

Public Goods (Chapters 7-9) Political Economy

Part-1

Political Economy

Optimal Provision of Public Goods

- So far, we have discussed when and how the government **should** intervene in order to achieve social efficiency.
- We now turn our attention to the fourth fundamental question of public economics:
 - Why do the governments intervene in the way they do?

Optimal Provision of Public Goods

Lindahl Pricing

- **Lindahl pricing**

- First, individuals report their willingness to pay for the next unit of a public good.
- Then, the government aggregates those willingnesses to form an overall measure of the social benefit from that next unit of public good.
- This social marginal benefit curve is then compared to the social marginal cost and the public good is produced at the intersection of the two.
- The good is financed by charging individuals what they were willing to pay for that level of public good.

Optimal Provision of Public Goods

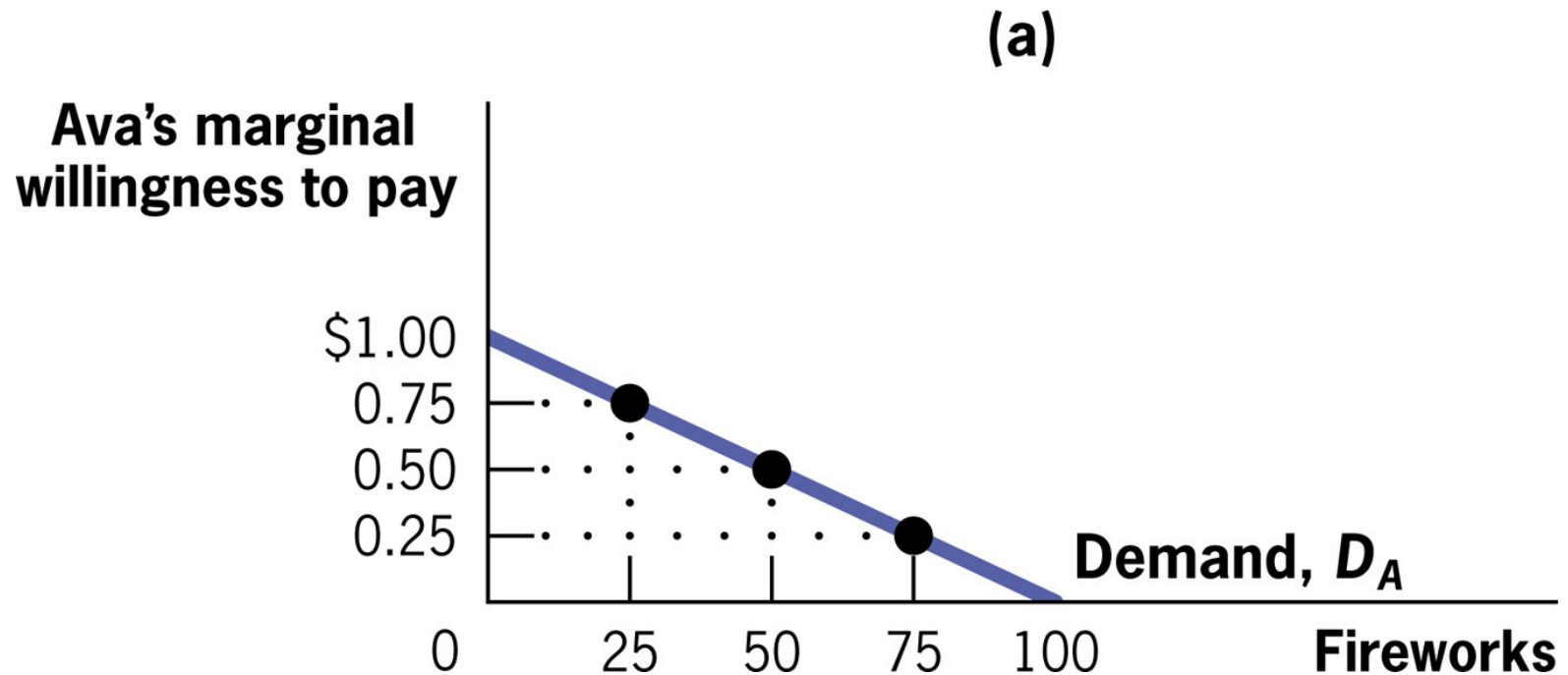
Lindahl Pricing

- **Example:** Assume that the public good will be provided to two individuals (Jack and Ava)
 1. The government announces a set of tax prices for the public good.
 2. Under these taxes, Ava and Jack announce how much of the public good they want.
 3. The government repeats the same procedure with different tax rates and constructs a demand curve for each individual.
 4. The government then calculates the aggregate demand curve by adding the willingness to pay for the two individuals at each quantity level.
 5. Finding the intersection between this social marginal benefit curve and the social marginal cost curve and produce the optimal amount of public good.
 6. The government finances the public good by charging Jack and Ava their willingness to pay.

Optimal Provision of Public Goods

Lindahl Pricing

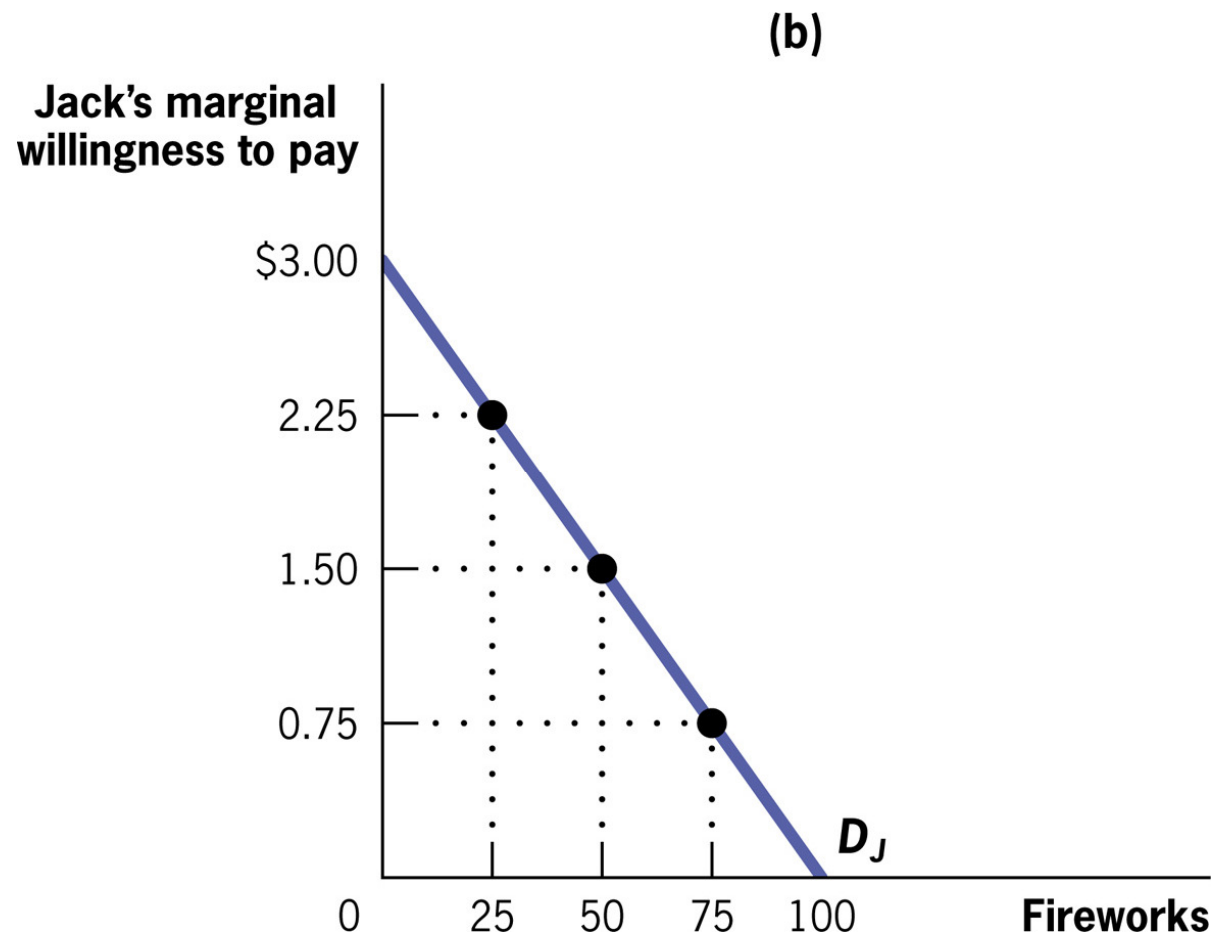
- **Example:**



Optimal Provision of Public Goods

Lindahl Pricing

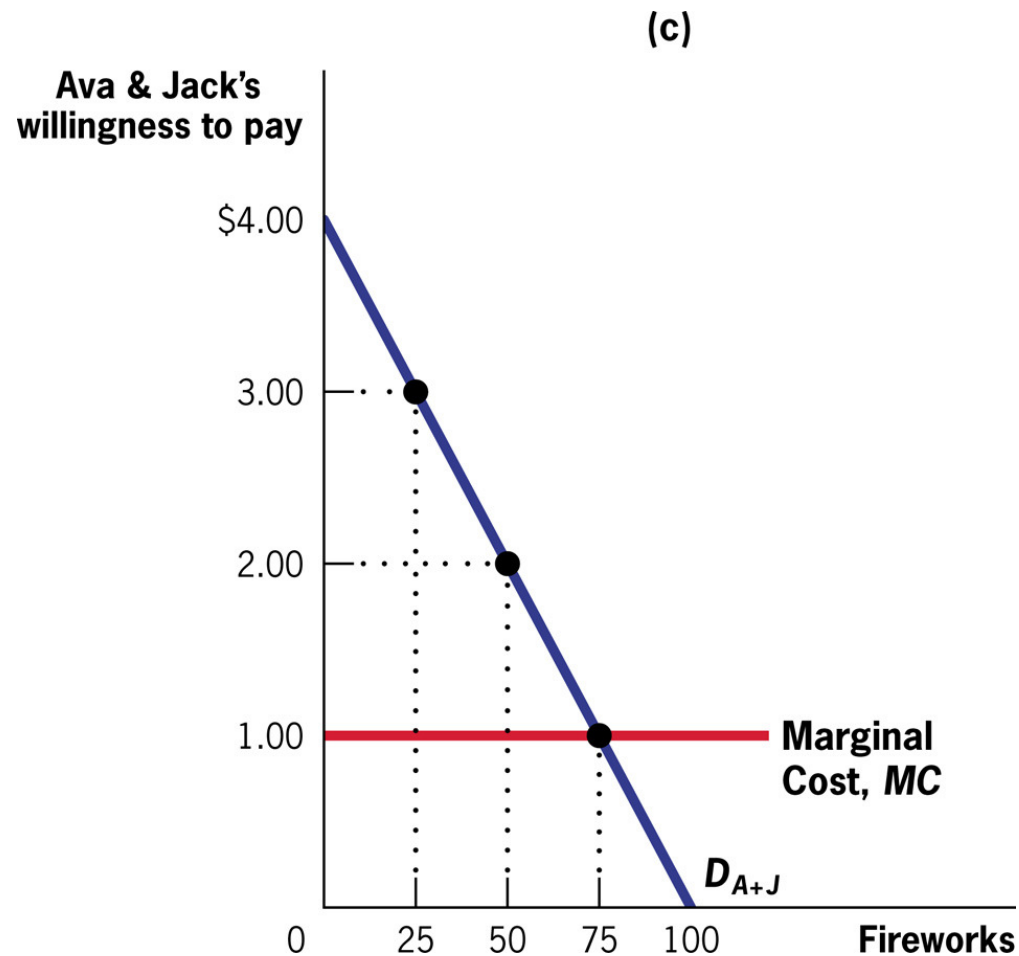
- **Example:**



Optimal Provision of Public Goods

Lindahl Pricing

- **Example:**



Optimal Provision of Public Goods

Lindahl Pricing

- This equilibrium is socially efficient, since, in equilibrium, the sum of the social marginal benefits is equal to the social marginal cost.
- Lindahl pricing is also called **benefit taxation**, since individuals are taxed for a public good according to their valuation of the public good.

Optimal Provision of Public Goods

Problems with Lindahl Pricing

- Preference revelation problem
 - Individuals might benefit from misrevealing their preferences (under-reporting their willingnesses)
- Preference knowledge problem
 - It might be difficult for individuals to quantify their valuations
- Preference aggregation problem
 - It is hard to aggregate the valuations when the size of the problem increases

Reality-Mechanisms for Aggregating Individual Preferences

- **Majority voting:** The typical mechanism used to aggregate individual votes into a social decision, whereby individual policy options are put to a vote and the option that receives the majority of votes is chosen.

Reality-Mechanisms for Aggregating Individual Preferences

- When does majority voting work?
- The aggregation mechanism must satisfy:
 - **Dominance:** If one choice is preferred by all voters, the aggregation mechanism must yield this choice.
 - **Transitivity**
 - **Independence of irrelevant alternatives:** The introduction of an independent alternative does not change the preference between two choices.

Reality-Mechanisms for Aggregating Individual Preferences

- When does majority voting work?
 - Furthermore, individual preferences must be **single-peaked**.
 - **Single-peaked preferences:** Preferences with only one local maximum (peak) so that utility falls as choices move away in any direction from that peak.

Reality-Mechanisms for Aggregating Individual Preferences

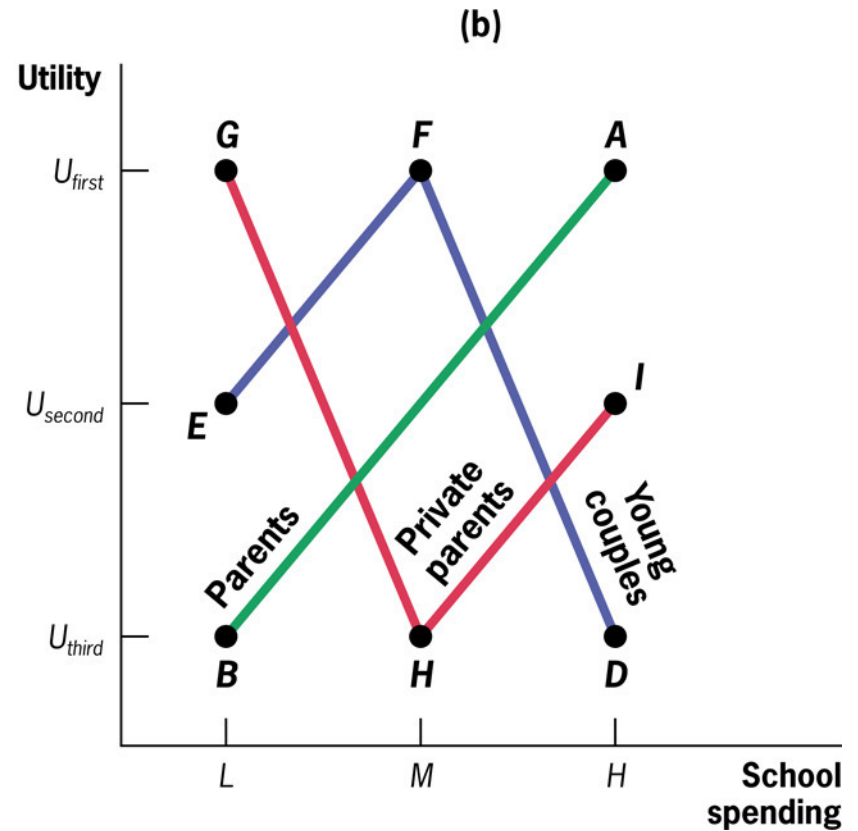
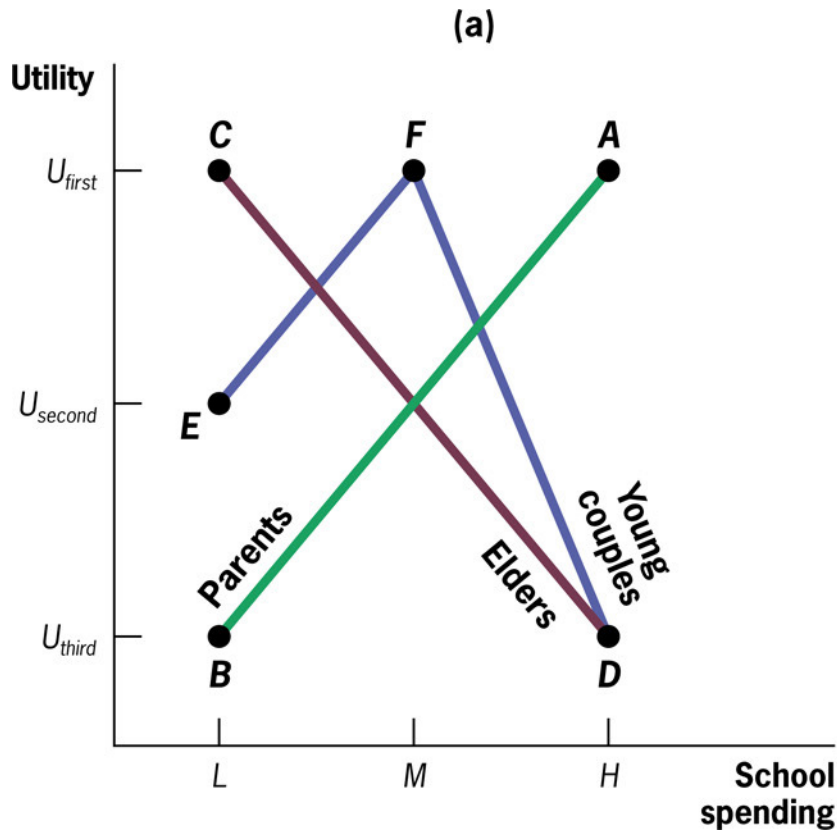
- **Example: Case-1**
 - Consider a town that is deciding between alternatives for public school funding.
 - Three types of voters:
 - Parents
 - Prefer high spending to medium, medium to low.
 - Elders
 - Prefer low spending to medium, medium to high.
 - Young couples without children
 - Prefer medium spending to low, low to high.

Reality-Mechanisms for Aggregating Individual Preferences

- **Example: Case-2**
 - Three types of voters:
 - Public school parents
 - Prefer high spending to medium, medium to low.
 - Private school parents
 - Prefer low spending to high, high to medium.
 - Young couples without children
 - Prefer medium spending to low, low to high.

Reality-Mechanisms for Aggregating Individual Preferences

- Example:**



Reality-Mechanisms for Aggregating Individual Preferences

- **Arrow's Impossibility Theorem:** There is no social decision rule that converts individual preferences into a consistent aggregate decision without either
 - Restricting preferences
 - Imposing a dictatorship

Reality-Mechanisms for Aggregating Individual Preferences

- **Median Voter Theory:** Majority voting will yield the outcome preferred by the median voter if preferences are single-peaked.
- **Median voter:** The voter whose tastes are in the middle of the set of voters.

Reality-Mechanisms for Aggregating Individual Preferences

- Example:**

■ TABLE 9-1

Majority Voting Delivers a Consistent Outcome

		Types of Voters		
		Parents (33.3%)	Elders (33.3%)	Young Couples (33.3%)
Preference Rankings	First	<i>H</i>	<i>L</i>	<i>M</i>
	Second	<i>M</i>	<i>M</i>	<i>L</i>
	Third	<i>L</i>	<i>H</i>	<i>H</i>

Reality-Mechanisms for Aggregating Individual Preferences

- Median Voter Outcome: Issues
 - Inefficient: median voter outcome does not reflect the intensity of preferences.

Reality-Mechanisms for Aggregating Individual Preferences

- **Example:**
 - A town is considering building a monument
 - There are 1001 voters in town
 - The monument will cost \$40,040, which will be financed by a \$40 tax on each voter.
 - 500 of the voters are willing to contribute to the monument by donating \$100 each.
 - 501 of the voters are not willing to pay at all.

Reality-Mechanisms for Aggregating Individual Preferences

- **Example:**

- Marginal benefit of building the monument:

$$500(\$100) + 501(0) = \$50,000$$

- Marginal cost of building the monument:

$$\$40,400$$

- It is socially optimal to build the monument.

Reality-Mechanisms for Aggregating Individual Preferences

- **Example:**
 - As a result of the majority voting:
 - 500 will say ‘Yes’ to building the monument
 - 501 will say ‘No’ to building the monument
 - The monument will not be built even though it is socially efficient to build it.