

## Market Failures: Problems

1. Which of the following satisfy the criteria for being a public good?
  - a. this is a private good that is both excludable and rivalrous in consumption.
  - b. while non-rivalrous, it is excludable. It is not a public good.
  - c. this is (mostly) non-excludable but rivalrous. It is not a public god.
  - d. This is a public good.
  
2. No. This is an important distinction between a public good and an externality. Even with a subsidy, there is still an incentive to underproduce the good.
  
3. There are a few possibilities here:
  - i. Like a positive externality, if the production of roads produces a public benefit (added utility), then the private market will underprovide the good.
  
  - ii. If roads are excludable (*e.g.* the cost of tolls), then the private market will only be able to provide it at a higher cost than a government could. This will also lead to an underprovision.

Below, I convert to marginal cost and utility from total.:

Units	Marginal Utility	Pri. Marginal Cost	Total Marginal Cost
1	\$10M	\$1M	\$4M
2	\$9M	\$3M	\$6M
3	\$8M	\$5M	\$8M
4	\$7M	\$5M	\$8M
5	\$6M	\$6M	\$9M
6	\$5M	\$6M	\$9M
7	\$4M	\$6M	\$9M
8	\$3M	\$9M	\$12M
9	\$2M	\$10M	\$13M

5. The price is six million dollars and the quantity is five jets.
  
6. It is a negative externality.

7. The efficient level of production uses total instead of private cost. This yields a price of \$8M and a quantity of three. Now consider the fourth and fifth units that are sold. The fourth unit yields one million in consumer surplus, one million in private producer surplus, but causes three million worth of pollution. Deadweight loss from this unit is one million. The fifth unit yields no consumer surplus or private producer surplus, but also yields three million of pollution. Its deadweight loss is thus 3 million. Total deadweight loss is thus four million dollars.

8 and 9. A three million dollar tax imposed on suppliers would be one way. This would cause their private marginal cost to align with the third column in table 1. Another way would be to tax buyers three million dollars. This would yield a price of 5 million and a quantity of three. Because buyers would have to then pay the government three million per jet, the outcome is the same no matter who pays the tax.

10. False. Consider the example of dividing \$100 across two people. \$49 for each is not Pareto optimal but you might prefer it to giving all \$100 to one person. Pareto efficiency is independent of equity.

11. Only if the price floor is greater than \$5. Otherwise, it will have no impact.

12. Because they do not bear the full cost of bad outcomes they will likely overprovide insurance,

13. Moral hazard. #12.

14. They will restrict quantity to raise the price.

15. They will restrict quantity to lower the price.

16. Antitrust policy is intended to limit market power. It may entail preventing mergers of firms that would result in there being too much market power or it may break up firms that have become too large.