Microeconomics with Ethics

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Chapter 25
Market Imperfections: Positive Externalities

Negative externality effects such as pollution are widely recognized as serious social and economic problems that deserve attention and correction whenever possible. Failure to correct for especially severe cases of pollution can evoke strong sentiments of injustice among the affected population.

Positive externalities represent the opposite effects where production or consumption activities have a positive spillover effect in the community. However, since these situations do not induce any unfortunate or unjustified losses, they also do not demand as much attention. Nevertheless these positive spillovers may be significant in some areas and are deserving of some attention. This is especially true to understand an important modern justification for government intervention into economic activity.

Recall from the introduction of externalities in Chapter 24 that some of the important positive spillover effects range from education and scientific research, to city architecture and private landscaping. It may also include new energy-producing technologies that do not rely on fossil fuels. The positive spillover from something like solar or wind power generators, for example, is the displacement of energy sources derived from fossil fuels thereby reducing the climate-change inducing release of carbon into the atmosphere. In this case, the positive spillover is the reduction in negative spillovers.

Positive externality effects can also be used to justify government industrial and technology policy programs. In the years after WWII, there was strong support around the world to promote heavy industry like steel and automobiles, electronics, such as radio, television, computers, and atomic energy production. It was suggested that promotion of these newer technologies would fuel economic growth and raise living standards for the entire population even for those not in the favored industries. More recently as science and technology has advanced, countries regularly promote internet technologies, biotechnology, nanotechnology, and alternative energy industries, to name just a few.

In this Chapter we will consider the effects of a positive externality effect in an otherwise perfectly competitive market. We'll first highlight the result that if the market is left free, producers will under-produce and consumers will under-consume relative to what is optimal. We'll then demonstrate how government intervention in the form of a subsidy can improve market efficiency.

We'll conclude the Chapter with a discussion of the well-known Coase Theorem which suggests that corrections for market imperfections might be obtainable via an alternative non-government process. This result is important to know about because it offers some insights into the ongoing debate between those who favor a free market and those who support government interventions. It also highlights continuing issues about imperfect information and the role of transactions costs in affecting economic outcomes.

25.1 Market Welfare with a Positive Externality

Learning Objectives

1. Learn to measure market welfare in the presence of a positive externality effect.

Consider the market for solar panels depicted in Figure 25.1. Assume that the market is perfectly competitive in that there are numerous suppliers of solar panels with market supply given by S and numerous consumers with market demand given by D. The intersection of supply and demand can be said to determine the private market price P_{pvt} and quantity Q_{pvt} which is what would arise in the market if we did not take account of the externality effect considered next.

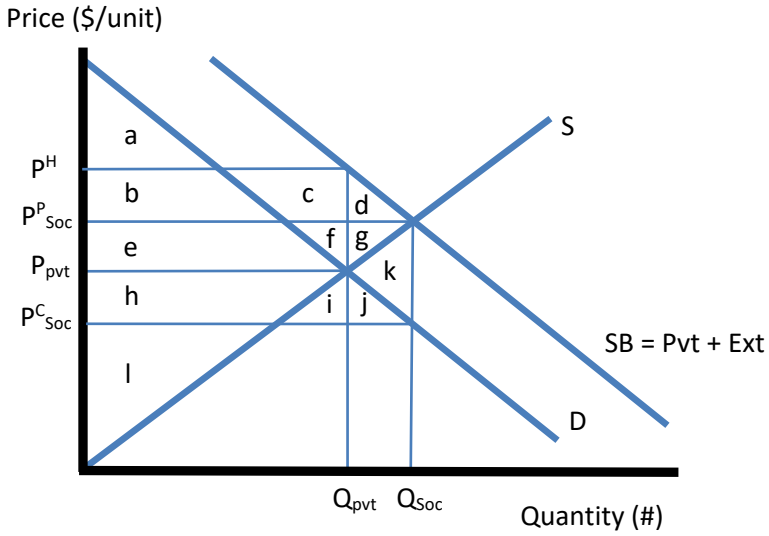
Let's suppose that the production of solar panels causes a reduction in the demand for electricity produced using fossil fuels like oil or coal. That in turn reduces carbon dioxide emissions which has a mitigating effect upon the causes of global climate change. In this way, we can envision that greater solar panel usage will provide a positive benefit to people everywhere in the world because some damaging effects from climate change will be averted.

These positive external benefits are unlikely to have any noticeable effect upon the producers or consumers of solar panels themselves, so it is reasonable to think these global effects will not affect their profit and utility maximizing decisions. However, news stories warning of the dangers of global climate change may cause the demand curve to shift outward as some consumers take personal responsibility. We'll imagine that the demand curve shown incorporates these consumer sentiments.

Suppose these positive effects, which we will call external benefits, can be accurately measured and denominated in dollar terms per solar panel installed in the market. For example, if the external costs were $0.03 per solar panel and the quantity of solar panels installed were 100 million, then the total external health costs would be $3 million. This makes the positive benefits variable because they increase as the total number of solar panels installed increases. This makes sense because we should expect total benefits to rise with decreases in carbon emissions.

In Figure 25.1, we plot a Social Benefit curve, SB, which is the vertical sum of the private benefits received by consumers in consumption, Pvt, (this is the market demand curve whose height reflects the willingness to pay for the product), and the external benefits, Ext. Thus, SB = Pvt + Ext.

Figure 25.1 Market Welfare with a Positive Externality



The Social Benefit curve is not a demand function. Instead it is a curve intended to represent the total benefits to the entire society of producing and consuming varying amounts of solar panels. We use this curve to determine the optimal level of solar panel installations. That quantity is found at the intersection of SB and the supply curve, because, at this quantity, Q_{Soc}, the marginal social benefit is equal to the marginal cost, which in this case is only the private costs represented in the supply curve.

Side Note: In this example, the external benefits occur only once the solar panels are installed thereby displacing energy produced using fossil fuels. These benefits do not arise from the production process. If the panels were produced, but not consumed, there would be no external benefits.

For some other processes, for example, consider research conducted by a private firm, knowledge that can spill over into other industries, it is the production process that generates the external benefit. Nevertheless, we can still represent the net external benefits by adding them to the demand function.

This outcome comes from a mathematical exercise in which we maximize total social welfare while incorporating simultaneously all of the benefits that arise in consumption and production and all of the positive external benefits that are caused to others from this market activity.

The problem with positive externalities is that the free market outcome will generate an output level of solar panels that is too low, namely $Q_{Pvt} < Q_{Soc}$. To see why, let's first use Figure 25.1 to determine total social welfare in the free market equilibrium and then show how intervention in the market can achieve the socially optimal outcome.

Market welfare in the free market equilibrium is the sum of consumer and producer surplus minus the negative health effects and is summarized in Table 25.1. The free market price and quantity is P_{Pvt} and Q_{Pvt}. Total consumer surplus is given by area (a + b + e). Producer surplus is given by area (h + l). The total external benefit is found as the product of the per panel

externality benefit and the quantity consumed in the market, Q_{Pvt}. The per panel benefit is the vertical distance between D and SB, which at Q_{Pvt} equals $P_H - P_{Pvt}$. That generates a total benefit of area (b + c + e + f). However to simplify the evaluation we will note that the per panel benefit at Q_{Soc} equals $P^P_{Soc} - P^C_{Soc}$. Thus, $P_H - P_{Pvt} = P^P_{Soc} - P^C_{Soc}$. Thus, the externality cost can also be written as area (e + f + h + i).

Market welfare equals the sum of these three effects. Notice that areas (e + f + g + i + j + k) cancel out yielding total market welfare of area + (a + b + m + n) – (h + l).

Table 25.1 Welfare in a Free Market Equilibrium with a Positive Externality
CS = a + b + e
PS = h + l
Externality Effect = (e + f + h + i)
MW = (a + b + e + h + l) + (e + f + h + i) = a + b + 2e + f + 2h + i + l

The sign for total market welfare is unambiguously positive because there are only positive values in the net welfare calculation. Because the market activity has positive external effects, this only adds to the total welfare accruing to producers and consumers trading in the market.

Key Takeaways

1. Welfare in a market with a positive externality is measured as the sum of consumer and producer surplus plus the positive effects to others caused by the externality.
2. Market welfare has only positive components and as such net welfare is always positive when a product has a positive externality effect.

25.2 The Optimal Subsidy to Correct for a Positive Externality

Learning Objectives

1. Learn to evaluate the welfare effects of an optimal subsidy in the presence of a positive externality.

Next we'll consider a method to induce the optimal level of production and consumption. That optimal level occurs at the quantity Q_{Soc}. The easiest method to achieve that output level is with a subsidy on either production or consumption. Recall, that in a competitive market it won't matter on who the tax is assessed because the effects will be the same. Drawing on the results from Chapter 17, a subsidy set equal to the difference between P^P_{Soc} and P^C_{Soc}, that is a subsidy, $S = P^P_{Soc} - P^C_{Soc}$ will increase the quantity produced and consumed to Q_{Soc}. The subsidy will raise the price received by producers to P^P_{Soc} and lower the price paid by consumers to P^C_{Soc}. Note that the subsidy is also equal to the size of the per panel externality effect since it was what caused the vertical shift establishing the social benefit curve.

Table 25.2

Welfare Effects of an Optimal Subsidy Correcting a Positive Externality

Surplus Levels after Subsidy	**Surplus Changes**
CS = a + b + e + h + i + j	ΔCS = + (h + i + j)
PS = e + f + g + h + l	ΔPS = + (e + f + g)
GR = - (e + f + g + h + i + j + k)	ΔGR = - (e + f + g + h + i + j + k)
Externality Effect = + (e + f + g + h + i + j + k)	ΔEE = + g + k + j
MW = (a + b + e + h + i + j) + (e + f + g + h + l) = a + b + 2e + f + g + 2h + i + j + l	ΔMW = + g + j = + k

In Table 25.2 we summarize the after subsidy surplus levels in the left-side column and the changes in surplus due to the subsidy in the right column. Keeping track of the effects is a bit cumbersome with so many areas, but the results narrow to a few important points.

First, note that since the optimal subsidy equals the per unit positive externality effect, government expenditures from the subsidy equals the positive externality effects, shown in the first column. That means that the taxpayers indirectly finance the full external benefits that accrue to others outside the solar panel industry. This is an indirect payment because the subsidies are paid directly to the firms which through their productions and sales creates an equal quantity of spillover benefits external to the industry itself.

Second, note that if we add up the surplus changes in the first three rows on the right, we will be considering only the effects of the subsidy, which generates a net effect of area – (k). These are the deadweight losses, or market inefficiencies, caused by any subsidy in a competitive market. However, the subsidy now has the secondary effect of increasing external benefits (by reducing carbon emissions) given by area g + k + j. The net effect is positive because the net external benefits from stimulating solar panel production is larger than the deadweight losses caused by the subsidy, leaving a net welfare benefit of area (g + j). Using the geometry of the rectangle g + j + k, it should be obvious that area (g + j) = area (k). This is unambiguously positive meaning

that an optimal subsidy applied to correct for the positive externality actually raises market welfare. In other words, the tax improves economic efficiency by correcting for, or improving upon, the positive externality.

Finally, the fact that the subsidy is optimal means that the net welfare effect, area k, is the largest obtainable with any size subsidy that might be applied. If the subsidy were set a little higher or lower, net welfare would remain positive, but the size of the welfare improvement would be slightly smaller than area k.

Key Takeaways

1. The optimal subsidy to correct for a positive externality is that subsidy which generates the optimal quantity that equalizes marginal cost with marginal social benefit.
2. The optimal subsidy that corrects for a positive externality redistributes income. Consumers and producers benefit, taxpayers lose to finance because they finance the subsidy payments, and the external beneficiaries are made even better-off.
3. Market welfare, or economic efficiency, improves when an optimal subsidy is set to correct for a positive externality.
4. An optimal subsidy to correct for a positive externality is an example of a welfare improving (efficiency improving) intervention by government.

25.3 Positive Externalities and Public Goods

Learning Objectives

1. Learn the similarities between positive externality effects and public goods
2. Learn some of the common examples of government interventions to promote beneficial economic outcomes

In Chapter 22, we introduced the first market imperfection that opened the door for beneficial government intervention in the economy, namely, the presence of public goods. Public goods are goods, or services, that have the features of non-excludability and non-rivalry in consumption. Recall that national defense is perhaps the most notable example of a public good.

Economic theory demonstrates that private firm provision of public goods, although possible, is unlikely to generate the socially optimal level of supply. Instead, private production will result in undersupply. The main reason is because of non-excludability.

When an army is raised to defend a territory from foreign invaders, every person residing within the defended territory receives the benefits from that protection. If private firms were established to provide such security services, these firms would have difficulty inducing the protected residents of the territory to pay for the benefits they receive because of the residents' inclination to free ride. Quite possibly only the wealthiest residents, those who have a lot to lose, would pay for such defense services, while poorer individuals would skirt their responsibility knowing that the protection of the wealthy will also protect them. However, because the less wealthy do not contribute, the level of defense will be less than is optimal for the community.

This outcome is similar to the case of positive externalities. If private defense firms do provide some level of protection using contributions from wealthier residents, then this protection spills over to the free-riding residents in the community, providing positive benefits for them as well. It is the non-excludability aspect of public goods that creates this effect.

In this Chapter, using the example of solar panels. we demonstrated that the free market outcome would under-produce a good or service, in the presence of positive externality effects. We also showed that intervention with a government subsidy, can increase private production to the optimal level and raise economic efficiency.

This is a similar outcome to public goods. Because private production of public goods, like national defense, is likely to be insufficient, government provision funded by taxation could raise supply to a more economically efficient outcome. However, government provision of public goods generally goes one step further because the government takes over production and acts as a monopoly supplier.

The reason to monopolize the production of public goods arises largely due to the non-rivalry feature. For example, solar panel consumption is rival. Once a consumer installs the panel, the electricity provided is used by only that one consumer. Other firms can sell rival solar panels to other customers and thus competition between many producers can occur. In the case of a public good, like national defense, suppose one firm supplies an army of soldiers at the country's border to protect citizens from invasion. That service benefits every resident within the country to the same degree. One person's sense of protection does not diminish the another person's. If a rival firm tries to compete and provides a second army to protect the border, then their services are also distributed across all residents thereby complicating which consumer pays which firm for its services. The non-rivalry feature therefore greatly complicates the collection of revenue for services provided by competing firms and thus it is more efficient to provide with a government monopoly.

Government Provision of Education and Health Care

It is generally accepted in many countries around the world that the main role of government is to provide public goods. However, as we can see in the discussion above, different types of goods have different degrees of public good features. The common feature of solar panels and national defense is the positive externality effect that each of them provide for others in a community. However, the two products differ in the degree of non-excludability and non-rivalry they each display. These differences can justify a difference in the type of government intervention used to correct the market inefficiencies. The case was made that government monopolization of national defense provision makes sense because its public goods characteristics are strong, whereas for solar panels it makes sense to offer subsidies to private firms or consumers, because its public goods features are much weaker. For other products, or other sectors, there remains much disagreement concerning the appropriate role of government.

Education

Consider the provision of education services, for example, basic literacy in language and math, to a population in a country. It is widely accepted that these skills are critically important for anyone to participate fully in modern economic and social life. It should also be clear that economic systems will function more effectively and benefit all of the population the more that people have these skills. Early industrializing countries who experienced rapidly rising standards of living in the 18th and 19th centuries, also were among the first countries to achieve near universal literacy. In 1870, nearly 80% of the populations of the US and the UK were literate, while at the same time only 20% of the world's population was literate.

Basic education is clearly important in the modern world and this leads some people to claim that it is a fundamental human right whose provision should be provided at low or no cost by government. This position is often justified by noting the public good characteristics of education, namely the important spillover effects of rising living standards to everyone in the country.

However, critics of publicly provided education, while not disputing the positive externality effects of basic education, may argue that education does not have strong non-excludability or non-rivalry features. This position considers education to be more like solar panel production, which may need to be subsidized to assure universal provision, but does not need to be publicly provided by government. The problem with government provision is that it creates a monopoly and its associated inefficiencies. Most notably, a monopoly eliminates the benefits that arise among competing producers of educational services who would be inspired to continually differentiate and innovate to improve the product quality.

Health Care

A similar policy discussion arises in the area of health care. A healthy population is clearly beneficial to the productive capacity of a country. One can readily convince most people that here are important positive spillover effects especially for routine care that can identify potential health problems early and provide preventative and curative treatments. A healthy population works more, consumes more, and is happier.

For these reasons, basic health care is also considered by many to be a fundamental human right and there is strong support for government provision. Indeed, many countries have established national health care plans to guarantee access to the entire population. These health care systems vary widely from complete public provision to government subsidization of health insurance coupled with a network of private providers. For some countries with public health systems, individuals can also purchase private insurance plans and engage directly with private providers.

In terms of our discussion here, that means that health care is treated by some countries as a pure public good with monopoly, or near monopoly, government provision of services and by other countries more like solar panels via subsidization to encourage universal coverage, but with a private network of health care providers.

The question of which system is best is difficult determine because of the inherent complexity and it is not the intention to provide an answer here. The intention instead is to explain the basis for the different policy approaches to health care and educational service provision. There are valid arguments on both sides of the policy debate and there are also tradeoffs to consider. There are strong arguments both for and against the suggested alternatives. Government provision of health care has arguments for and against it, as does private provision so there is no obvious correct answer.

Key Takeaways

1. The non-excludability characteristic of public goods implies there is a positive externality effect if a public good is privately provided.
2. Subsidization to encourage additional production and government provision of the product are two different ways to realize the optimal provision of goods and services with positive externality effects.
3. There are policy disagreements because there are important tradeoffs to consider in certain critical services like education and health care.

25.4 The Coase Theorem

Learning Objectives

1. Learn how the Coase theorem can be applied to find a solution to externality problems

What is commonly known and referred to as the Coase Theorem is not so much a true theorem as a unique way to think about the solution to problems like externality effects. Ronald Coase was the 1991 Nobel prize winner in economics. Among his key works was a paper highlighting the role of transactions costs in motivating the formation of firms and his work on the problem of social costs (externality effects) which is what came to be known as the Coase theorem.

The Coase theorem starts out imaging an externality problem such as pollution caused by an industry. As we discussed in Chapter 24, pollution causes external social costs that would not be considered by a profit maximizing business resulting in excess supply of the product relative to what is best from a social perspective. Coase noted that one of the problems with this type of social cost is the incomplete assignment of property rights. He also noted that no one formally owns the atmosphere in which the polluter pollutes, but by assigning these property rights to someone it would open up the potential for negotiated settlements of social cost problems. That bargaining does not automatically arise in many real world contexts occurs in part because property rights remain unassigned and also because of impediments related to transactions costs. We can illustrate these issues with a simple externality example.

Consider a chemical firm that causes air pollution affecting the local community. In Table 25.3 we present the payoffs to these two groups (firm and community) under two different scenarios. In the first case we imagine that the firm pollutes freely in which case we assume the firm makes a modest $100 in profit but the community loses $50 (- 50) in well-being because of the damages caused by the pollution. The net impact in this scenario is a net welfare gain of $50 overall. This means we are assuming here that while the pollution causes damages, the benefits

that accrue because of production and sales of the product outweigh those damages thereby causing the net positive effect on economic efficiency.

Table 25.3 Payoffs in Two Pollution Scenarios

	Pollute	Don't Pollute
Firm Profit ($)	+ 100	+ 75
Community Welfare ($)	- 50	0
Total	+ 50	+ 75

In the second case we assume that the chemical firm could incur a cost to install scrubbers that will completely clean its emissions thereby having no noticeable negative effect upon the local community. The cost of the scrubbers however is assumed to be $25 which means that the firm profit will fall to $75 ($100 – $25). However, because the community welfare is unaffected by the chemical firm activity, its welfare reverts to zero. The net effect is the sum of the two which equals $75 in the case of no pollution. The best outcome for society overall is for the firm to install the scrubbers and not pollute.

To apply the Coase theorem to this problem we first assume that one of the parties in the model (firm or community) is given the property rights over the use of the atmosphere. Traditionally, with no ownership assigned, anyone is free to use the atmosphere as they like. If you want to use it to breathe, go ahead. If you want to spew noxious chemicals into it, go ahead. When conceived of as a resource, the atmosphere is a common resource and is available for everyone to use as they like. The problem arises because one party's use as a dumping ground impinges on the other parties' ability to breathe fresh air.

Suppose we were to assign the property right of the atmosphere to the firm. Having this right means the firm could use the air however it likes, including spewing noxious chemicals into it, and can also exclude others from using it as they might like. Under this assumption, the profit maximizing firm would surely choose to pollute because that yields the greatest profit.

The second step in applying the Coase theorem is to imagine that the two parties can negotiate about the result. We can consider whether some sort of bargain could be reached that would enable the social optimum to be achieved. In this case, a deal could conceivably be reached that would benefit both parties and achieve the social optimum.

The solution involves a monetary transfer to be made between the community and the firm. Suppose the community offers the firm $30 to agree to install the scrubbers and prevent pollution. The money would have to be collected from contributions by all the community members. This might be difficult given how difficult it can be to avoid free riding when the community groups is large, but, for simplicity we'll assume it can be done without difficulty.

Table 25.4 demonstrates the effects of the transfer. The deal requires the firm to install the scrubbers and not pollute to receive a transfer of $30 from the community. That will cause total firm profit to rise to $105 (= 75 + 30). The community will receive relief from the pollution thereby gaining $50 in welfare (0 – 50 = +50) but will have to transfer $30 to the firm yielding a net return of - $30. Finally, social welfare will rise from 50 units to 75 units because of the change.

Table 25.4 Effects of a Community to Firm Transfer

	Pollute	Don't Pollute	Don't Pollute w/ transfer
Firm Profit ($)	100	75	75 + 30 = 105
Community Welfare ($)	-50	0	0 – 30 = -30
Total	50	75	105 – 30 = 75

Many observers may comment that this looks like a raw deal for the community. Not only do they continue to suffer a loss after the deal, but they essentially are required to pay the firm to install the scrubbers and top it off with an extra $5 to induce them to go along with the deal. If this seems unfair, the Coase response would be that what you consider unfair is really that the firm has the property right in the atmosphere. We offered no justification for that in the example, we just investigated what could happen if the firm has the property right.

So let's consider the alternative. Suppose the community has the property right in the atmosphere. Alternatively we could claim the government has the property right and manages the resource on behalf of the community. With community ownership of the atmosphere, they have the right to prevent others from using it freely if they so desire, and in this case they would certainly desire the firm to not pollute. This would be the default solution.

The firm, if it wishes to pollute will have to seek permission from the community to do so. However, given these values, the firm would have no ability to transfer money to the community in a way that raises the well-being of both parties. For example, because the firm will lose $25 because it must install the scrubbers relative to freely polluting, it can transfer up to $25, let's assume $24 and still come out ahead. However, if the community were given $24 to accept firm pollution, the community would lose $50 because of the pollution. The net effect for the community is minus $26 (+24 – 50 = - $26). The community would not accept such an offer because it does not raise its welfare.

The conclusion is that no offer is feasible and thus the firm would not be allowed to pollute. If you feel this is a fairer solution, then according to Coase, you believe it is more fair that the common resource (the atmosphere) be allocated to the community, or government, and that the firm is infringing on the rights of others.

One other feature of the Coase approach can be seen with a new example using different values. Consider Table 25.5 with different payoff values. The one change from the example above is a much lower value for the community welfare loss in the case of pollution. Here, the community only loses $10 rather than $50 because of pollution. In other words, while the pollution still causes community losses, the losses are not as severe as before.

Table 25.5 Payoffs in Two Pollution Scenarios - Case 2

	Pollute	Don't Pollute
Firm Profit ($)	+ 100	+ 75
Community Welfare ($)	- 10	0
Total	+ 90	+ 75

In this case were the firm to be allocated the property rights to the atmosphere, the firm would still find it advantageous to pollute, but the community would not be able to collect sufficient

contributions to change the firms behavior. The firm would need more than $25 to induce it to install the scrubbers and stop polluting, but the community would only be willing to pay up to $10. Thus, no deal would be made and the firm would pollute.

Suppose instead that the community (or government) had the property right in the atmosphere. Of course the community will prefer the firm not pollute and would restrict it from operating without installing scrubbers. However, in this case the firm could approach the community with an offer. Recognizing that the cost of pollution is only $10, the firm could offer to pay the community, say $15, if it will allow it to operate without scrubbers. The community would be better off by $5 if it took the deal from the firm. The firm would be better off too with the final outcomes after the transfer displayed in Table 25.6.

Table 25.6 Effects of a Firm to Community Transfer

	Pollute	Don't Pollute	Pollute w/ transfer
Firm Profit ($)	100	75	100 - 15 = 85
Community Welfare ($)	-10	0	15 – 10 = +5
Total	90	75	85 + 5 = 90

Notice something important. In the first case, regardless of who has the property right, when bargaining is possible, the social welfare maximum is achieved. In the second case too, regardless of who has the property right, when bargaining is possible, the social welfare maximum is achieved. However, who has the property right does affect the distribution of welfare in the end. In both cases, the party that has the property right is better-off than if they didn't have the right. For example, in the first case when the firm has the property right, it receives $105 (community gets -$30) but when it doesn't, it receives $75 (community get $0). This difference will make property ownership contentious. As with intellectual property, firms would prefer to have monopoly property rights in their production inputs since this will be more profitable for them. However, allocating rights to firms, especially monopoly rights is likely to skew the distribution of income against consumers and the community.

These results suggest that bargaining between parties affected by externalities represents a non-governmental method of reaching a socially optimal solution. Two critical things are needed for this to work. First, property rights, however allocated, must be enforceable and second bargaining must be possible.

Enforceability of property rights requires an effective judicial system. Parties must have the ability to sue each other if rights are infringed upon. For example, if the community owns the atmosphere and as in the first case, if it is socially optimal to pollute, then the community must be able to force the firm to cease polluting if it attempts to do so. The likelihood of government penalties if the firms infringe upon the property of the community must be enough to induce firm compliance.

Second, the parties must be able to bargain for a deal when it is warranted. This turns out to be a relatively difficult thing to do sometimes and involves the issue of transactions costs. Here transactions cost refers to any explicit costs, such as hiring a legal team to conduct bargaining negotiations, and implicit costs such as inconveniences or organizational difficulties that arise when trying to bargain. Here, imagine only the difficulty in the first case of trying to raise money from the large community to make the money transfer to the firm. That difficulty is a

transactions cost, albeit one that may be reducible with government stepping in to negotiate on behalf of the community.

Whether bargaining solutions such as these arise, depend largely on the ability to keep transactions costs low. In some instances, polluting firms, recognizing the damage their pollution causes to the community, may propose community transfers to offset that cost. They may contribute to build community parks and fund health service centers to provide greater assistance for those who suffer from the pollution damage.

Sometimes these transfers flow in the opposite direction. Communities are often eager to attract certain industries to their area because their presence has positive external effects on the community. For example, a large auto assembly plant might provide thousands of jobs and increase tax revenues for a community. That community my offer initial tax breaks, or infrastructure improvements to induce the firm to locate their plant in the community.

These are examples of bargaining outcome that represent attempts to solve externality issues. Sometimes the firms pay the community to compensate for some of the damages they inflict, and other times the government pays the firms to induce the positive externality effects that they sometimes have. Many other times the transactions costs are simply too great and bargaining does not work. Ronald Coase himself once said that he viewed the Coase Theorem as a stepping stone on the way to an economy with transactions costs.

This point was illustrated back in Chapter 3 when we discussed the role of intermediary firms. These firms exist entirely because they facilitate transactions between other firms. For example, Amazon makes it possible for small businesses and individuals to advertise their product to a vast audience and to facilitate trade that would not have occurred otherwise. Transactions costs is the general term for the difficulties individuals and firms have finding each other on their own. The intermediary exists because it has found a way to reduce transactions costs for other merchants.

Douglass North, the Nobel prize winner in economics in 1993, focused his research on the role of institutions in the economy. He argued that institutions facilitate the reduction in transactions costs and thereby are a positive force in an economy. Several examples of this have already been discussed. For example religions teach their followers not to deceive each other and not to steal from each other. A merchant selling in a religious community will need to take fewer precautions and therefore has lower transactions costs than if selling in a non-religious community. Similarly, the institution of the government judicial system assures a lender that if a borrower does not repay, they can be sued in court for recovery of damages. The institution of a reliable judiciary therefore encourages more transactions by reducing transactions costs for the banks.

Key Takeaways

1. If property rights over all resources are specified and if transactions costs are low or zero, then bargaining agreements can lead to the socially optimal outcome.
2. The socially optimal outcome can be realized with bargaining regardless of who owns the otherwise common resource
3. The distribution of incomes varies with who owns the common resource.
4. It is always more favorable to have the ownerships rights of the otherwise common resource.
5. High transactions costs make it less likely for a socially optimal solution to arise