Learning Objectives

1. Use economic analysis to show how U.S. health care system can be improved
2. Compare and contrast the ways in which taxes and tradable permits can be used to reduce pollution
3. Apply the Cost-Benefit Principle to improve workplace safety
4. Show how economic analysis contributes to debates regarding public health and domestic security spending
Introduction

• Carter Administration proposed response to oil shocks (1979)
  – Add 50 cents/gallon to gas tax and rebate proceeds by reducing Social Security taxes
• Policy would
  – Reduce gas consumption and dependence on foreign oil
  – Reduce air pollution
  – Reduce traffic congestion
• Opponents won by arguing that consumers would buy the same amount of gas due to rebates

Health Care Delivery

• Health care spending has grown faster than income
  – Up from 4% of national income in 1940 to 17% in 2005
  – Part of the increase is due to improved quality of tests, procedures, drugs, etc.
  – Part is due to the third-party payment system
    • Growth in use of insurance for payments
      – Employer-provided and government-provided
Health Care Delivery

- Cost-benefit test assures efficient allocation of health care
  - Perform a service only if the benefit exceeds the cost
- Costs are easy to measure
- Benefits are complicated
  - Usual measure is willingness to pay marginal cost
  - Some patients are unable to pay for basic services
    - Society assumes some responsibility via government-provided insurance
    - Confused by third-party payment system

Health Care for the Employed

- Employer pays insurance on behalf of employee
  - Employees pay part of the insurance premiums
- Medical provider cares for patient / employee
  - Patient co-pay
- Medical provider bills insurance
  - Insurance pays provider
- Insurance periodically reviews employer’s policy and adjusts rates
Example: The Demand for Hospital Care

• Price of hospital room is $300 per day
  – If David pays, MC to him is $300
  – David equates marginal cost and marginal benefit and stays one day
  – If insurance pays, MC to David is zero
    • He stays 3 days

<table>
<thead>
<tr>
<th>Length of hospital stay (days)</th>
<th>Price ($/day)</th>
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<tbody>
<tr>
<td>1</td>
<td>300</td>
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<td>3</td>
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Full Insurance Coverage Creates Waste

• If David pays, stay is 1 day
• If insurance pays, stay is 3 days
  – Extra benefit of 2nd and 3rd day to David is $300
  – Extra cost is 2 days times $300 per day = $600
  – $300 surplus lost
Alternative Coverage Scheme

- Insurance company pays David $700
  - Insurance company saves $200 compared to a 3-day stay
- David stays 1 day
  - Pays hospital $300
  - David keeps $400
    - The $300 benefit he would get from staying 3 days PLUS $100 pure surplus
- Total surplus increases $300

Insurance, Demand, and Waste

- Amount of waste from full insurance depends on the price elasticity of demand for medical services
- Research compared patients with first dollar coverage to those with $1,000 deductibles
  - **First-dollar coverage** pays all expenses for the insured's health care
  - $1,000 deductible pays all expenses after the patient has paid $1,000
  - Deductible patients spent 40 – 50% less on health care and had the same health outcomes
Policy Implications

- Research shows that when individuals pay for their health care, they consume less
- An more efficient system can be designed
  - Adopt a system of high deductible health insurance
  - Use stipend payments for the poor
- An efficient policy will increase the size of the health care pie

Health Maintenance Organization (HMO)

- An HMO is a group of physicians that provides health services for a fixed annual fee
  - Reduced incentives to prescribe expensive tests
    - The doctor receives no additional fee for prescribing and interpreting tests
- In most cases, diagnoses and treatment will be the same with conventional health insurance and with an HMO
  - HMO costs less than conventional health insurance
U.S. Health Insurance

In 2009, 50 million Americans had no health insurance...WHY?

• Unregulated private insurance markets
  – Employers expenditures for health insurance were nontaxable, but conditional on insurance being made available to all employees irrespective of any pre-existing medical conditions
    • Private insurance companies are reluctant to issue individual policies to people with serious health problems
    • Employer-provided insurance market is lucrative without as much risk
  – Employer-provided insurance is cheaper for employees than private insurance, which would be purchased with income that had already been taxed

The Problem of Adverse Selection

• Insurance tends to be purchased disproportionally by those who are most costly for companies to insure
  • As a result insurance premiums are raised and a downward spiral ensues resulting in unaffordable health care
• Employer-provided insurance kept adverse selection at bay, but it is now beginning to unravel
  – Medical costs have risen
  – Insurance premiums taking more out of worker’s paycheck and heightened competition; some companies are offering higher wages instead of health care coverage
The Affordable Care Act of 2010

• Three main provisions
  – Nondiscrimination on the basis of preexisting conditions
  – A mandate that all individuals would need to buy health care coverage
  – Subsidies to low-income families

Price Incentives and the Environment

• Goods with negative externalities tend to be overproduced
• Social objective is to reduce pollution by half from its unregulated level
  – The most efficient solution is one where the marginal cost of pollution abatement is the same for all polluters
    • Cost data are not available to government
  – One solution is to have all reduce pollution by the same proportion
    • Uneven distribution of costs
Price Incentives and the Environment

- One policy option is to tax pollution
  - Businesses decide how much pollution to produce
- 2 firms, 5 production processes each
  - Production differs by cost and amount of pollution

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Price Incentives and the Environment

- If there are no regulations, each firm produces at its lowest cost, production method A
  - Each firm produces 4 tons of smoke per day
- Government wants to cut pollution by half
  - Option 1: Set maximum pollution limits
  - Option 2: Tax smoke at a rate of $T per ton
    - Determine T to reduce pollution by half
- Each option has costs to society that must be considered
Reducing Pollution by Regulation

• Each firm moves to production process C
  – Costs increase $500/day for Sludge and $80/day for NW Lumber
  • Total cost to society of this plan is $580/day

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Taxing Pollution

• If tax is $T per ton, the firms will reduce pollution as long as the cost of reductions is less than $T
• A tax of $101 moves Sludge to B and NW Lumber to D
• Total cost is $100 for Sludge + $180 for NW = $280/day
  – Net savings of $300/day over regulation

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Price Incentives and the Environment

• Taxing pollution concentrates pollution reduction in firms that can accomplish it at the least cost
  – Cost – Benefit Principle
  – Cost of the last ton of smoke removed is the same for all firms
• It can be difficult to determine the optimal tax rate
  – Set the tax too high and you get too little reduction
  – Set the tax too low and you get too much reduction
    • Marginal cost exceeds marginal benefit to society

Auctioning Pollution Permits

• Set a target level for total pollution allowed
  – Auction 4 permits to allow 4 tons/day
• Determine price of a permit, who buys them, and the total cost of pollution reductions

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Auctioning Pollution Permits

Cost of Production and Amount of Smoke Emitted

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Benefit of Permits

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Auctioning Pollution Permits

- At a price of $90, 6 permits are demanded
  - 4 for Sludge and 2 for NW Lumber
- At a price of $100, 5 permits are demanded
- At a price of $101, 4 permits are demanded
- Sludge uses process B and NW uses process D
Advantages of the Auction

- Utilizes low cost pollution control
  - Permit fees can offset other taxes
  - Total cost same as with tax; administratively simple
- Predictable operating and investing environment
- Citizens can lobby government to set target pollution

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Climate Change and Carbon Taxes

- Concerns about the consequences of climate change have led to proposals to tax or require permits for carbon emissions
- Gasoline prices would go up
  - Reaction to the higher gas prices would result in: more fuel-efficient cars, people moving closer to work, car pooling, less distant vacation destinations
  - Revenue from the tax could help pay down debt, reduce taxes, and provide funding to low-income families
Workplace Safety

• Safety has costs and benefits
  – Optimal amount of safety is set by Cost – Benefit Principle

• Most nations set safety standards
  – Suggests employers would not employ the optimal amount of safety without regulation

• Economics argues that safety is a consideration in the competition for labor
  – If an employer offers too little safety, he loses worker to firms with optimal safety precautions

Competition through Safety

• Install a safety device at a cost of $50 per month
  – Workers value that safety device at $100 per month
    • Average wage is $2,500 per month

• An employer with the safety device could hire for $2,440 per month
  – $60 savings covers safety device and $10 more
  – Workers' net gain is $40 = $100 safety - $60 lower wages

• Safety decisions based on the Cost-Benefit Principle create a cost advantage over competitors
  – All employers provide safety device
Market Mechanism and Safety

- For markets to work, information about safety must be available
- The only employer in the area has a $50 incentive to install safety device in our previous example
  - Without the device, there is cash on the table
- Employers have an incentive to educate workers on the safety they offer

Market Mechanism and Safety

- For markets to provide safety, workers must be mobile
  - Firms with good safety records can start a plant near the current employer with low safety standards
  - Evidence shows that workers are mobile and new firms enter existing market
- If firms exploit workers by providing too little safety, these firms should have higher profits
  - Evidence shows that high-wage firms are highly profitable
- Therefore, there is a weak justification for safety regulation due to employer exploitation
Workplace Safety Example

• Don and Michael get satisfaction from:
  income, safety, and relative income
  – They choose between a safe job paying $50 per
    week and a risky job paying $80 per week
  – Value of safety for each is $40 per week
  – Benefit of higher relative income is $40 per week
  – Cost of lower relative income is $40 per week
• If they look only at safety, each will work in the
  safe firm for $50 per week
  – Value of safety is greater than the wage
differential

Workplace Safety Example

• Don and Michael value their relative positions
  – Attractiveness of each job depends on the other's
    choice
• Equilibrium is both workers in risky jobs

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<th>Risky</th>
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<td></td>
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<tr>
<td>Don:</td>
<td>$90</td>
<td>Don</td>
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<td>Michael:</td>
<td>$90</td>
<td>Michael</td>
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<td>$50</td>
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| Michael's Options |
|-------------------|-------------------|
| Safe Job          |                   |
| Don               | $50               |
| Michael           | $120              |
| Risky Job         |                   |
| Don:              | $80               |
| Michael:          | $80               |
Workplace Safety Regulation

– Valuing relative income does not always lead to efficient outcomes in the labor market
– If Don and Michael could act collectively, they would take the save jobs and be better off
  • Collective action leads to regulations
– Prescriptive safety regulation can also create inefficient results
– Regulation handled by Occupational Safety and Health Administration (OSHA)
– Difficulty in drafting regulations that capture costs and benefits in a variety of circumstances

Workplace Safety Regulation

• Workers compensation is the government insurance system that provides benefits to workers injured on the job
  – Funded by employer payments, creating incentives to implement optimal safety precautions
    • Rates independent of employer's safety record
• Adjusting premiums to reflect safety record would increases efficiency
  – Incentive Principle
  – Premiums would be a tax on injuries
Public Health and Public Safety

• Cost – Benefit Principle applies to health and safety
  – Optimal policies to prevent illness should equate the marginal social benefit with the marginal social cost
    • Individual cost – benefit calculations are different
• Vaccinations have a small but serious risk
  – Low probability, high cost
  – Disease itself has risks
  – Vaccinate until marginal cost of the vaccination is equal to the marginal benefit of the illnesses prevented

Immunization Required

• A child who is not vaccinated has a risk of contracting the disease
  – This is a private cost balanced against the private benefit of avoiding complications of vaccination
• The infected child risks infecting others
  – This is a social cost
• Market forces alone result in too few vaccinations
• Laws allow parents to opt-out of vaccinations
  – Where opt-out rates are high, incidence of the disease is high
Optimal Security

• *Cost – Benefit Principle* applies to decisions about safety
  – Assign agents until the cost of an additional agent equals the value of the extra protection provided
  – The cost of harm to a President is higher than the cost of harm to a Vice President
    • Threat to President is also greater
• Marginal cost of protection increases as the number of agents increases
  – *Principle of Increasing Opportunity Cost*

Secret Service Protection

![Graphs showing cost-benefit analysis for POTUS, VP, and professorial agents.](image)
Wrap-up

Health
- Health care delivery
- Insurance and inefficiency
- Policy ideas
- Public Health

Environment
- Price Incentives
- Regulation
- Taxes
- Pollution Permits

Safety
- Workplace Safety
- Market Mechanism
- Regulation
- Public Safety