CHAPTER 10 USING ECONOMICS TO MAKE BETTER POLICY CHOICES

**Answers to Review Questions**

1. Individuals tend to ignore the fact that if they are infected with a disease, this will impose additional risks on others. Thus, if vaccinations are not a legal requirement for entry into public schools, the equilibrium rate of vaccination will be below the optimal rate.

Learning Objective: 10-01

AACSB: Reflective Thinking

Bloom’s: Understand

1. Efficient resource use requires that the buyer pay a price equal to the marginal cost of the resource. First-dollar health care coverage is inefficient because it violates this principle. Specifically, policyholders are reimbursed for all medical expenses and thus face an effective price of zero for medical care, while the marginal cost of medical services is clearly some positive amount. This leads policymakers to use more medical care than is optimal.

Learning Objective: 10-02

AACSB: Reflective Thinking

Bloom’s: Understand

1. Efficient cleanup requires that the marginal cost of pollution reduction be the same for every polluter. If this is not the case, it is possible to reduce the total cost of pollution reduction by having polluters with high marginal costs remove less and those with low marginal costs remove more. Pollution taxes and the sale of effluent permits result in marginal costs of pollution reductions that are the same for all polluters. Across-the-board-cutbacks, in contrast, result in marginal costs of pollution reduction that are higher for some firms than others and thus result in inefficient cleanup efforts.

Learning Objective: 10-03

AACSB: Reflective Thinking

Bloom’s: Understand

1. A negative income tax grant that was big enough to maintain living standards of the poor would also be large enough to induce many people to leave the workforce and live at taxpayer expense. Such a program would therefore be politically unpopular as well as prohibitively expensive.

Learning Objective: 10-04

AACSB: Reflective Thinking

Bloom’s: Understand

### **Answers to Problems**

1. a. With full coverage, the marginal cost to David of staying in the hospital is zero, so he

will stay until the marginal benefit of staying in the hospital is zero, or 8 days. This choice fails the cost-benefit test because the marginal benefit of the 8th day in the hospital ($0) is less than its marginal cost ($150).

b. Since David will have to pay $150 per day for any hospital stay that costs less than $1,000 he will choose to stay in the hospital 2 days.

*(\*Please note parts a & b are to be switched in the 2nd printing of the book. The solution above is representative of the presentation in the 1st printing.)*

Learning Objective: 10-02

AACSB: Analytic

Bloom’s: Analyze

1. a. Dave would stay only one day since his willingness to pay for the second day ($200) is

less than the cost of the second day ($250).

b. If Dave’s insurance covers half of the cost of each hospital day, he would pay $125 a day. Thus, Dave would choose to stay two days since his willingness to pay for a third day ($100) is less than $125.

c. Examples may vary. One possibility is if Dave’s insurance stops covering hospital stays and instead reduces the cost of his health insurance by $225.

Learning Objective: 10-2

AACSB: Analytic

Bloom’s: Analyze

1. a. If pollution is unregulated, both firms will use process A and emit 8 tons per day.
2. To reduce emissions by 50 percent, both firms must switch to process C. The cost will be $120 - $50 = $70 for Sludge Oil and $500 - $100 = $400 for Northwest Lumber, for a total cost of $470.

c. Each firm will switch to a cleaner process if the cost of doing so is less than $T. If T = $81, Sludge Oil finds it worthwhile to switch from process A to B, and still finds it worthwhile to switch from process B to C, and again from C to D. Northwest Lumber finds it worthwhile to switch from process A to B. Sludge Oil thus cuts emissions by 3 tons, and Northwest Lumber by 1 ton. The total cost to society is $200 - $50 + $180 - $100, or $230.

Learning Objective 10-03

AACSB: Analytic

Bloom’s: Analyze

1. If Sludge Oil does not have any permits it will have to pay $500. Sludge Oil is therefore willing to pay up to $300 for the first permit, which is the cost difference between process E and process D. Sludge will pay up to $80 for the second permit, and so on.

If Northwest Lumber does not have any permits it will have to pay $2,000. Northwest Lumber is therefore willing to pay up to $1,000 for the first permit, which is the cost difference between process E and process D. Northwest will pay up to $500 for the second permit, up to $320 for the third, and up to $80 for the fourth.

Therefore, the auction price will keep rising until it reaches $81, the lowest price for which the total demand is 4 permits.  Sludge Oil will buy 1 permit and Northwest Lumber will buy 3 permits. The total cost of the pollution reduction is $230. Sludge Oil now pays $200 instead of $50, and Northwest Lumber pays $180 instead of $100.

Learning Objective 10-03

AACSB: Analytic

Bloom’s: Analyze

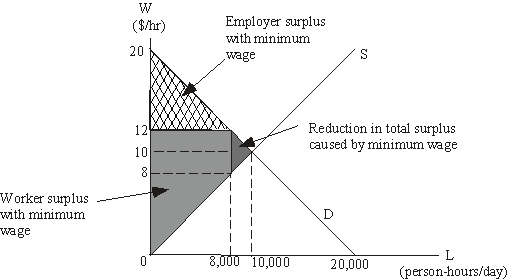
1. Countries maintain armies at great expense even when they are not certain that those armies will ever be called into action.  If the consequences of being invaded are sufficiently grave, it can be rational to maintain an expensive army even if an invasion would never have occurred.  The same logic applies in the case of investments in reducing greenhouse gases.  Inherent uncertainties in climate science mean that we cannot be sure what the payoff from those investments will be.  But the fact that climate estimates are highly uncertain means that the worst consequences could be very grave indeed.  To reduce the likelihood of such consequences, it can be rational to invest heavily in reducing greenhouse gases.

Learning Objective: 10-03

AACSB: Analytic

Bloom’s: Analyze

1. Without a minimum wage, employers and workers each receive an economic surplus of $50,000 per day. As shown in the diagram below, a minimum wage set at $12 per hour reduces employer surplus to the area of the cross-hatched triangle, $32,000 per day, and increases worker surplus to the area of the four-sided shaded figure, $64,000 per day. The minimum wage thus reduces employer surplus by $18,000 per day and increases worker surplus by $14,000 per day. Based on this information, employers would be willing to pay a tax up to $18,000 to enact the earned-income tax credit rather than the minimum wage. A tax of $16,000 levied on employers could therefore fund an earned-income tax credit of $1.60 per hour × 10,000 hours = $16,000, which is more than the $14,000 increase in worker surplus that the minimum wage would provide. Clearly, this arrangement would make both employers and workers better off than under the minimum wage.



Learning Objective: 10-04

AACSB: Analytic

Bloom’s: Analyze

*(\*Please note this problem was replaced in the 2nd printing of the book. The solution above is representative of the presentation in the 1st printing. The solution below is for the new problem that appears in later printings.)*

The earned income tax credit provides a federal tax credit to low-income workers.  It works like a negative income tax, except that eligibility for the program is confined to those who work.  As a result, it does not provide assistance to individuals who are unemployed.  Unlike the minimum wage, the earned income tax credit has no direct effect on the wage firms pay workers, and so it does not provide employers with an incentive to lay off low-wage workers.  Since the earned income tax credit provides workers with cash (in the form of a tax credit), it is thought of a cash transfer program rather than an in-kind transfer program.

Learning Objective: 10-04

AACSB: Reflective Thinking

Bloom’s: Understand