Public Goods and Public Choices
Lessons 1 - 4
What Jobs Does Government Perform?

List as many jobs as you can for each question below.

- What functions does local government perform?
- What functions does the state government perform?
- What functions does the national government perform?
The Economic Functions of Government

1. Enforce laws and contracts
2. Maintain competition
3. Redistribute income and provide an economic safety net
4. Provide public goods
   - Nonexclusion
   - Shared consumption
CLASSIFYING GOODS AND RESOURCES

- Excludable
  - A good, service, or resource is **excludable** if it is possible to prevent a person from enjoying its benefits.
  - A good, service, or resource is **nonexcludable** if it is impossible to prevent a person from benefiting from it.
CLASSIFYING GOODS AND RESOURCES

- Examples of excludable items are
  - The security services of Brink’s
  - Fish in a fish farm
  - A live concert

- Examples of nonexcludable items are
  - The services of the city police department
  - Fish in the Pacific Ocean
  - A concert on network television
Rival or Nonshared Consumption

- A good, service, or resource is rival or nonshared consumption if its use by one person decreases the quantity available to someone else.

- A good, service, or resource is nonrival or shared consumption if its use by one person does not decrease the quantity available to someone else.
CLASSIFYING GOODS AND RESOURCES

- Examples of rival items are
  - The services of Brink’s security
  - Fish both in ocean and in a fish farm
  - A seat at a live concert

- Examples of nonrival items are
  - The protection provided by a city police department
  - A concert on network television
A Fourfold Classification

Private Goods

- A **private good** is a good or service that can be consumed by only one person at a time and only by those people who have bought it or own it.
- A private good is both rival and excludable.
- For example, a can of coke.
Public Goods

- A **public good** is a good or service that can be consumed simultaneously by everyone and no one can be excluded from enjoying its benefits.

- It is both nonrival and nonexcludable.

- For example, a flood-control levee.
Common Resources

- A common resource is a resource that can be used only once but no one can be prevented from using what is available.

- It is both rival and nonexcludable.

- For example, fish in the Pacific Ocean.
Natural Monopoly Goods

– A good or service that is nonrival but excludable is produced by a natural monopoly.

– A natural monopoly is a firm that produces at lower cost than two or more firms can.
CLASSIFYING GOODS AND RESOURCES

Figure 11.1 shows this fourfold classification of goods and services.
The Free-Rider Problem

- Public goods create a free-rider problem.
- A **free rider** is a person who enjoys the benefits of a good or service without paying for it.
- Because of the free-rider problem, the market would provide too small a quantity of a public good.
- To produce the efficient quantity, government action is required.
The benefit a public good provides is the value of its services.

Because security lights in a common parking area are nonrival and nonexcludable, they are a public good.

- Everyone consumes the same quantity of them.

- To find the economy-wide value of the security lights, we add together the marginal benefits of everyone who benefits from them.
The Marginal Cost of a Public Good

- Marginal cost increases as the quantity of a public good produced increases—the principle of increasing marginal cost.

- So the marginal cost curve of public good slopes upward.
PUBLIC GOODS AND THE FREE-RIDER PROBLEM

The Efficient Quantity of a Public Good

- Resources are used efficiently if marginal benefit equals marginal cost.
- If marginal benefit exceeds marginal cost, resources can be used more efficiently by increasing the quantity produced.
- If marginal cost exceeds marginal benefit, resources can be used more efficiently by decreasing the quantity produced.
PUBLIC GOODS AND THE FREE-RIDER PROBLEM

- **Private Provision: Underproduction**
  - No one would have an incentive to buy his or her share of the satellite system—the free-rider problem.
  - So a private firm would not supply satellites.

- **Public Provision: Efficient Production**
  - The political process determines the quantity of a public good provided—this quantity might be efficient or inefficient.
The Principle of Minimum Differentiation

- The principle of minimum differentiation is the tendency for competitors to make themselves identical to appeal to the maximum number of clients or voters.
PUBLIC GOODS AND FREE-RIDER PROBLEM

Public Provision: Overproduction

- Bureaucrats translate the choices of politicians into programs and control the day-to-day activities that deliver public goods.
- The behavior of bureaucrats modifies the political outcome.
PUBLIC GOODS AND THE FREE-RIDER PROBLEM

Why don’t the politicians block the bureaucrats?

Rational Ignorance

- Rational choice balances marginal benefit and marginal cost.
- An implication of rational choice is rational ignorance.
- **Rational Ignorance** is the decision not to acquire information because the marginal cost of doing so exceeds the expected marginal benefit.
Why Government Is Large and Growing

- Voter preferences for public goods drive the growth of government.

- The demand for national and personal security and the demand for other public goods are *income elastic*.

- As incomes increase, the demand for these services increases by a larger percentage than the increase in income.
PUBLIC GOODS AND THE FREE-RIDER PROBLEM

- Part of the reason why government is large is
  - Inefficient overprovision of public goods
  - Voters’ rational ignorance

- There is no easy fix for this problem.

- Our ever-growing demand for education and health-care services contribute to the large and growing scale of government.
COMMON RESOURCES

– The **tragedy of the commons** is the absence of incentives to prevent the overuse and depletion of a commonly owned resource.

– Examples include the Atlantic Ocean cod stocks, South Pacific whales, and the quality of the earth’s atmosphere.

– The traditional example from which the term derives is the common grazing land surrounding middle-age villages.
Using the Commons Efficiently

- The efficient use of a common resource requires marginal cost to equal marginal social benefit.

- To use a common resource efficiently, it is necessary to design an incentive mechanism that confronts users of the common resources with the marginal external cost generated.
Three methods that might be used to achieve the efficient use of a common resource are:

- Property rights
- Production quotas
- Individual transferable quotas (ITQs)
COMMON RESOURCES

Property Rights

– By assigning property rights, *common* property becomes *private* property.

– When someone owns a resource, the owner is confronted with the full consequences of her/his actions when using that resource.

– The social benefits become the private benefits.
COMMON RESOURCES

Production Quotas

- A production quota is an upper limit to the quantity of a good that may legally be produced in a specified period.

- A production quota can achieve an efficient use of a common resource if it is set equal to total production at the quantity at which marginal social benefit equals marginal cost.
COMMON RESOURCES

Individual Transferable Quotas

– An individual transferable quota (ITQ) is a production limit that is assigned to an individual who is free to transfer the quota to someone else.

– A market in ITQs emerges.

– The market price of an ITQ is the highest price that someone is willing to pay for one.

– That price equals the marginal social benefit minus the marginal cost.
COMMON RESOURCES

- The market price of an ITQ confronts fishers with the full cost of their catch.

- The private marginal cost equals the marginal social cost.

- If the efficient quantity of ITQs is assigned, the market price of a quota confronts resource users with a marginal cost that equals the external cost at the efficient quantity.
An *externality* is a cost or a benefit that arises from:

- Production that falls on someone other than the producer
- Consumption that falls on someone other than the consumer

**Negative externality**
- A production or consumption activity that creates an external cost.

**Positive externality**
- A production or consumption activity that creates an external benefit.
EXTERNALITIES IN OUR DAILY LIVES

- Four types of externalities:
  - Negative production externalities
  - Positive production externalities
  - Negative consumption externalities
  - Positive consumption externalities
EXTERNALITIES IN OUR DAILY LIVES

- Negative Production Externalities
  - Pollution is the major example of this type of externality.
  - Others are noise and congestion.

- Positive Production Externalities
  - Example: Orchards provide positive production externalities to honey producers, who in turn provide positive production externalities to orchards.
EXTERNALITIES IN OUR DAILY LIVES

- Negative Consumption Externalities
  - Smoking tobacco in a confined space
  - Noisy parties

- Positive Consumption Externalities
  - Education is a major example of this type of externality.
  - Others are a flu vaccination and restoration of an historic building
NEGATIVE EXTERNALITIES: POLLUTION

- **Private Costs and Social Costs**
  - **Marginal private cost** is the cost of producing an additional unit of a good or service that is borne by the producer of that good or service.
  - **Marginal external cost** is the cost of producing an additional unit of a good or service that falls on people other than the producer.
NEGATIVE EXTERNALITIES: POLLUTION

- **Marginal social cost** is the marginal cost incurred by the entire society—by the producer and by everyone else on whom the cost falls.

- Marginal social cost (MSC) is the sum of marginal private cost (MC) and marginal external cost.

  \[
  MSC = MC + \text{Marginal external cost}
  \]
Illustrating a Negative Externality

- S (private and social costs)
- S (private costs only)

D

PRICE

QUANTITY
Illustrating a Positive Externality
Activity 54

**Figure 54.1**
External Benefits

Costs/Benefits vs. Hours of Music:
- \( MC_T = MC_P \)
- \( MB_T = MB_P + MB_S \)

**Figure 54.2**
External Costs

Costs/Benefits vs. Hours of Music:
- \( MC_T = MC_P + MC_S \)
- \( MB_T = MB_P \)
Coase Theorem

- Ronald Coase is a Nobel Laureate in economics.
- Coase Theorem describes the efficient allocation of resources.
  - Advocates private ownership rights
  - No transaction costs
  - Ownership will not effect economic use of resources
  - Indicates less need for government intervention
Coase Theorem

The Coase Theorem

- **Coase theorem** is the proposition that if property rights exist, only a small number of parties are involved, and transactions costs are low, then private transactions are efficient and the outcome is not affected by who is assigned the property right.

- **Transactions costs** are the opportunity costs of conducting a transaction.
The Reciprocal Nature of the Coase Theorem

- The reciprocal nature of the problem – Should A be allowed to harm B, or should B be allowed to harm A?

- Examples:
  - Confectioner v. doctor
  - Cattle v. crops
  - Fish v. products
Coase Theorem Application

- Application of the Coase Theorem
  
  • If factories own homes and river, the rent people willingly pay decreases as the amount of pollution increases.

  • If homeowners own the river, factories must pay homeowners for any pollution, and the more they pollute, the more they pay.

  • Regardless of who owns the river, so long as someone owns it, the factories bear the cost of pollution, and the quantity of production and pollution are efficient.
NEGATIVE EXTERNALITIES: POLLUTION

- **Property Rights**
  - *Property rights* are legally established titles to the ownership, use, and disposal of factors of production and goods and services that are enforceable in the courts.

Now work on Activity 55
NEGATIVE EXTERNALITIES: POLLUTION

- Production and Pollution: How Much?
  - When an industry is unregulated, the amount of pollution it creates depends on the market equilibrium price and the quantity of the good produced.
  - If the industry creates an external cost, the market equilibrium is inefficient. Too much of the good is produced.
NEGATIVE EXTERNALITIES: POLLUTION

- Government Actions in the Face of External Costs
  - The three main methods that governments can use to achieve a more efficient allocation of resources in the presence of external costs are
    - Pollution limits
    - Pollution charges or taxes
    - Marketable permits (cap-and-trade)
NEGATIVE EXTERNALITIES: POLLUTION

- Pollution Limits
  A pollution limit seeks an efficient outcome by placing a quantity limit on a polluting activity.

The 1990 Clean Air Act administered by the Environmental Protection Agency (EPA) employs this method.
NEGATIVE EXTERNALITIES: POLLUTION

- **Pollution Charges or Taxes**

  Pollution charges or pollution taxes confront the producers with the external cost of pollution and provide an incentive to seek technologies that are less polluting.

  To work out the pollution charge or pollution tax that achieves efficiency, the regulator needs a lot of information about the industry, which is generally not available.
NEGATIVE EXTERNALITIES: POLLUTION

– Marketable Pollution Permits (Cap-and-Trade)

A marketable pollution permit seeks an efficient outcome by assigning or selling pollution rights to each producer in an industry.

Producers can buy and sell permits in the market.

Producers with a low marginal cost of reducing pollution will sell permits and producers with a high marginal cost of reducing pollution will buy.

Producers will buy and sell permits until their marginal cost of pollution equals the market price of a permit.
<table>
<thead>
<tr>
<th>Reduction of Foul Sludge Emissions</th>
<th>Total Social Benefit of Cleanup</th>
<th>Marginal Social Benefit of Cleanup</th>
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<th>Marginal Social Cost of Cleanup</th>
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## Figure 56.2

### Firm 2

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### Figure 56.1

**Firm 1**

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### Figure 56.2

**Firm 2**

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POSITIVE EXTERNALITIES: EDUCATION

- Private Benefits and Social Benefits
  - **Marginal private benefit** is the benefit of an additional unit of a good or service that the consumer of that good or service receives.
  - **Marginal external benefit** is the benefit of an additional unit of a good or service that people other than the consumer of the good or service enjoy.
POSITIVE EXTERNALITIES: EDUCATION

- **Marginal social benefit** is the marginal benefit enjoyed by society—by the consumer of a good or service and by everyone else who benefits from it.

- Marginal social benefit \((MSB)\) is the sum of marginal private benefit \((MB)\) and marginal external benefit.

\[
MSB = MB + \text{Marginal external benefit}
\]
Government Actions In the Face of External Benefits

- Three devices that governments can use to achieve a more efficient allocation of resources in the presence of external benefits:
  - Public provision
  - Private subsidies
  - Vouchers
POSITIVE EXTERNALITIES: EDUCATION

- **Public provision** is the production of a good or service by a public authority that receives the bulk of its revenue from the government.

- A **subsidy** is a payment that the government makes to private producers to cover part of the costs of production.

- A **voucher** is a token that the government provides to households that can be used to buy specified goods or services.

Complete Activity 57
“Lower Taxes and Less Government”?

Present or proposed government activities:
(a) eliminate; (b) decrease funding; (c) maintain; (d) increase funding

1. National health care
2. National defense
3. Social Security
4. Welfare
5. Border security
Key Ideas in Public-Choice Economics

1. Is it rational for government leaders to favor special interests over the general public interest?
   - Concentrated v. special interest
   - Information Costs

2. Why are politicians mainly in the middle of the road?
   - Median-voter model of political behavior
Key Ideas in Public-Choice Economics

3. Are people rational or irrational when they spend little time evaluating candidates before they vote and when they don’t vote?

4. What is the effect of bureaucratic entrepreneurs on government?
Measuring Economic Inequality

- We measure economic inequality by looking at the distributions of income and wealth.
- **Market income** is a household’s wages, interest, rent, and profit earned from the markets for factors of production before paying income taxes.
- **Money income** is market income plus cash benefits paid by the government.
- A household’s **wealth** is the value of the things that it owns at a point in time.
Taxation Theories

- **Ability to pay theory**
  - The ability-to-pay approach treats government revenue and expenditures separately. Taxes are based on taxpayers’ ability to pay; there is no *quid pro quo*. Taxes paid are seen as a sacrifice by taxpayers, which raises the issues of what the sacrifice of each taxpayer should be and how it should be measured.

- **Benefits received theory**
  - The benefit principle takes a market-oriented approach to taxation. The objective is to accurately determine the optimal amount of revenue that should be spent on public goods.
Tax Rates

- **Nominal tax rate** is expressed as a percentage of the taxable income.

- **Marginal tax rate** is the tax percentage on the highest dollar earned.

- **Effective tax rate** is the rate actually paid on taxable income.
Tax Equity

- Income taxes may be progressive, regressive, or proportional.
  - A **progressive tax**
    One that taxes income at an average rate that increases with the level of income.

  - A **regressive tax**
    One that taxes income at an average rate that decreases with the level of income.

  - A **proportional tax**
    One that taxes income at a constant rate, regardless of income.
For use with Activity 60

<table>
<thead>
<tr>
<th>Percentage of all taxpayers</th>
<th>Income Range</th>
<th>Group’s share of total income (adjusted gross income)</th>
<th>Group’s share of total income taxes</th>
<th>Group’s average tax rate</th>
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</thead>
<tbody>
<tr>
<td>Top 1%</td>
<td>Above $343,927</td>
<td>16.9%</td>
<td>36.7%</td>
<td>24.0%</td>
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<tr>
<td>Top 5%</td>
<td>Above $154,643</td>
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<td>58.7%</td>
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<td>Top 10%</td>
<td>Above $112,124</td>
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<td>Top 25%</td>
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<tr>
<td>Bottom 50%</td>
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<td>1.8%</td>
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<td>All Taxpayers</td>
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<td>100.0%</td>
<td>100.0%</td>
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Efficiency, Equity, and Effects of Government Policies

- Why is efficiency important?

- Why is equity important?

- Do policies that redistribute income hurt efficiency, or are there policies that can improve both equity and efficiency?
Lorenzo Curve and Gini Coefficient

- A **Lorenz curve** is a curve that graphs the cumulative percentage of income (or wealth) against the cumulative percentage of households.

- The **Gini coefficient** is a measure of statistical dispersion intended to represent the income distribution of a nation’s residents.
MEASURING ECONOMIC INEQUALITY

The cumulative percentages of income and wealth are graphed against the cumulative percentage of households.

1. If each 20 percent of households received 20 percent of total income, there would be no rich and poor—there would be equality as shown by the Line of equality.
<table>
<thead>
<tr>
<th>Cumulative percentage of</th>
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</thead>
<tbody>
<tr>
<td>Households</td>
<td>Income</td>
<td>Wealth</td>
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<tr>
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<td>(A') 0.2</td>
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<td>(B') 4.0</td>
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<tr>
<td>60</td>
<td>C 26.4</td>
<td>(C') 15.3</td>
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<td>80</td>
<td>D 49.8</td>
<td>(D') 28.7</td>
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<td>90</td>
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<td>(E') 41.0</td>
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<tr>
<td>95</td>
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<td>(F') 65.6</td>
</tr>
</tbody>
</table>

**Diagram:***

- **1. Line of equality**
- **2. Income**
- **3. Wealth**

Cumulative percentage of income or wealth vs. Cumulative percentage of households.
2. The distribution shows that the 20 percent of households with the lowest income received 3.3 percent of total income, and the highest paid 20 percent received 49.8 percent.

3. The distribution of wealth shows that the poorest 40 percent of households owned 0.2 percent of total wealth, and the richest 1 percent owned 34.4 percent.
ECONOMIC INEQUALITY

The farther the Lorenz curve is from the line of equality, the greater is the inequality.

The distribution of wealth is much more unequal than the distribution of income.
Graphical Representation of the Gini Coefficient

The graph shows that the Gini coefficient is equal to the area marked $A$ divided by the sum of the areas marked $A$ and $B$. That is, $\text{Gini} = \frac{A}{A + B}$. It is also equal to $2A$ due to the fact that $A + B = 0.5$ (since the axes scale from 0 to 1).