

# Lesson 4 - Externalities, Public Goods & Asymmetric Information

**Acknowledgement:** BYU-Idaho Economics Department Faculty (Principal authors: Rick Hirschi, Ryan Johnson, Allan Walburger and David Barrus)

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## Section 1 - Externalities

Adam Smith taught each individual, seeking only his own gain, “is led by an invisible hand to promote an end which was no part of his intention,” that end being the public interest. However, there are times when the market outcome differs from the outcome that society considers optimal. This **market failure** may occur when there is an **externality**, an external benefit or cost that is enjoyed or imposed on a third party other than the buyer or seller of the good. For example, consider your answer to the following question:

What is the optimal level of pollution? Most people would automatically give the answer that zero pollution would be optimal. However, the optimal level of pollution is not zero; instead, the optimal level is obtained by following our economic decision rule of equating the marginal benefit to the marginal cost.

### Negative Externalities

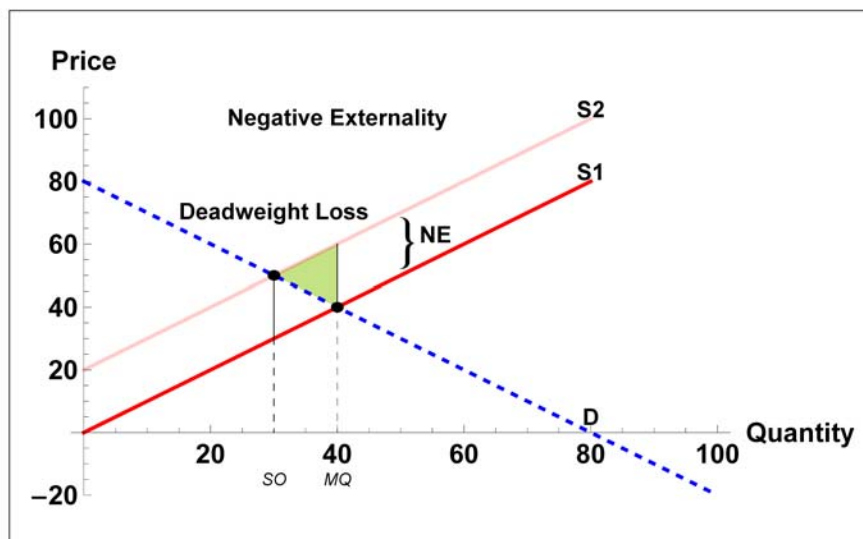
When a **negative externality** is present, there is a cost imposed on a third party not involved in the production or consumption of the good. Examples of negative externalities include various forms of pollution, such as air pollution from factories or power plants, water pollution; noise pollution such as airports or even roommates; and drivers who are impeded by drugs, alcohol, or texting. Use the link below to view an ABC News 20/20 video clip on noise pollution.

[Click here to watch the ABC News 20/20 video clip on “Too Much Noise.”](#)

## Negative Externalities

A negative externality is an external cost that is imposed on a third party other than the buyer or seller of the good. The market overprovides the good. Society would rather have less of the good and have the supply of the good at S2 instead of S1.

KEY: Demand= Marginal Benefit; S1 = Marginal Private Cost. S2 = Marginal Social Cost or  $S2 = MPC + \text{Externality}$ ; MQ = Market Quantity, SO = Social Optimal, NE = Negative Externality.



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If a factory is able to pollute without paying for the damages caused by the pollution, it will produce more than the socially optimal level of output. Since the firm only pays for the marginal private cost of producing the good or service, it will produce where the marginal private cost is equal to the marginal private benefit. But when there are externalities, the marginal private cost is not the same as the marginal social cost. The marginal social cost adds to the marginal private cost the cost of the externality, which graphically is the vertical distance between the marginal private cost and marginal social cost. If we were to account for the negative externality, the optimal level of production would be lower than the market quantity. As is, the excessive quantity of output creates a deadweight loss to society since the marginal social cost exceeds the marginal social benefit.

Externalities may exist in either the production or consumption of the good or service. Negative production externalities are generated when the good or service is produced such as factories polluting the air, water or land as they produce the good or service. Negative consumption externalities occur when the consumption of the good or service creates the externality, for example an individual that consumes alcohol at the bar then, when driving home, kills pedestrians due to his impairment.

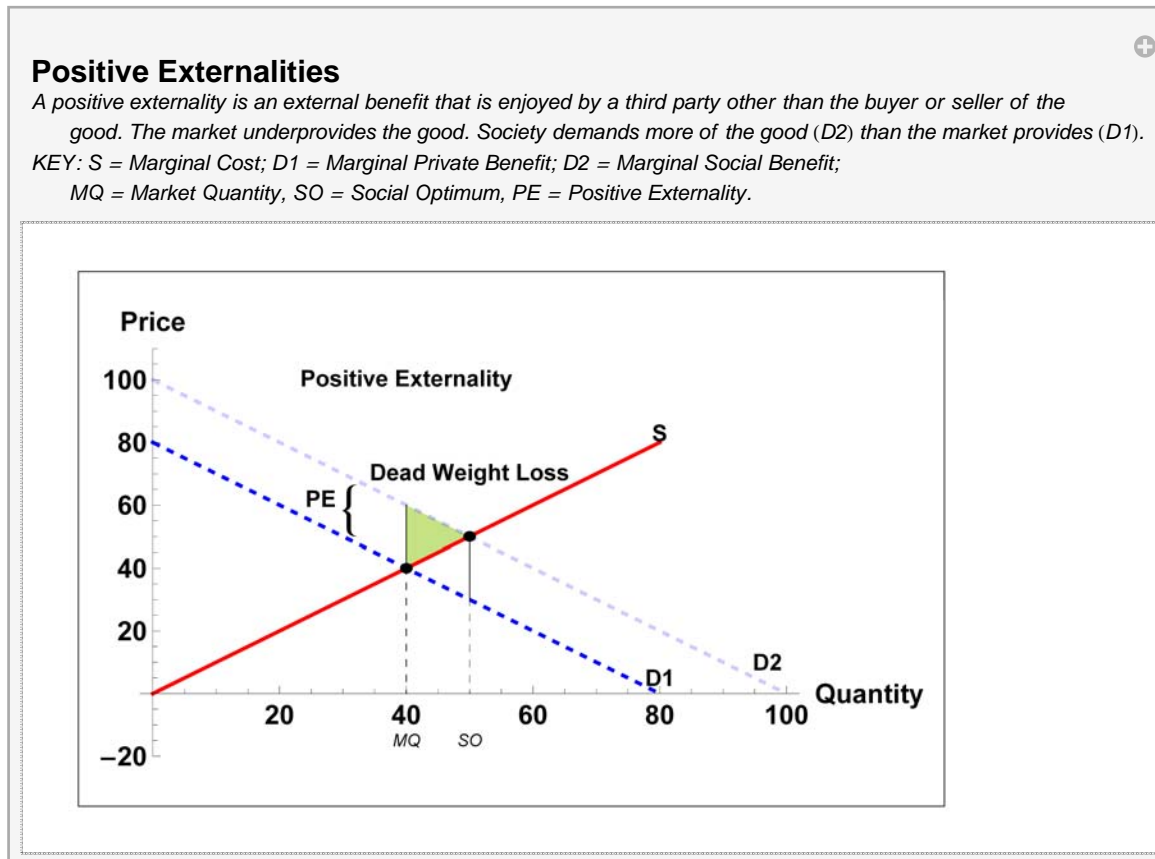
Property that is held in common, such as air, water, and public lands, belongs to everyone as a whole. Consequently no one individual has an incentive to care for it, since it doesn't belong to just her. In some college apartments, dishes pile up in the sink or the garbage doesn't get taken out, because it belongs to everyone collectively and no one individually. When a resource belongs to everyone, individuals account only for the private marginal benefits and costs and fail to account for the impact of their actions on others, hence the **tragedy of the commons**.

For example, if the ocean is common property there is a tendency to over fish because fishermen only consider their private costs and do not account for how their larger catch makes it more costly for other fisherman to catch the fewer remaining fish. Similarly during the 19th century, American bison that once roamed much of North American were killed by the millions since they were a common resource. Because individuals actions fail to account for the impact on others, a negative externality exists.

(Reference: <http://www.economicexpert.com/a/Tragedy:of:the:commons.htm>,  
<http://animals.nationalgeographic.com/animals/mammals/american-bison/> )

## Positive Externalities

When a **positive externality** is present, the market produces less than the socially optimal quantity of the good or service, since there is a benefit to society that is not captured by the individual. Education, for example, not only benefits the individual but also society as a whole since individuals often are creating new products and services and are less likely to be involved in violent crimes or on the welfare rolls of society. However, a student will only consider the marginal private benefit and the marginal private cost when determining the quantity of education that he or she should obtain.



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Other examples of positive externalities include immunizations or a neighbor who fixes up his house which in turn increases the property value of other homes on the street. A deadweight loss also exists when there is a positive externality because at the market quantity, the marginal social benefit is greater than the marginal social cost.

When an externality exists, the socially optimal output is not achieved. A variety of different policies exist to correct these ranging from "command-and-control" to market-based policies.

**Command-and-control** options often include legislation limiting the amount of the activity along with regulatory bodies to monitor the behavior of the industry. For example, government may require all firms to cut emission levels by 30 percent within five years. Although these types of policies have been popular and treat all firms the same, they are also inefficient. For example, suppose there are two power plants producing pollution and each is required to cut emissions by 30 percent and that one plant was very inefficient while the other had installed state-of-the-art technology and was already producing very little pollution. The marginal cost of meeting the abatement goal is relatively low for the inefficient firm but may be extremely expensive for the plant that was already operating efficiently.

For common resources, such as fish and wildlife, government will set harvest limits and issue a limited number of licenses that specify what can be caught and in what location. They may also restrict the equipment that can be

used in harvesting such as net or boat size. These laws not only set a given limit but are also designed to increase the marginal private cost. Fishing licenses, for example, may set a maximum catch limit for the season but also set a daily catch limit.

As limits are set, the government must monitor the behavior of firms to ensure that they are abiding by the standards. When a firm is out of compliance, fines are imposed. Since the probability of being caught out of compliance is not 100 percent, these fines are often relatively high to discourage firms from taking the risk of being out of compliance. If the fine is too low, there is less incentive for firms to be in compliance. For example, if the fine for possessing illegal recreational drugs is low behavior is not likely to change. On the other hand, losing a limb or your life can serve as a strong deterrent for particular behavior.

For example a report found that in Texas, excess pollution benefited firms by an estimated value of \$8.6 million yet they were fined less than \$1.7 million. Consequently, firms may have little reason to comply with the standards.

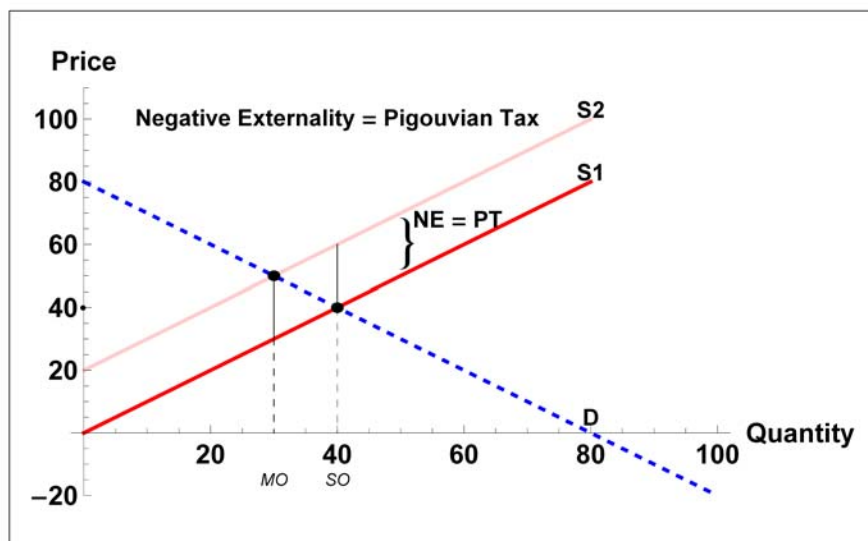
With each law, it is required that there be a punishment associated with noncompliance. From 2 Nephi 2:13: "And if ye shall say there is no law, ye shall also say there is no sin. If ye shall say there is no sin, ye shall also say there is no righteousness. And if there be no righteousness there be no happiness. And if there be no righteousness nor happiness there be no punishment nor misery. And if these things are not there is no God. And if there is no God we are not, neither the earth; for there could have been no creation of things, neither to act nor to be acted upon; wherefore all things must have vanished away."

## Solving the Market Failure - Pigouvian Tax

### Solving the Market Failure – Pigouvian Tax

To correct for the negative externality, a government will impose a Pigouvian tax. The tax is the vertical distance between  $S1$  and  $S2$ . The tax will decrease the equilibrium quantity and increase the price of the good. Therefore, less of the good that produces the negative externality is produced.

KEY: Demand = Marginal Benefit,  $S1$  = Marginal Private Cost,  $S2$  = Marginal Social, Cost =  $MPC +$  Externality,  $MO$  = Market Outcome,  $SO$  = Social Optimal,  $NE$  = Negative Externality,  $PT$  = Pigouvian Tax.



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Economist Arthur Pigou recommended levying a **tax** on the good equal to the amount of the negative externality or a **subsidy** equal to the amount of the positive externality in order that firms internalize the externality.

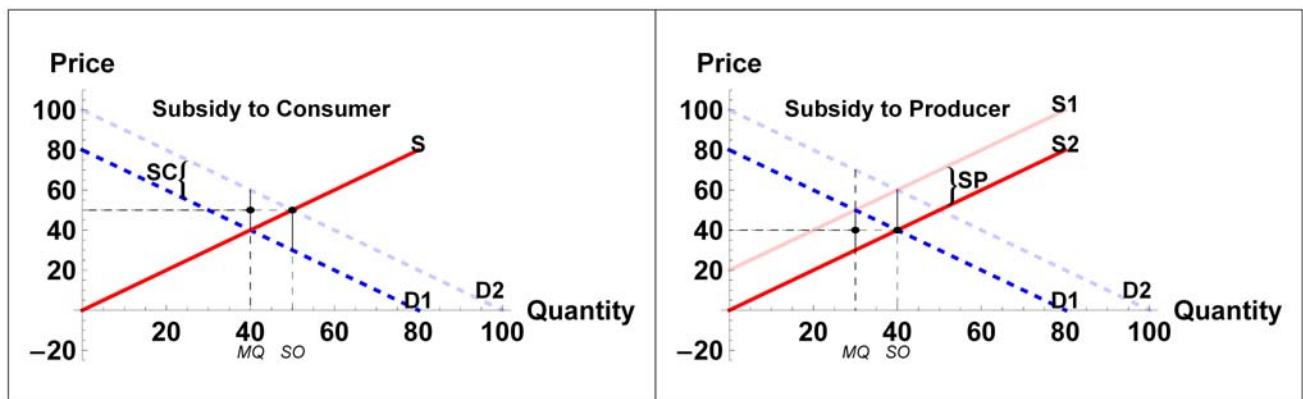
A firm producing a negative externality would pay its marginal private cost plus a **Pigouvian tax** equal to the externality, and would thus reduce its production to the socially optimal level of output, since it would be paying for the damage caused to others.

## Solving the Market Failure - Pigouvian Subsidy

### Solving the Market Failure – Pigouvian Subsidy

To encourage more demand and/or production for a good that produces a positive externality, a government will offer subsidies or money to encourage the production and consumption of the good. This is called a Pigouvian subsidy. The subsidy to producers is the vertical distance between  $S_1$  and  $S_2$ . The subsidy to the producer shifts the supply curve to the right from  $S_1$  to  $S_2$ . There is more of the good produced. The subsidy to the consumer shifts the demand curve from  $D_1$  to  $D_2$ . This also results in more of the good being produced.

KEY: MQ = Market Quantity, SO = Social Optimum, SC = Subsidy to Consumer, SP = Subsidy to Producer.



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To correct a positive externality, such as education, society can subsidize (**Pigouvian subsidy**) the consumer, increasing the demand for the good. Pell grants and other subsidized school loans increase consumer's demand for education. Alternatively, a subsidy may be given to the producer to reduce the marginal cost of providing the good. States typically subsidize educational institutions allowing them to charge a tuition rate less than the marginal private cost. Another alternative is for the government to provide the good or service instead of the private market, for example, the majority of primary education (K-12) is provided by the government, with relatively little direct cost to the students.

Alternatively, government may determine the optimal level of pollution, then assign or sell tradeable emission permits, which allow firms to produce a certain amount of the particular pollution, such as sulfur dioxide. The advantage of permits over the traditional command and control system, is that the pollution standard is met in a more efficient manner. To be in compliance, firms can buy permits, install scrubbers or other devices that reduce the amount of pollution emitted, or reduce their output. Firms are able to meet the standards in the least cost method which benefits them as well as society. Since firms have to buy permits to pollute, the externality is internalized and the socially optimal output level of the good is attained.

Reference for Sulfur Dioxide trading: [http://www.ccf.com/education\\_ccfe/SO2\\_Background\\_Drivers\\_Pricing\\_PDF.pdf](http://www.ccf.com/education_ccfe/SO2_Background_Drivers_Pricing_PDF.pdf)

## Solving the Market Failure - Coase Theorem

In 1991 economist Ronald Coase was awarded the Nobel Prize “for his discovery and clarification of the significance of transaction costs and property rights for the institutional structure and functioning of the economy” (Nobel Prize Announcement). The **Coase theorem** argues that even when externalities exist, the efficient solution can be reached as long as transaction costs, i.e., costs of negotiating, are low, property rights are assigned, and individuals are allowed to negotiate. This efficient solution will be reached regardless of who is assigned the property right.

Let's say that your roommate loves to barbecue but it smokes up the apartment and makes everything smell like smoke. If transaction costs were low and your roommate was willing to negotiate, under the Coase theorem, how many nights would your roommate barbecue?

If you had the property right, you would prefer that your roommate not barbecue at all, but given his passion for barbecuing, he'd be willing to compensate you up to \$10 if he could barbecue at least one night (being the weekend). Based on the values in the table he would only have to pay you one dollar, to allow him the right to barbecue once a week. His marginal value for the second and third nights are also greater than your marginal cost. Thus with compensation, you would allow him to barbecue each of those nights. However for the fourth night, your marginal cost is greater than his marginal value, so he would not be willing to pay you six dollars if it is only worth two dollars to him.

If your roommate had the property right, he would want to barbecue five nights a week. You would be willing to pay him up to 8 dollars, if he reduced his barbecuing from 5 nights to 4 nights. His marginal value of barbecuing the fifth night is only one dollar, so he would be willing to give up that night if he was compensated. Likewise, his marginal value of fourth night is less than your marginal cost, so he would willing give up the fourth night as well with compensation. Since your marginal cost is less than his marginal value for the third night, you would not be willing to pay for him not to barbecue on the third night.

**Coase Theorem** +

*The Coase Theorem states that externalities can be solved if transaction costs are low, property rights are assigned, and private parties are able to negotiate. Below is an example of the Coase Theorem.*

Nights	Roommate's Marginal Value of Barbecuing	Your Marginal Cost of the Smoke from Barbecuing
1	10	1
2	6	3
3	5	4
4	2	6
5	1	8

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As seen in our experiment, we reached three nights of barbecuing no matter who had the property right. While the efficient solution is reached under both scenarios, there is a difference in the income distribution.

In many cases, transaction costs are high and negotiating can be difficult. Acid rain, for example, impacts a wide area involving millions of people. When property rights are not clearly defined, the matter is often taken to the judicial system. Some individuals will try to use the court system to force an outcome in their favor.

The importance of clearly defined property rights is discussed in the ABC News 20/20 video “Sharing is Better.”

Watch the ABC News 20/20 video “Sharing is Better.”

Source: [http://nobelprize.org/nobel\\_prizes/economics/laureates/1991/press.html](http://nobelprize.org/nobel_prizes/economics/laureates/1991/press.html); <http://www.marietta.edu/~dele-meeg/games/games71-80.htm>; <http://www.econlib.org/library/Enc/bios/Coase>

## Ponder and Prove - Section 1 - Externalities

### Section 1 Questions +

*Instructions: Click on the button that represents the correct answer. After you select an answer, click on the 'Grade My Answer' button.*

Question 1
Question 2
Question 3

**If there is a negative externality, it means the good producing the externality is**

- provided at a good level
- it cannot be determined
- under provided
- over provided

Grade My Answer
Reset

"Results"

Original source code for problem above from Craig Bauling. Modified by David Barrus, Victoria Cole, and Brent Nicolet

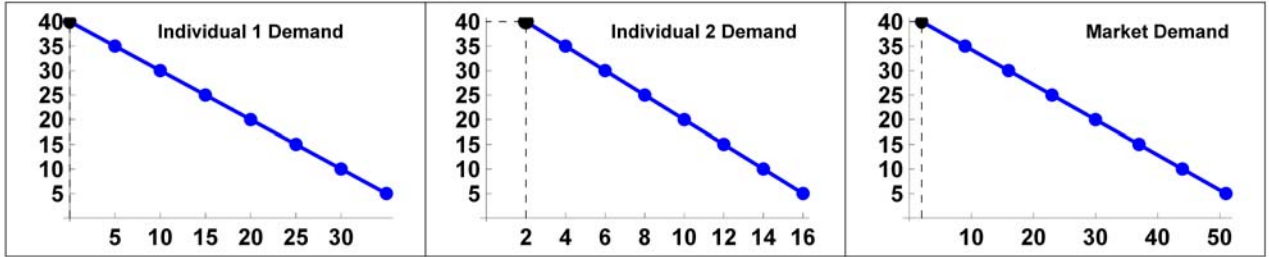
## Section 2 - Private and Public Goods

### Private Goods

All semester long, we have been talking about markets that involve private goods. **Private goods** are **rival**, **excludable**, and **divisible**. By “**rival**” we mean that the consumption of the good or service by one prevents another from consuming the item. **Excludable** means that those who do not pay for the good or service, cannot consume it. Finally, private goods are **divisible** meaning the production of the good or service can be divided among those who are consuming the good. For example if a firm produces collectible toy cars, each car can be divided and sold to a customer. To determine the market demand for the good or service, we horizontally summed the demand curves of each of the individuals. In the graph below, at a price of \$40, there is only a demand for two cars from Individual 2. As the price decrease, see what happens to the market demand.

### Market Demand Curve

In this market, the private good is collectible toy cars. Click on the various prices to see how the demand changes as the price decreases. Notice that the market demand is derived from the demand of the two individuals. The good is divisible so we can see how much each individual purchased.



Price

#### Individual and Market Demand

Price	Individual 1 Quantity Demanded	Individual 2 Quantity Demanded	Market Quantity Demanded
40	0	2	2

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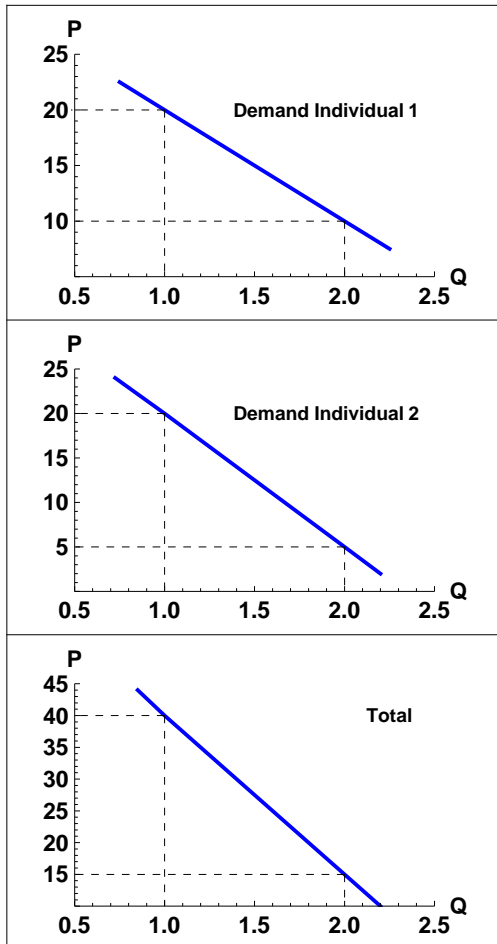
## Public Goods

As we saw in our discussion of externalities, not all goods are private. Pure **public goods** are **nonrival**, **nonexcludable**, and **nondivisible**. National defense, for example, is a public good. The consumption, or in this case the protection, provided to one person does not diminish the protection provided to another. Regardless of whether an individual living in the country paid for the service or not, he still enjoys the benefits of that service. Last national defense is non-divisible, meaning we can't divide up the protection provided to each individual.



## Public Goods

Imagine Demand Individual 1 and Demand Individual 2 are the only two consumers in a market. We are trying to determine how much they are willing to pay for lighthouses. At a lower price, more good is demanded. We vertically sum the demand curves to get the market demand for lighthouses.



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Being **nonexcludable** means that no one has to pay to consume the good and service; therefore, there is a tendency for people to be **free riders**, consuming the good without paying for it. Consider where many people watch the fireworks on the Fourth of July. While many stadiums often provide a show within the stadium and charge an entrance fee, most people watch the fireworks outside the stadium, since once the fireworks are shot up into the air, they can enjoy the fireworks without paying for them. Since people can enjoy the good without paying for it, the private market produces less of the good or service than is socially optimal.

Being **nonrival**, more than one person can enjoy the good. Thus to determine the socially optimal amount of the good or service, we do a vertical summation of each individual's willingness to pay (see graphic above). For example, lighthouses can provide service to more than one person and one person's consumption does not diminish the consumption of another. If two individuals in the market are both willing to pay 20 dollars to have a lighthouse, the willingness-to-pay for the first lighthouse is 40 dollars. For the second lighthouse, individual one is only willing to pay 10 dollars and individual two is only willing to pay 5 dollars. Vertically summing each individual's willingness to pay, we can derive the collective willingness to pay, similar in concept to the demand curve. If the marginal cost of providing a lighthouse were 30 dollars, one lighthouse would be socially optimal. Note that due to the free-rider problem, no one individual would be willing to provide a lighthouse, since the marginal cost exceeds her willingness to pay. To

correct this market failure, government will typically tax individuals and provide the good or service to the public.

## Other Types of Goods

We have discussed two of the main types of goods. Goods can be classified in one of four different categories: private, common resources, quasi-public goods, and public goods, based on whether the good is rival and excludable in the range of demand (see graphic below). Most goods fall into the category of private goods and because they are excludable the market can provide the socially optimal quantity. Ocean fishing may be nonexcludable but rival, since the fish caught by one can not be caught by another – it is a **common resource** good. A toll road firm is able to exclude those using the good, and at low levels of demand the roads are non-rival, meaning one person's use of the road does not diminish the enjoyment or use the road by another – it is a **quasi-public** good. However, at high levels of use, such as during rush hour roads do become rival since the enjoyment or use of the road by one is diminished by the use of others.

**Private, Public, Quasi–public, and Common Resources**

*Below are the four types of goods. Rival means that when we consume a good, someone else cannot consume it. Non–rival means that our consumption of the good does not affect someone else's consumption. Excludable means that we must pay for the good to consume it. Non–excludable means that we do not have to pay to consume the good.*

	Excludable	Non-excludable
Rival	<b>Private Good:</b> Shoes Tacos	<b>Common Resources:</b> Ocean fishing Public lands
Non-rival	<b>Quasi-public goods</b> Toll Road Cell phones *Non-rival has a range	<b>Public Good</b> National Defense Lighthouses

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## Cost/Benefit Analysis

What is the Grand Canyon worth? If there was proposal to dam the Grand Canyon and fill it with water to generate power for California, how much would you be willing to pay to “save” the Grand Canyon? Alternatively, if this proposal was to go forward but the government wanted to compensate you for the loss of the Grand Canyon, how much would they have to pay you? As you think of the answers to these three questions, you should ask yourself if all three of these answers might be the same? In many cases they will differ since what an individual is willing to pay is subject to his budget constraint so he may have a low willingness to pay, yet he may consider the government to have no budget constraint so his willingness to accept is very large. This presents a challenge when determining the value of a public good, since we can not look to the market to see the current price for a Grand Canyon or some endangered species.

If individuals are concerned about the amount they will be taxed to provide or protect a good, their stated value may not reflect their true value. On the other hand, if individuals anticipate a very high or low stated value will pass or reject a project but they won't have to pay their respective portion of the cost, they may give an unreasonable value while planning to be a free rider. Thus, the hypothetical value stated by individuals may not reflect their true value for the item.

In Nauvoo, when a member's house burned down, many of the men were talking saying how sorry they felt for the

loss. Joseph Smith reached into his pocket and pulling out his money, and said, “I feel sorry to the tune of five dollars” and he gave it to the man. Willingly giving the man the money, reflects his actual willingness to pay.

Benefit/Cost analysis weighs the benefits of a project to the costs of a project. Since benefits and costs may occur at different time periods, we convert future values to a present value for a common comparison. To compute the present value of a future benefit or cost, the future value is divided by  $(1+r)^t$ , where  $r$  is the interest rate expressed as a decimal and  $t$  is the number of years until the benefit or cost is incurred. Consider the example below.

### Cost/Benefit Analysis

*Below are the formulas and an example for calculating present value and future value.*

- Present Value = Future Value /  $(1+r)^t$
- \$1000 in 30 years if the interest rate is 6%
- $1000/(1+.06)^{30} = \$174.11$
  
- Future Value = Present Value x  $(1+r)^t$
- \$174.11 invested at 6% interest for 30 years
- $174.11 \times (1+.06)^{30} = \$1,000$

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As seen in the example above, the present value of 1,000 dollars received in 30 years if the interest rate is six percent would be \$174.11. Note that if the \$174.11 was invested at six percent for 30 years, the future value would be 1,000 dollars.

Comparing the present value of the benefits to the present value of the costs is useful in determining if it is worthwhile to undertake a project.

Another challenge associated with the provision of certain goods can be determining where to locate the item. While individuals may be in favor of having the good provided, such as an interstate, power plant, or city dump, they don't want it located in their backyard.

Demand for power in some states has increased dramatically, yet state residents have resisted the development of new power sources to meet the growing demands.

Watch the following video: <http://www.youtube.com/watch?v=Mo2rMj8KVtQ&feature=related>

## Ponder and Prove - Section 2 - Private and Public Goods

**Section 2 Questions** +

*Instructions: Click on the button that represents the correct answer. After you select an answer, click on the 'Grade My Answer' button.*

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**Why does the private market under provide public goods?**

The private market does provide public goods without government intervention  
 The private market has little or no incentive to provide them  
 Public goods create negative externalities  
 Firms and individuals are selfish

"Results"

Original source code for problem above from Craig Bauling. Modified by David Barrus, Victoria Cole, and Brent Nicolet

## Section 3: Asymmetric Information

### Adverse Selection

**Asymmetric information**, when there is an imbalance of information among parties, can also create a market failure. **Adverse selection** can arise when information is known to one party in a transaction that is not known to the other, at the time the contract is made. This is best illustrated with an example: when purchasing a used car, you might consider which type of vehicle is most likely to be sold in the used car market, a “lemon” or a car that has performed well. Adverse selection would suggest that poor quality vehicles (adverse) are most likely. The seller may not disclose all he knows about the mechanical defects of the vehicle. Not knowing the honesty of the seller means, the price offered for the vehicle will likely be less to account for this risk. Similarly, those who need insurance the most are those most likely to purchase full coverage with low deductibles. Due to this risk, insurance premiums are increased which causes some healthy individuals to decide not to purchase coverage; this further increases the cost of the insurance and results in greater adverse selection.

### Moral Hazard

Another asymmetric information problem is moral hazard. **Moral hazard** occurs when the behavior of one changes after the contract is made. For example, those who purchase insurance may be less inclined to take precautions after the purchase, knowing that they are insured. Or another example, lenders may see a large credit reserve left on a potential borrower's credit cards as a red flag. This may be the case, even if the borrower is a stellar customer and has never carried a balance on the credit cards, because of the potential that a large amount of credit could easily be obtained.

Watch: <http://www.pbs.org/newshour/video/share.html?s=news01n14e0q123>

A Charlotte, NC man turned in a fire insurance claim for a rare cigar collection, claiming "a series of small fires." When the insurance company failed to pay, the man sued and was awarded \$15,000. However, after paying the claim, the insurance had the man arrested and charged with 24 counts of arson after he cashed the check. Country singer Brad Paisley summarize what happens in the song, The Cigar.

Reference: <http://www.usaone.net/jokenet/jokes.asp?command=list&r=26>

## Solving the Market Failure - Public and Private Solutions

A variety of methods both private and public can help to address these problems (all designed to gather information that the other party knows).

1. Health insurance companies, for example, typically have individuals fill out a health history and complete a physical exam to determine the premiums they will charge to the individual.
2. Credit scores can also help companies assess the likelihood of individuals repaying their loans and allow them to charge an appropriate interest rate. Those with good credit scores get better rates, while those who have not managed their finances appropriately in the past are charged a higher rate. Credit scores are also used in other areas, such as car insurance, since individuals who are irresponsible with their finances have a higher likelihood of being irresponsible in other behaviors as well.
3. Deductibles are designed to prevent the problem of moral hazard. If individuals have to bear at least a portion of the cost when they make an insurance claim, they are less likely to make a claim. Furthermore, the threat of having increased premiums or being dropped by the insurance company, can be a deterrent from moral hazard.
4. Product reports and reviews also provide information to help individuals make an informed decision. Publications such as Consumers Report are an independent review of products ranging from cars to washing machines. Movie reviews can be beneficial to individuals trying to make an informed decision about the content of a movie and what to watch.
5. Consumers are also more willing to purchase goods that offer warranties or money back guarantees. Many consumers often have the perception that products with good warranties are better. While this is not necessarily the case, it reduces the risk associated with purchasing the good. Even though a product may offer a warranty, there is a cost associated with returning the defective product and keeping the necessary paperwork to have the firm honor the warranty.
6. Franchises are another way firms employ to address asymmetric information. Restaurant chains, for example, strive to have a relatively consistent product at each location. Thus if you are visiting a new city, you know what to expect if you go to a national restaurant chain.

## Solving the Market Failure - Government Intervention

Government is also involved in addressing the problems of asymmetric information.

1. Government has set various standards to insure a minimum quality ranging from food products, such as grade A milk, to bar exams to insure that individuals practicing law have some minimum competency. Some professions require that individuals receive additional training in their respective profession annually to maintain their license.
2. Inspections also promote confidence in what is being purchased. For example when filling your car up with gas, we trust that we are receiving not only the quality but also the quantity of what is indicated on the pump, because the Department of Weights and Measures has indicated that the pump has been checked and approved.

3. Various laws restrict certain activities such as insider trading. Individuals within a company are restricted from selling their stock due to information they know about the company, prior to the information being released publically.
4. The government also may also publish reports disclosing specific information about an industry, such as accident and death rates. This allows individuals considering an industry to know more of the potential risks of the industry. In addition, agencies such as the Occupational Safety and Health Administration (OSHA) require businesses to provide certain working conditions and impose fines when the firms are not in compliance.

## Solving the Market Failure - When Government Intervention Fails

While government plays a role in correcting certain market failures, they may not solve the problem for several reasons:

1. Principal-agent problem. For example, if a person in charge of the nation's welfare program (the agent) does such a great job he gets everyone off welfare (as desired by the citizens – the principals), he no longer has a job. Thus, he has the incentive to grow the welfare program so his position is more important with a larger budget. If the goal of a politician is to get reelected, he may pursue policies that are politically popular but impose additional costs on society at some later time period. The growing national debt, is evidence, that politicians would rather spend today and force some future generation to pay for it.
2. Government may fail to recognize and account for the unintended consequences of their actions. Earlier we mentioned, flood insurance that was designed to provide affordable insurance to those in flood prone areas. However, the subsidized insurance has lead to additional people building in areas that are flood prone, due to the government subsidy. Another example is home ownership, which is politically popular; however, a portion of the housing crisis can be traced back to government "encouraging" banks to lower their lending standards and issue mortgages to individuals who would not otherwise be considered credit worthy.

Watch: <http://www.youtube.com/watch?v=uBVMni4B4us>

3. Given the bureaucratic nature of government, government intervention generally takes longer and costs more than originally anticipated. More intervention leads to more laws and more administrative bodies to enforce those laws, which adds additional costs to the tax payers. Furthermore, many of the issues government addresses are large and complex in nature with many unknown factors, making it difficult to pass a meaningful effective bill that focuses on the problem.
4. Regulatory Capture is another potential government failure when the regulatory agency acts in the interest of those it is assigned to regulate. As described by the Economists magazine:

"The theory of regulatory capture was set out by Richard Posner, an economist and lawyer at the University of Chicago, who argued that 'Regulation is not about the public interest at all, but is a process, by which interest groups seek to promote their private interest ... Over time, regulatory agencies come to be dominated by the industries regulated.' Most economists are less extreme, arguing that regulation often does good but is always at risk of being captured by the regulated firms."

(<http://www.economist.com/research/Economics/alphabetic.cfm?letter=R>).

On the other hand, those with more extreme views of regulation may pursue office or positions in government in order to pass legislation aligned with their views, which may not be in the interest of society as a whole.

Given these challenges, government should weigh the benefits of market intervention relative to the costs to determine if society would be better off or worse off with the government involvement. As citizens it is incumbent upon us to elect wise government officials who will uphold the Constitution and institute righteous laws, in addition to being willing to be personally involved (D&C 98:10). The Book of Mormon is replete with examples of nations prospering

when righteous leaders were elected and stumbling when wicked leaders were in office.

In 1998, the First Presidency stated:

"We wish to reiterate the divine counsel that members should be anxiously engaged in a good cause, and do many things of their own free will, and bring to pass much righteousness' (D&C 58:27) while using gospel principles as a guide and while cooperating with other like-minded individuals.

"Through such wise participation as citizens, we are then in better compliance with this scripture: 'Governments were instituted of God for the benefit of man; and ... he holds men accountable for their acts in relation to them' (D&C 134:1).

"Therefore, as in the past, we urge members of the Church to be full participants in political, governmental, and community affairs. Members of the Church are under special obligations to seek out and then uphold those leaders who are wise, good, and honest (see D&C 98:10).

"Thus, we strongly urge men and women to be willing to serve on school boards, city and county councils and commissions, state legislatures, and other high offices of either election or appointment, including involvement in the political party of their choice.

Reference: "First Presidency Urges Citizen Participation," Ensign, Apr. 1998, 77

## Ponder and Prove - Section 3 - Asymmetric Information

### Section 3 Questions +

*Instructions: Click on the button that represents the correct answer. After you select an answer, click on the 'Grade My Answer' button.*

Question 1
Question 2
Question 3

**What is moral hazard?**

- Behavior changes after the contract is made
- Information is known to one party in a transaction that is not known to the other
- Breaking laws
- Imbalance of information among parties

Grade My Answer
Reset

"Results"

Original source code for problem above from Craig Bauling. Modified by David Barrus, Victoria Cole, and Brent Nicolet

# Summary

## Key Terms

**Adverse Selection:** A situation where information is known to one party in a transaction that is not known to the other, at the time the contract is made.

**Asymmetric Information:** There is an imbalance of information among parties. One party knows something the other party does not know.

**Coase Theorem:** Argues that even when externalities exist, the efficient solution can be reached privately as long as transaction costs, i.e., costs of negotiating, are low, property rights are assigned, and individuals are allowed to negotiate.

**Command-and-Control Options:** Legislation and/or regulation that creates regulatory bodies that monitor the behavior of an industry to try and reduce externalities such as pollution.

**Common Resources:** A good that is nonexcludable and rival such as fish in the ocean.

**Cost/Benefit Analysis:** Benefit/Cost analysis weighs the benefits of a project to the costs of a project to see if a project should be undertaken.

**Divisible:** The production of the good or service can be divided among those who are consuming the good.

**Excludable:** Those who do not **pay** for the good or service, cannot consume it.

**Externality:** An external benefit or cost that is enjoyed or imposed on a third party other than the buyer or seller of the good.

**Free Rider:** Consuming the good without paying for it.

**Market Failure:** A situation when the market outcome differs from the outcome that society considers optimal.

**Moral Hazard:** A situation when the behavior of one changes after the contract is made.

**Negative Externality:** A cost is imposed on a third party not involved in the production or consumption of the good.

**Nondivisible:** A good cannot be divided up into separate parts.

**Nonexcludable:** No one has to pay to consume the good and service.

**Nonrival:** More than one person can enjoy the good. One person's consumption does not impact another person's consumption of the good.

**Pigouvian Subsidy:** A subsidy given to entice consumers (producers) to demand (supply) more of a good that creates a positive externality.

**Pigouvian Tax:** A tax imposed to limit production of a good that creates a negative externality.

**Positive Externality:** A benefit is imposed on a third party not involved in the production or consumption of the good.

**Private Goods:** These types of goods are rival, excludable, and divisible.

**Public Goods:** These types of goods are nonrival, nonexcludable, and nondivisible.

**Quasi-public Goods:** These types of goods are nonrival and excludable.

**Rival:** The consumption of the good or service by one prevents another from consuming the item.

**Tragedy of the Commons:** A situation where when a resource belongs to everyone, individuals account only for the private marginal benefits and costs and fail to account for the impact of their actions on others. This typically leads to a depletion of the resource.

## Objectives

### Section 1

1. Explain the behavior of the private market when positive and negative externalities are present and methods to correct these externalities.
2. Define externality and give examples of both negative and positive externalities.
3. Demonstrate graphically the private market outcome when externalities are present.
4. Identify the marginal social cost, external cost, marginal private cost, market equilibrium quantity, and market equilibrium price.
5. Identify the social optimal quantity, and social optimal price.
6. Discuss the methods of correcting externalities including the Coase Theorem, Command and control alternatives,



Pigouvian tax, and tradeable pollution permits.

7. Identify the consumer surplus, producer surplus, and the deadweight loss associated with both the market equilibrium output and the socially optimal output.
8. Demonstrate how the assignment of property rights to either party when transactions costs are low and the parties are allowed to negotiate will lead to the same outcome.
9. Explain why transaction costs can prevent the socially optimal outcome predicted by Coase.
10. Demonstrate how tradeable pollution permits can incentivize producers to produce the socially optimal level of output when a negative externality is present.
11. Explain how government policy with respect to externalities, public goods, and common resources can fail due to rent seeking and regulatory capture.
12. Explain how government policies can sometimes lead to unintended consequences because of the incentives they create.

## Section 2

1. Explain the nature of public good and how the social optimum quantities are determined.
2. Explain the differences between private goods, public goods, quasi-public goods, and common resources in terms of whether the goods are rival and excludable.
3. Compute the market demand for a public good and explain how it differs from a private good market determination.
4. Discuss the free-rider problem.

## Section 3:

1. Discuss the market failures that exist with asymmetric information.
2. Define moral hazard.
3. Explain why a bail out of financial institutions may create a moral hazard.
4. Define adverse selection.
5. Explain why insurance companies are concerned about adverse selection.
6. Discuss the methods that can be used to correct for asymmetric information.

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