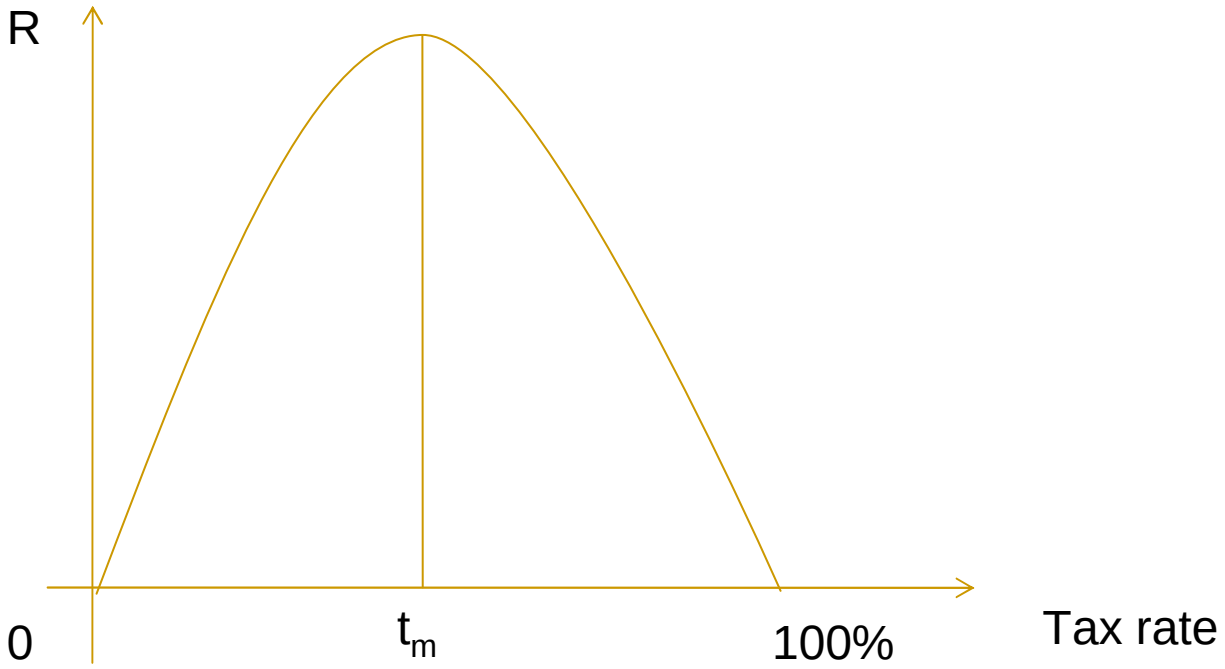
- What can the leviathan government do to avoid loosing its tax base?

- Escape from a leviathan government is not possible when the government levies taxes to raise revenue on **immobile** tax base.

- A tax on property cannot be escaped by selling the property
  - The higher taxes are capitalized into the value of houses and reduce property values

2. Excessive taxation: the Laffer curve

- Tax rates can be so high that they reduce the total tax revenue



- If the tax rate exceed t_m, taxation is excessive and the government is on the "wrong side" of the Laffer curve.

- When taxpayers are on the wrong side of the Laffer curve, they have responded to the high rate of taxation by substituting non-taxable free time for taxable income to the extent that total tax revenue has declined

- There are long-run and short-run aspects of a revenue response on the Laffer curve
- It takes time for people to respond to lower taxes
- How people respond to the reduced taxes also depends on the long-run credibility of the government's reduction in taxes

3. Political objectives

- Political objectives can affect the taxes that governments choose
- There are political-support limitations to applying the Ramsey rule
- Because the Ramsey rule for efficient taxation calls for high taxes on the necessities of life, we expect the taxes that are indicated as efficient by the Ramsey rule to be politically unpopular

What to tax?

- Various taxes are available to governments
- The different possible taxes raise questions about what to tax and why

a. Taxation of income from capital

- The Ramsey rule for efficient taxation provides a justification for taxing income from capital differently from labor

- Ramsey rule:

$$\frac{t_L}{t_K} = \frac{\varepsilon_{SK}}{\varepsilon_{SL}}$$

- The supply elesticities reflect opportunities to leave a tax jurisdiction

  - If capital can readily leave, the elasticity of supply of capital ε_{SK} is high
  - If labor cannot leave, the elasticity of supply of labor ε_{SL} is low

- **The Ramsey rule implies that the rate of taxation on income from capital should be lower than the rate of taxation on income from labor**

- The home bias investment
  - Possibilities for taxing capital depend on the willingness o investors to hold assets outside their tax jurisdiction
  - Investors often seem reluctant to hold foreign assets, which results in a "home bias" in asset holdings
  - The home bias may be due to investors' believing that they are better informed about investments in their home market
  - **The home bias reduces the supply elasticity of capital**
  - It increases the efficient tax on income from capital relative to income from labor

- Social justice
  - A government might believe that social justice requires taxing income from capital at a higher rate than income from labor
  - The presence of capital markets that extend beyond the government's tax jurisdiction limits the scope for taxing income from capital
  - If capital can leave the jurisdiction to escape the tax, a government has no choice but to set low taxes on income from caporal and high taxes on income from labor

Dynamic inconsistency

- Taxation of income from capital is subject to the problem of dynamic inconsistency
  1. Financial capital is very mobile
  2. After an investment in physical capital has been made, the pysical capital cannot readily move elsewhere
  3. The supply elasticity of capital after the investment is made is zero

- **The supply elasticity of capital before the investment decision has been made is in general greater than after the investment has been made**

Govt announces a low rate of taxation on income from capital

The investment in physical capital is made

The Ramsey rule calls for a high rate of taxation on income from the investment

- **The Ramsey rule calls for a high rate of taxation on income from the investment because of the subsequent low (or zero) supply elasticity of capital**

- Announcement by a government of a low rate of taxation from capital is **dynamically inconsistent**

- The low tax announced today will not be the tax rate that the government will wish to apply tomorrow

- The announcement of a low tax rate before the investment has been made will not be credible to investors
- Investors know that it is in the interest of the government to increase the tax rate after the investment has been made
- If the announcement of a low tax rate is not credible, investments will not be made, because of the anticipation by investors of high taxes in the future

- It is wise for governments not to change taxes
- Stable taxes allow investment decisions to be made without the uncertainty of having to predict future government tax policy
- Uncertainty about taxes increases the uncertainty that firms face when deciding whether to invest

- A reputation for stable taxes is a way of establishing and confirming commitment not to take advantage of capital that becomes immobile after the investment has been made

- There are benefits from maintaining an unchanged rate of taxation on income from capital
- When tax rates on income from capital are increased, the credibility that tax rates will not be changed again in the future is lost
- Investors may become reluctant to invest

b. Corporate (or company) taxation

- The corporate tax is a tax on the profits of firms.
- Tax structures and tax rates differ between individuals and corporations
- Whereas personal income taxes tend to be progressive, corporate taxes tend to have flat rates

In Ireland

- Corporate tax: 12.5%
- Manufacturing, Software and certain Financial Services Operations: 10% being phased out, 12.5% then
- Patent income: 0% generally on Irish inventions

Source: KPMG (2008)

- Income earned by corporations belongs to the corporation's shareholders

- If adjustments are not made for the taxes paid by individuals through personal taxation, the corporate income tax results in individuals' incomes from ownership of shares in corporation being taxed twice

1. Taxation of income from capital
   - Dynamic inconsistency
2. Corporate (or company) taxation
3. Indirect taxes
   - Sales taxes
   - Import taxes
   - Value-added taxes

c. Indirect taxes: sales taxes, import duties and the value-added tax

- Governments use various indirect taxes
- Indirect taxes: taxes levied when income is spent

- Sales tax: tax on all sales and purchases in a particular market
- Import tax: tax on domestic sales of foreign imports

Sales taxes vs import duties

- An import tax is a discriminatory tax that makes foreign goods more expensive than domestically produced goods
  - the import tariff provides revenue only from domestic sale of imported goods

- A sales tax provides a wider tax base than an import tariff
  - A sales tax provides revenue from sale of all goods irrespective of where the goods have been produced

- When revenue is the objective, we expect to observe the use of a sale tax, with the broader tax base and more revenue

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Comparing the import duty and sales tax

- Tax revenue is higher with the sales tax
- The excess burden of taxation is lower with the sales tax
- Consumers are indifferent between the import tariff and the sales tax
- Domestic producers are better off with the import tariff

Should income taxes accompany the optimal income tax?

- Remember: optimal tax reaches the optimal balance between efficiency and social justice
- Atkinson and Stiglitz (1976) show that indirect taxes are unnecessary
- ...under some conditions

- Conditions:
  - Taxpayers have the same preferences for spending income
  - Taxpayers differ only in the abilities to earn income
  - Also, a specific utility function is required

- People do not have identical consumption preferences
- When consumption preferences differ, indirect taxes affect people in different ways
- Indirect taxes can then be used to target people who have particular preferences

Additional taxation of high-income people

- Consider two individuals that have
  - the same utility function
  - different abilities

- Consider Bentham's Social welfare funtion

$$W=U^H+U^L$$

- When the social welfare function is chosen behind the veil of ignorance, maximizing this social welfare function also maximizes the expected utility of each person

- The two people have the same weights

- Let's consider the case where weights differ

$$W=aU^{H}+bU^{L}$$

- The two individuals have the same preferences, but different incomes
- This will lead to consumption of different goods
- Assume there are two goods, A and B
  - Individual H consumes good A
  - Individual L consumes good B
- An indirect tax on good A will impose a loss to individual H through the tax paid

- How can we associate income levels to particular spending patterns?
- A case for indirect taxes to accompany optimal income taxes stereotypes individuals
- In a population with a broad range of spending preferences, indirect taxes cannot be targeted

Revenue maximization

- A Leviathan government that wants to maximize revenue from taxation will wish to use both indirect taxes and income taxes
- A government might also use indirect taxation with the objective of providing political favors
- Uniform taxes limit this political discretion in choice of indirect taxes
- Indirect taxes are usually uniform – although import taxes are not

c. Lotteries

- Lotteries offer a means by which governements can obtain revenue
- The revenue might be collected by a government agency that manages the lottery

d. Lump sum taxes

- Lump sum taxes have no excess burden of taxation
- Example: head tax
- Applying the Ramsey rule, the head tax is efficient because the tax cannot be escaped

Summing up

- Ramsey rule and efficient taxation
- Ramsey rule and social justice
- Optimal taxation
- What to tax
  - Income from capital
  - Indirect taxes
    - Sales taxes
    - Import duties
  - Lotteries
  - Lump sum taxes