Microeconomics with Ethics

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Chapter 22
Market Imperfections: Public Goods

In this Chapter we begin to introduce some complexities of the market that open the door for efficiency improving government intervention. In the previous Chapters 17-21 covering government policy interventions we demonstrated invariably that when markets are perfectly competitive government intervention reduces economic efficiency. Whether a government tax, or subsidy, or price ceiling, or price floor, or price support, when government intervenes, it makes things worse. The best role for government if markets are perfectly competitive, is to step back and do nothing. Laissez-faire, a French term meaning leave it alone, is a commonly used term in economics to describe a government that does nothing to affect market outcomes. Indeed, many who favor free markets in general will also claim to support a laissez-faire policy.

However, as discussed in the previous Chapter 21, governments frequently do implement all of the policies just mentioned, begging the question of why they would do such a thing if it only makes the economy worse. One possible answer to that question, among others, is that the model of perfect competition is too simplistic and there are other features of the real world which, once included, makes government policies worthwhile. That is the topic of the next four Chapters 22-25.

Side Note: The other two reasons given for why government may choose welfare reducing policies, first, that no one listens to economists, and second, that government does not seek to maximize economic efficiency, are not mutually exclusive answers. All three of these are likely to play a role affecting government policy choices simultaneously.

22.1 Market Imperfections

Learning Objectives

1. Learn about different types of market imperfections

The standard model in economics results in the derivation of supply and demand curves. Considerable analysis of economic situations is done using supply and demand curves to represent the workings of a market. However, as we have regularly emphasized, this standard economic model contains a large set of simplifying assumptions which are collectively known as perfect competition. As a reminder, the most important assumptions of perfect competition are that there are many consumers and producers of a homogenous product. Each consumer is assumed to maximize utility while every firm attempts to maximize utility. The sizeable number of identical firms means that every firm is too small to affect the market price and thus takes the price as given setting price equal to marginal cost to determine its output level. In the long-run free entry and exit of firms in response to profits assures that the market price equals minimum average cost and economic profit equals zero. In addition we must assume that consumers and

firms have perfect information to make decision, there are no deceptive practices, coercion or theft.

Everyone knows, or should recognize, that these assumptions are too strict to be accurate descriptions of all aspects of markets in the real world. One might infer from this statement that the perfect competition is wrong and one might be tempted to throw it out in favor of a more complete and accurate model. However, such a severe response is not necessary or useful.

Recall, from Chapter 2 that by definition all models are simplifications of the real world. These simplifications are made to make the model tractable, or solvable. If too many realistic processes are included in a model, it typically becomes impossible to comprehend and solve, in which case we cannot say anything definite. Even the perfect competition model with all its simplifications, especially when it was expanded to describe multiple interconnected markets, was extremely difficult to solve.

A solution to this problem of model oversimplification was found by using the perfect competition model as a base, with its solutions well understood, and then adjusting it by relaxing assumptions within the model. This technique not only allows one to incorporate more realistic features from the real world, but it also enables one to see more clearly the role that each of the assumptions plays in determining the efficiency of the market outcome.

Whenever a perfect competition model is adjusted by relaxing one, or more, of its standard assumptions, we refer to it as a model with market imperfections. In other words, *market imperfections* represent any deviation away from the standard assumptions of perfect competition. Sometimes economists use the term *market failures* to describe these same types of models. Economists will also sometimes say that they are *relaxing an assumption* when they assume something slightly different than in the standard model.

As we will see, in general, when some perfect competition assumptions are relaxed, market efficiency is reduced. In others words, the market will not generate the same level of overall surplus, or well-being, as was generated when the standard assumptions were fulfilled. It is in this way that the market fails. The market outcome that arises fails to achieve its full potential.

In some ways though, the term market failure seems to exaggerate the consequences. It is not true that the markets crash and burn when imperfections exist, instead the outcomes are simply not quite as good. For that reason, we'll more often use the more benign term, market imperfections, to describe these situations, rather than market failure.

Also, sometimes market outcomes fail to realize their full efficiency potential because some government action is taken that causes the inefficiency. In this case, the action distorts the market outcome in a way similar to market failure. In other words, any market action, usually

government policy, that causes economic inefficiencies is known as a *market distortion*. Thus, taxes, subsidies, price ceilings, etc., are often said to cause market distortions.

Examples of Market Imperfections

There are numerous examples of market imperfections, some of which we have already considered earlier in this book. Below we'll include a partial list.

1) Unethical Behavior

In Chapter 4, we considered what would happen if market participants chose not to cooperate with each other in mutually voluntary exchange, but instead sought to satisfy their desires via theft. One potential implication of this market imperfection is that traders may refrain from going to the market for fear of losing their products. They might instead choose to become more self-sufficient thereby erasing some of the mutual gains from specialization and trade. A second implication is that individuals will devote resources to establish protections from theft such as building walls, or safes, or by hiring security forces. These goods and services are a waste relative to the pure market outcome in which one didn't need to worry about theft. As such, market welfare is diminished because of these protections, compared to a world without theft.

Similarly, in Chapter 4, we relaxed the assumption of perfect information and discussed the possibility of using deception to secure a more favorable terms of trade and to sell inferior products to one's unsuspecting customers. A potential effect of this change would also be the reduction of market participation as wary consumers avoid trading for fear of repeated losses from deceitful businesses.

In both of these cases, government can step in and pass laws prohibiting theft, fraud, and violent coercion as well as providing a judicial mechanism to adjudicate and process those found guilty of these offenses. This intervention takes money and resources that would have to be collected from taxpayers. Relative to a market in which theft, fraud, and violence is widespread, a market that is regulated by effective government regulations can improve overall market efficiency. However, relative to a market in which these crimes are never committed, market efficiency is likely to be lower.

This provides the first of many examples of the following nature. When one begins with a perfectly competitive market and add an imperfection, in this example theft or fraud, the market outcome worsens. But in the presence of these imperfections, it is possible for the government to intervene with appropriate policies or regulations to improve the outcome. Thus, laissez-faire may not be the best policy to follow in these circumstances. Let's consider some other examples already explored previously.

2) Monopoly/Oligopoly Markets

In Chapters 10 and 11, we explored profit maximizing firm behavior in the case of a single monopoly firm and in the case of a small number of firms (oligopoly) competing to sell a product in a market. In both these cases we did not have a market with many identical firms each of which were too small to affect the market price. In other words, these models were not perfect competition models. Instead they were models that incorporated a type of market imperfection. It is worth pointing out that in these monopoly and oligopoly models, we assumed that perfect information prevailed and that there was no theft or coercion. Those assumptions

of perfect competition were maintained while instead we relaxed the assumption of numerous firms competing with each other.

Using those models, we demonstrated that both monopoly and oligopoly market outcomes would generate a level of market efficiency inferior to that of a perfectly competitive market. In other words, a lack of full (or perfect) competition reduces overall welfare accruing to market participants. Monopolies and oligopolies are worse for the economy than perfect competition.

We also discussed in Chapter 16, the many methods businesses use to try to prevent competition in their market and establish monopoly power. These processes work both to reduce market efficiency and to increase inequality in society. Sometimes these activities are discouraged or prevented by government policies, as when antitrust laws are implemented and enforced, or when free trade agreements are ratified. This means government policies can be used to mitigate the negative effects of monopoly power and improve the market outcome.

However, we also provided examples where government policies served to enhance the monopoly power of businesses and reduced market inefficiencies. Examples included intellectual property rights, professional licensing agreements, and trade protectionism, among others.

Thus, government intervention can clearly cut both ways. It could be used as a tool to mitigate the negative effects caused by market imperfections, or, it could be used as a tool to redistribute income away from the majority and into the hands of a wealthy minority. In practice, it seems clear that government does both of these simultaneously.

Which direction the government leans, that is whether towards efficiency improving or efficiency diminishing interventions, will depend on whether government is mostly inspired to pursue the national interests or whether it is mostly construed to promote the special interests. How a country solves, or doesn't solve, the political economy problems discussed in Chapter 21, will greatly influence the overall effectiveness of government.

3) Monopsony Markets

In Chapter 20, we discussed the effects of a minimum wage law in the labor market and showed that minimum wages would cause unemployment and market inefficiencies when implemented in a perfectly competitive low-skilled labor market. However, we also demonstrated that if the firms in the labor market were able to exercise monopsony power, that is, acting in unison as if they were the only employer of low-skilled workers, then they could exploit the workers by paying them a wage lower than the competitive level. In this case, the presence of monopsony power represents an market imperfection because it deviates from the standard assumptions of perfect competition. The market outcome when firms have monopsony power reveal that firms would make higher profits, workers would suffer losses, and market efficiency would be reduced. However if the government intervenes in this situation with an appropriate minimum wage law, it will improve overall market efficiency. Thus once again government intervention

in the presence of a market imperfection can improve the market relative to the free market, or laissez-faire outcome.

4) Public Goods

In the next section of this Chapter, we will illustrate the problems associated with free market provision of products known as public goods. These are goods, or services, that have the unique characteristics of being non-excludable and non-rival in consumption. Examples include products like coastal lighthouses, roads and bridges, and the national defense.

Because of these special characteristics, which are not a part of the assumptions in perfect competition, public goods represent another type of market imperfection. As such private market provision will tend to be inefficiency and it is possible that an appropriate government intervention can raise overall economic efficiency and welfare.

5) Common Resources

In Chapter 23 , we will illustrate the problems associated with products known as common resources. These are goods, or services, that have the unique characteristics of being non-excludable and rival in consumption. Examples include products like open pasture cattle raising, ocean fisheries, and outer space.

Because of their special characteristics, which are not a part of the assumptions in perfect competition, common resources represent another type of market imperfection. As such private market provision will tend to cause inefficiencies and it is possible that an appropriate government intervention can raise overall economic efficiency and welfare.

6) Externalities

In Chapter 24 and 25, we'll consider two additional important market imperfections, the case of externality effects. These are situations in which either production or consumption activities spillover and have effects on other people external to the markets themselves. The external effects can either have a negative impact on others (negative externalities), or a positive impact on others (positive externalities). Common examples of negative externalities include air and water pollution, Examples of positive externalities include pure scientific research and general education. Since products with these features are not explicitly mentioned in perfect competition models, it means that it is assumed they are not present.

When externality effects are included in an otherwise perfectly competitive model, market welfare under laissez-faire is diminished compared to the situation when these imperfections were not present. As we will demonstrate later, government can play a role by implementing appropriate regulatory policies that will enhance overall market efficiency, or welfare.

7) Other Examples

This list above includes a few of the most prominent market imperfections worthy of consideration. Although we did discuss the imperfection of imperfect information above in discussing the potential for product deception, imperfect information arises in a variety of other ways. One other example given in Chapter 16 was the case of trade secrets. When firms make process innovations that reduce their own costs, but keep that information secret from other

firms, then economic efficiency will not be enhanced as much as in the case of perfect information. Standard government intervention in this situation has involved the establishment of trade secret protections and punishments against violators. This is an example where government sides with businesses helping to preserve their monopoly power while simultaneously reducing overall economic efficiency. There are many other examples that involve aspects of imperfect information that are beyond the scope of this course.

Also sometimes countries are open to international trade and through their trade policies can affect the international prices that prevail. In international trade theory we call such a country a *large country*. Large countries open to trade represents another type of market imperfection.

As mentioned in Chapter 12, the conditions of perfect competition are rarely, if ever, satisfied in the real world. For some observers that inspires calls to throw out this stylized model and to develop models that are more realistic. There are a few problems with this approach.

First, the perfect competition model is extremely useful as a reference. Economic efficiency is best realized under the assumptions of perfect competition and even though this can never be realistically realized, the model describes what it would take to achieve this kind of perfection. The economist Harold Demsetz once fittingly described a perfectly competitive market as economic nirvana, suggesting that perfect competition is an merely an economic ideal, that is virtually impossible to achieve.

Secondly, a standard technique in economics has been to begin with a perfectly competitive model, whose characteristics are widely understood, and then introduce, one, or at most several, types of market imperfections. This keeps the model simple enough to be tractable and enables one to better see how the imperfections affect the outcomes. In general, a substantial amount of recent economic analysis involves models that incorporate some type, or several types, of market imperfection. Today, models with imperfect competition are more standard than pure perfectly competitive models. It is simply not the case that these issues have not been addressed.

Finally, a model that is more realistic, by including many of the known market imperfections simultaneously, is not a very useful construct. With too many complications included, the model may become too difficult to work with or to make sense of the results. Economists have some experience constructing such models at both the micro-level and the macro level. Suffice to say here that while these models are useful in illustrating the complexities of a more realistic system, they are also very difficult to work with and to understand the outcomes. It is more practical to construct simpler, and yes, less realistic models to use as guides to understand some of the most important cause and effect relationships, always remembering that models are not intended to be complete representations of the real world.

Key Takeaways

1. Market imperfections (a.k.a. market failures) are any deviations away from the assumptions of perfect competition.
2. Examples of market imperfections covered earlier in the course include unethical behavior, monopoly/oligopoly markets, the monopsonistic labor market and the political economy collective choice problems.
3. Additional examples of market imperfections covered in this chapter and later include public goods, common resources, and externality effects.

22.2 Public Goods

Learning Objectives

1. Learn how two features of consumption, non-excludability and non-rivalry, are the defining characteristics of a public good or service.
2. Identify several notable public goods.

Public goods are characterized as having two main features that make them distinct from private products like bread, milk and coffee. Public goods are non-excludable and non-rival in consumption. In contrast, private goods are both excludable and rival. We'll use the example of roads to explain these features and then provide other common examples later.

We will describe roads as public "goods" below, but in many cases the products are better labeled "services" rather than goods. When a road is used it is not consumed, or used up, by the user as a good often is. Instead the road provides a service to the user, enabling them to move from one place to another with an appropriate vehicle.

Non-Excludability

First, we should highlight the difference between the terms non-excludable and non-excluded. Non-excludable is a term that would be used for a pure public good because there is no ability to exclude others from using the good or service. In contrast, there are some goods or services in which it possible to exclude people from using it, but it also possible to set it up so that people are not excluded. Roads fit this latter example of normally being non-excluded in consumption.

For example, a public highway is set up by government so that any individual with an appropriate vehicle is allowed free access. Users are *not excluded* from enjoying its benefits. In contrast, a toll road is set up with barriers to entry (toll plazas) where a payment is required to use the road. Toll road consumption is excluded. Thus, roads are not a pure public good because they are not non-exclud*able*; instead consumption is sometimes excluded and sometimes not excluded.

Non-Rivalry

Rivalry also has a pure form and many impure forms. A product is purely rival when ones persons use of it makes it impossible for another person to use it simultaneously. If I drink a carton of milk, you cannot also drink the same carton. Thus, milk is purely rival in consumption, my use of it prevents your use of it.

In the case of roads, rivalry depends on circumstances. An open highway on a weekend morning is considered non-rival because many users can use the same road at the same time to reach their destination. Naturally, vehicles will enter the road at different points and at different times, so that all vehicles can travel at the speed limit together on the same road. That some road becomes rival, to a degree, when there is congestion. When too many vehicles try to use the highway at the same time, vehicles cannot travel at the speed limit and travel time is

reduced. When travel time is only slightly lower, there is a small degree of rivalry. When traffic comes to a standstill, rivalry is total.

Consider several highway scenarios. An uncongested freeway, or neighborhood street is both non-excluded and non-rival, hence we consider it a public good. In contrast, a congested toll road is both excluded, and rival, making it most like a private good.

Provision of Public Goods

Suppose a society decides that free passage along highways is a natural right of all citizens. One could argue that every person, should be allowed to freely move around a community on roads and other thoroughfares and between towns and cities. By making this a right, the community has decided that roads should be non-excluded (even though they are technically excludable). The economic question one would then ask is how best to provide for these public services. The typical solution is that governments should construct and maintain the roads and make them freely available to its citizens. The reason government provision is usually chosen is because it is very difficult for private firms, competing with each other, to provide an adequate quantity of public goods without infringing on the rights of its citizens. To be profitable, private firms would have to charge fees for road usage which would automatically infringe upon these established citizen rights. If we relaxed the rights requirement, though, separate private firms might construct toll roads and compete with each other, but the problem is that they would most likely undersupply the service relative to what is best for society overall. In economic terminology, private provision of road services would be economically inefficient. We'll provide a more detailed explanation below, but first consider several other examples of public goods.

Examples of Public Goods

Lighthouse

One of the classic examples of a public good is a lighthouse. A lighthouse provides services to ships passing near a rocky coast, warning them to keep their distance from the light for safety. A lighthouse is non-excludable because it is impossible to provide the light only to those ships who have paid the service fee to the lighthouse. Instead, the light warns all ships passing by. The lighthouse is non-rival because several ships passing nearby can be warned simultaneously.

National Defense

Perhaps the most important public good is national defense or national security. A country's defense against attack by enemies can take many forms including building barriers, such as fences or walls, to the establishment of an army of soldiers, supplied with modern weapons, whose job is to protect and defend the citizens. National defense is really a public service which is mostly non-rival because once the security measures are put into place, every citizen simultaneously enjoys the benefits of safety and security from external threats. The defense services are also mostly non-excludable because it is difficult to provide protection to some residents but withhold it from others.

However, it is not impossible to separate security services between different residents. For example, it is plausible to provide some towns within the country with protective services while leaving others out. Alternatively, consider the internal security that a local police force provides to a community. This force is intended to protect the residents from theft, violence and other

crimes perpetrated by members of the community itself. These protective services could be provided to only paying members of a town and excluded to others who do not pay. Also, in cities like Washington DC, there are many public security services that overlap in the same jurisdiction such as the Capitol police, the Parks police, the secret service, the university police, and the metropolitan or city police. Each division handles a different community and arrangements have been made to assign responsibility when there is overlap. To the extent that some members in a community are excluded from using certain security services, these protection services are not pure public goods (services).

Security services are most like a private product when they are used to protect a relatively small space such as a factory of office building. For example, many companies hire a security firm to prevent theft and provide safety for its workers. Many separate security firms can compete against each other in providing these local services to many different company customers. Once a security firm is hired it only protects the people within the company property and excludes everyone else. Thus, this service is no longer a pure public good.

The point of these examples is to illustrate that public good provision is complicated by the fact that no good or service is purely public. Many have features that make them close to pure public goods while others can be made to be public goods with free provision (as with roads).

Judicial System

A judicial system is composed of the police, the courts and the corrections system. The police are there to enforce the laws by detaining individuals suspected of legal violations. The courts are there to provide fair judgements about individual guilt or innocence. And the corrections system incarcerates individuals found guilty of crimes thereby providing a disincentive to commit crimes.

Generally, judicial services are provided by governments as a public good. The benefits include the safety and security that all citizens can feel simultaneously with a reduction in violence, theft and deception that an efficient judicial system can provide. The judicial system also offers the ability to resolve contract disputes made between market participants using a publicly available adjudication service.

The provision of judicial services can be privatized, as when multinational businesses arrange for a private independent arbitrator to be used to settle business disputes so as to avoid having to rely on unreliable foreign courts. However, complete privatization of judicial services would undermine the principle of “equal justice under the law” as less wealthy citizens would be

unable to access private services. Thus, it is generally accepted that judicial services be provided as a right to all citizens and therefore as a public good.

Key Takeaways

1. Public goods and services are non-excludable and non-rival in consumption.
2. Non-excludability means that one cannot prevent a person from consuming the good or service once produced
3. Non-rivalry means that one person can use the good or service simultaneously with another person
4. Perfect competition assumes goods are private goods, meaning they are excludable and rival in consumption
5. Notable examples of public goods include lighthouse services, national defense, and the judicial system

22.3 A Model of Public Good Provision

Learning Objectives

1. Learn different methods of supplying public goods, including private provision, non-governmental organization provision and government provision.
2. Learn why a public good is likely to be undersupplied if provided by private firms.

The model below is designed to illustrate some of the issues that arise in providing an adequate level of a good with the public good characteristics of non-rivalry and non-excludability. We will also use the model to highlight different ways to finance the public good and suggest several equity problems that can arise. The example is not meant to provide a general model, or exhaustive coverage of public good problems. For that, the student is directed to a course on public finance.

Consider a small community of six farmers who suffer the problem of roving bandits who occasionally raid their village and steal a portion of their annual harvest. Imagine that effective protection of the community is possible if a sufficiently high wall is built. Of course complete protection might also require arming guards with weapons to fight off the invaders, but let's keep the model simple and imagine a fortified wall is enough. Perhaps the extra effort of raiding a walled village is enough to steer the bandits towards other unprotected villages.

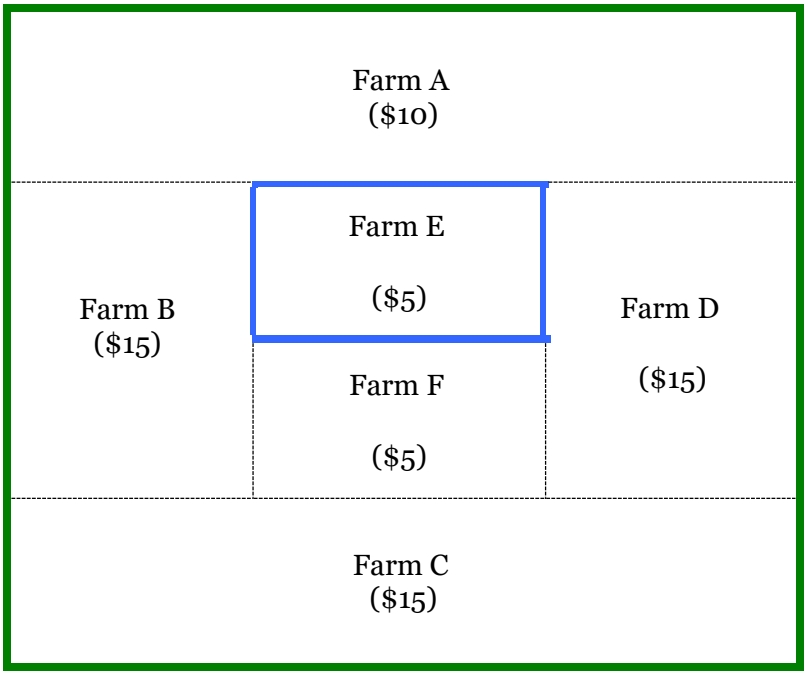
A wall is expensive to build though and the community will have to decide if building a wall is cost-effective. Suppose there are two options for wall building. First, assume an individual wall can be built around any single farm for a cost of $20. Second, a single wall can be built around the entire community of six farms at a cost of $50. Clearly the community wall is cheaper than if each farmer built their own wall, but we must consider how a community wall can be built.

To assess differences in individual farmer incentives suppose the value of the wall to each farmer is as listed in Figure 22.1, which also provides a map of the farms in relation to each

other. The green border represents the community wall that can be built, while the blue interior border is an individual wall.

The value listed for each farmer is their estimated economic value of wall protection. It is the amount of money they would save if their farm were protected by a wall. As such it is also the maximum amount they would be willing pay to prevent theft from occurring. The farms are assumed to have different willingness to pays because of unique characteristics that vary between farms. For example, different farms may have different annual harvests, so the farms with a higher value might simply have more to lose. Alternatively the geographic positions of the farms may make them more or less vulnerable to the roving bandits. Perhaps the bandits rarely raid from the north (top of Figure 22.1) so that while Farm A may produce just as much as Farms B, C and D, its losses tend to be less than the others. That might be the reason for its lower willingness to pay for protection. Also notice that the interior Farms, E and F, have the lowest willingness to pay at $5. This could be because they produce less, or it might be because they are naturally protected from theft by being in the interior. The bandits may rarely penetrate to the interior if they can find enough goods to steal on the perimeter.

Figure 22.1 Willingness to Pay for Defense in a Community of Farmers



Whether a wall is built will depend on how the farmers deal with the situation. First we should point out that no farm would find it cost-efficient to build an individual wall since the cost at $20 exceeds the benefits accruing to every farm. In other words, it's just too expensive to build an individual wall.

A community wall is viable though because the sum total of the benefits accruing to the six farms is $15 + $15 + $15 + $10 + $5 + $5 = $65 which is greater than the cost of building the

community wall at $50. The next question is how to collect money from the farmers to finance the building of the community wall.

Reality Check

It is worth pointing out at this stage that we are imagining a very simple model with strong assumptions that are unlikely to prevail in the real world. For example, here there are only two options for protection, an individual wall or a community wall. In reality, defense of a village could involve many different types of protections each of which has a different degree of effectiveness and a different cost. In addition, the farmers are assumed to know by how much they value protection. This is actually very difficult to calculate and it is unlikely that anyone knows precisely how much they will benefit. This problem of measurement extends to public planners who must decide the type and the quantity of public goods to provide and a fair method to collect payment from the citizens. These are issues that have been considered in more detail in the sub-discipline of economics called public finance.

Private Provision of a Public Good

One method is to allow a private firm to supply the wall to the community. However, the firm would have to solicit payment from the farmers and may have difficulty getting each to pay their fair share. In addition, if we assume that information is not perfect, the farmers might not honestly report their willingness to pay in the hope that they could pay less and still receive the full benefits of the protection. Some may hope others will pay and claim they have no use for the wall at all (free riding). However, suppose each farmer were equally dishonest and claimed to value the wall at only half the true value. In this case the wall company might get each farmer to pay half the true valuation and could collect a total of $32.50. Since this is not enough the cover the costs of the wall, the private firm would not produce it and the protection services would be undersupplied relative to what is best for the community.

NGO Provision of a Public Good

The second method to solve this problem is to take collective or community action. In this case, since the total number of farmers is very small, and presumably they know each other, it will be possible to create a wall-building organization that will solicit contributions from the farmers to build the wall. Recall the discussion of collective action from Chapter 21 suggesting that small groups are more effective in organizing than large groups. The organization could collect information directly from the farmers on the value of the wall to each of them and could independently collect other info to assess whether the stated values are accurate. For example, they might ask each farmer to report their annual harvest for the past few years and adjust contributions based on average output. They might also ask farmers to guess what the other farmers harvests were to check if individual reports matches community knowledge. In any case it is easier to collect info and agree on valuations from among a smaller group than among a large group.

For example, suppose the Farmers B, C and D, who reported the highest valuations, contest the values reported by Farmers A, E and F. Suppose the harvest sizes are similar across all farmers but A, E and F are reporting lower valuations because of the natural protections offered by their geographical location. A coalition of farmers can raise this issue within the collective organization and suggest valuation adjustment and a fairer payments system. One way to force the issue could be for Farmers B,C, and D, whose valuation of the wall is $45 collectively, to threaten to build their own wall protecting only themselves. Although these farmers would lose

$5 in this effort ($45 – $50), their wall would leave the remaining farmers, A, E and F, more vulnerable to the bandits thereby increasing their willingness to pay. The threat alone may be sufficient to induce the low-valuers to raise their contributions for a complete wall. The point here is that a small collective group can address these kinds of issues more easily than can a very large group.

However, for simplicity, suppose the wall-building organization determines the values listed in Figure 22.1 are accurate and they agree to assess a uniform percentage tax sufficient to cover the wall-building costs. In this case they need only solve the following problem: p(15 + 15 + 15 + 10 + 5 + 5) = 50, where p is the percentage tax in decimal form. This equation simplifies to 65p = 50 or p = 50/65 = .769 or 76.9%. This means the payments made by the farmers will respectively be $11.54 + $11.54 + $11.54 + $7.69 + $3.85 + $3.85 = $50. In this example, a non-governmental organization (NGO) was formed by the community to provide for the public good of community defense. This represents one method that can be used to provide an adequate amount of the public good and is likely to be better than a private market solution.

Government Provision of a Public Good

The third way to provide for the public good is for the government to provide it. Government provision has one big advantage in that they can more easily address the free-rider problem by forcing the farmers to pay a government tax. In essence, a government can make not paying the tax illegal and use the judicial system to force payment by every farmer. This solves the free rider problem that would become much more apparent for an NGO if the group size were very large, for example if the farmers to be protected numbered in the thousands or millions, rather than six. For this reason, a government solution is more appropriate at the level of national defense, than it would be for small community defense where the problem could be solved with local collective action.

However, government provision would face similar problems as the NGO, namely how to accurately value the public good and how to collect taxes fairly. Different methods to provide for the national defense and to collect taxes may be offered by different political parties and voting may decide which method is ultimately used. In our simple example, the easiest method to collect money for the wall would be to assess a fixed tax for each farmer without even asking their valuation. In this case the per farmer tax to build the collective wall would be 50/6 = $8.33 per farmer. In doing so and from an equity perspective, the government is implicitly assuming that the value of the wall is equal for all farmers.

If the valuations are not equal, and as listed in the Figure, then voter evaluation of the policy will differ. Among the farmers, four of them A, B , C and D would consider this a good deal since they are each paying less in taxes than the value they receive from the protective wall. However two of the farmers, E and F, would presumably object to the government plan since they are paying more than the value of the wall to them. They might consider their government to be exploiting them in this situation.

Of course at the national level the numbers used in the calculations will be much larger. Instead of 6 farmers there may be 6 million farmers. Instead of $50 to build the wall, it may be $50 million. If in this case the government applied its same equal payment plan then each farmer would pay only $8.33 in taxes to finance the $50 million wall. At this scale, less than $10 each seems a small amount to pay for the defense of the nation. However, this small per farmer tax creates some other problems with the provision of public goods.

Recall from chapter 21 that lobbying efforts by special interests groups can often sway the decisions of government. One of those special interests in the national security area are the defense firms themselves, or in light of our example, the wall building company. These firms have an incentive to overemphasize the national security threats faced by the country so that government will purchase more of their goods and services. For example, the wall building company might argue that a 20 foot fence costing $100 million dollars would be much more effective than a 15 foot fence costing $50 million. Since the per farmer cost would only rise to $16.67 per farmer, government decision makers might be inclined to accept such a proposal. Once again, we have a situation where the costs of the project are dispersed across a large number of taxpayers, but the benefits accrue to the small number of defense firms. Such an imbalance tilts the likely policy outcome in favor of the special interest security firms and may lead to an oversupply of the public good. Indeed, this was the warning made by US President Eisenhower in his farewell address in 1961 when he said, "In the councils of government, we must guard against the acquisition of unwarranted influence, … by the military-industrial complex. The potential for the disastrous rise of misplaced power exists and will persist."

Thus, while government provision of public goods solves some problems (like free riders) it causes other problems (undue influence by defense firms). To assure that government provides the socially optimal quantity of public goods and services, or something close to it, and collects taxes in a fair manner, requires an enormous amount of accurate information. When that information is not available, or when it is heavily biased because it is provided by special interest groups then government is likely to over or undersupply the public goods.

Key Takeaways

1. Private provision of a public good will likely undersupply the product relative to the social optimum.
2. A collective non-government organization can supply a public good effectively especially if group size is small or if the organization can overcome collective action problems like free-riding.
3. Government can readily solve the free rider problem and supply an adequate amount of the public good. However, government provision must deal with problems associated with the collection of information and fair taxation.

22.4 Loyalty and Public Good Provision

Learning Objectives

1. Learn how the ethical principles of loyalty, respect for authority and courage can facilitate the provision of public goods such as national defense
2. Learn why loyalty and respect for authority can facilitate the efficient operation of large businesses
3. Learn how misapplied loyalty can facilitate a decline in economic efficiency

There is one other difficulty worth noting about the public good provision of national defense. The individuals hired to provide this service, in particular military personnel, are not producing a typical good but instead are sometimes risking their lives in battle with external enemies to protect their country. In one sense, we can consider military occupations as simply being

riskier, and thus similar to other somewhat less risky jobs like in construction, or bridge building. One way to induce individuals to take riskier positions is to compensate them with higher wages. The higher the risk of injury or death in a particular profession, the higher the compensating differential necessary to secure sufficient labor supply. One common method to secure an adequate military for defense is to hire mercenaries who are willing to fight and risk their lives in exchange for sufficient compensation.

However, there is a less costly way to induce participation in the risky business of national defense. Namely, in some way induce a sense of patriotism, or loyalty, to one's country among the citizens. The more a person believes that they have a duty to serve their country and to risk their lives so their community can be safe, then the lesser need there will be to compensate these individuals with higher wages. When citizens feel a sense of pride when they serve their country and when they receive acclaim from others for having done so, then it will be easier to get willful participation in the national defense and it will be cheaper to induce people to serve. This provides an incentive to promote patriotism in society.

In addition, instilling a strong belief in patriotism and individual courage may solve the fight or flight dilemma faced by a soldier in a life-threatening battle. If a soldier were a 100% self-utility maximizer, it is unlikely he would risk his life in battle for his country. With personal risk involving a very high chance of death, coupled with the personal benefit of contributing only minutely to the security of the nation, most non-patriotic and non-courageous individuals are likely to flee the battle. However, with a strong sense of patriotism instilled, together with punishments and social scorn that would come from an act of cowardice and desertion, and the public good of national security can be more readily supplied.

Of course, another method sometimes used to induce cheaper participation is via military conscription, or, a draft. In this case government may simply make a law that requires all, for example, male individuals between the ages of 18 and 35, to participate in the military. By using force, or the threat of force, given the likelihood of punishment if one does not comply, government can induce military participation without having to pay the extra money needed to maintain a voluntary system.

In this way, the ethical principle of loyalty to one's country and community, if nourished via public encouragement and via religious instruction, helps to provide for the public good of national security more efficiently (at lower cost) than if a sense of loyalty was not a commonly held belief. Patriotism helps to reduce the cost of providing the public good of national security.

However, there is another ethical principle that is also needed to supply national security at an adequate level, namely respect for hierarchy, or respect for authority. To recognize the importance we need only imagine what is required for military effectiveness. One hallmark of military training is blind adherence to the chain of command. New military recruits are indoctrinated, using extreme physical challenges, to follow the instructions of their commander, regardless of what is requested. This is critically important in battle situations in which an army is much more effective when it acts as a coordinated unit. That coordination will be more easily achieved if the military personnel has a healthy respect for authority and the hierarchy within their unit.

Imagine the counterfactual. Suppose a military commander is trying to coordinate the battle actions of a group of independently-minded individuals, each of whom has their own idea as to the best plan of attack. Surely this would not be an effective fighting force especially against a

coordinated enemy comprised of patriotic soldiers. Thus, a respect for hierarchy and authority is an important ethical principle that contributes to the provision of an adequate national defense.

As a side-note we should point out that this same ethical principle, respect for authority, is also important as an input to any organization that sets up a hierarchy or chain of command. For example, a large business relies on its workers to respect the authority structure of the organization. Every worker has a boss from whom the worker agrees to take instructions. That boss also has a boss, etc. etc. Clearly, this structure operates more efficiently than one hypothetically comprised of hundreds of self-utility maximizers thinking only of their own objectives instead of the objectives of the organization or collective. Indeed, economic theories of the firm, these are theories intended to explain why firms exist and how they form the structure that they do, contend that firms arise because it is less costly to operate in this manner.

If we accept that as true, then loyalty to one's firm or organization, and a respect for hierarchy facilitates a reduction in costs and enables more efficient production. Ethical behavior contributes to economic efficiency. In fact, we can argue here that the extra costs associated with not operating as a hierarchical business arise because of imperfect information which means that there is a market imperfect in play. Ethical behavior in the form of loyalty and respect for hierarchy, helps correct for these imperfections and achieve greater economic efficiency.

Ethical Behavior Gone Wrong

While ethical behavior can contribute to improvements in economic efficiency, this same behavior can also cause economic damages. For this reason, loyalty and respect for hierarchy cannot be said to be an absolute ethical principle that promotes better outcomes in all circumstances. Instead, it matters to whom and for what purpose the loyalty and respect is given.

Consider one simple example. Suppose a worker in a firm has a strong sense of loyalty and respect for the authority structure of his business. However, suppose the managers of this business decide that the best way to maximize their profit is to deceive their customers by running ads falsely claiming their products have certain desirable features. We know from Chapter 4 that deceptive practices reduce potential trades and reduces economic efficiency. In this case, worker loyalty and respect for authority facilitates the bad economic practices of deception. This situation is often referred to as "blind loyalty." From the business owners' perspective, they are better-served by a workforce that puts loyalty above every other ethical or moral principle. From the worker's perspective, by putting loyalty first, it makes it easier to justify participating in otherwise deceptive practices. From a social perspective, we should notice that loyalty can be leveraged by organizations just as easily to promote good outcomes as to promote bad ones. Loyalty as a source for good depends on the circumstances.

Another clear example is the application of loyalty/patriotism in the provision of national security. As discussed above, a patriotic citizenry can contribute to lowering the cost of the nation's defense. However sometimes, national leaders have decided that their best defense is a good offense. These leaders' offensive goals require a well-trained and organized army just like a good defense, thus it behooves them to inspire the patriotic spirit of their people. However, the application of patriotism to a hostile nation facilitates the unethical outcomes associated with violence and theft. From the government's perspective, they are better-served by a military that puts loyalty above every other ethical or moral principle. From the soldier's perspective, by

putting loyalty first, it makes it easier to justify participating in otherwise violent and destructive practices. From a social perspective, we should again notice that patriotism can be leveraged by governments just as easily to promote good outcomes as to promote bad ones. Patriotism as a source for good depends on the circumstances.

Key Takeaways

1. The ethical principles of loyalty, respect for authority and courage can facilitate the provision of public goods such as national defense
2. Loyalty and respect for authority can facilitate the efficient operation of large businesses
3. Misapplied loyalty can facilitate a decline in economic efficiency