CHAPTER 7

Government Regulation in a Free-Market Society

An important reason for Americans' high standard of living is that they live in a free-market economy in which competition establishes prices and the government enforces property rights and contracts. Typically, free markets allocate resources to their highest-valued uses, avoid waste, prevent shortages, and foster innovation. By providing a legal foundation for transactions, the government makes the market system reliable: it gives people certainty about what they can trade and keep, and it allows people to establish terms of trade that will be honored by both sellers and buyers. The absence of any one of these elements—competition, enforceable property rights, or an ability to form mutually advantageous contracts—can result in inefficiency and lower living standards. In some cases, government intervention in a market, for example through regulation, can create gains for society by remedying any shortcomings in the market's operation. Poorly designed or unnecessary regulations, however, can actually create new problems or make society worse off by damaging the elements of the market system that do work.

The key points in this chapter are:

- Markets generally allocate resources to their most valuable uses.
- Well-designed regulations can address cases where markets fail to accomplish this goal.
- Not all regulations improve market outcomes.

How Markets Work

Free markets work through voluntary exchange. This voluntary nature ensures that only trades that benefit both parties take place: people give up their property only when someone agrees to exchange it for something that they value more highly. In most transactions, sellers receive money rather than goods in exchange for their property. Sellers then use that money to become buyers in other transactions.

What ensures that producers are providing the commodities that consumers want? Market prices play the critical role of coordinating the activities of buyers and sellers. Prices convey information about the strength of consumer demand for a good, as well as how costly it is to supply. By conveying information and providing an incentive to act on this information, prices induce

society to shift its scarce resources to the production of goods that are valued by consumers. In this way, markets usually allocate resources in a manner that creates the greatest net benefits (benefits minus costs) to society. An *efficient* allocation is one that maximizes the net benefits to society.

In general, efficiency requires that the price of a good reflects the incremental cost of producing that good, including the cost of inputs and the value of the producer's time and effort. In this way, prices induce consumers to economize on goods that are relatively expensive to produce and to increase their purchases of goods that are relatively inexpensive to produce. A key advantage of free-market competition is that it generally leads to a situation in which price equals incremental production cost. This outcome occurs because in a competitive market environment, a seller who charges a price above the cost of production will be undercut by competitors, including new entrants. In contrast, if prices are artificially high because of limited competition, consumers will buy less of the good than they would if they faced the competitive price. Furthermore, some consumers who would benefit from buying the good at a competitive price may not buy it at all.

When market conditions change, prices usually change as well and signal buyers and sellers to modify their behavior. For example, if a disruption in the gasoline supply were to occur and prices and behavior remained unchanged, there would not be enough gasoline supplied to satisfy consumer demand at predisruption prices. The result would be a gas shortage. To eliminate this shortage, some form of rationing would be required to ensure that the quantity of gasoline demanded by consumers matched the quantity of gasoline provided by suppliers.

In a market economy, rationing is done by prices. As prices of gasoline increase, two changes in behavior typically occur. First, consumers as a whole reduce their consumption of gasoline, and second, producers as a whole increase the quantity of gasoline available for sale. These aggregate changes are the result of many individual decisions. For example, some consumers may carpool, others may cancel trips, and some may be willing to spend more on gasoline to continue on as before. On the supply side, producers may ship gasoline from areas not affected by the supply disruption, refineries may increase production, and firms may lower inventories of gasoline in storage. Eventually, prices increase to the point at which the reduced quantity of gasoline demanded equals the increased quantity of gasoline supplied. In a market economy, all of this happens without any centralized control mechanism.

Market Imperfections

Sometimes markets do not allocate resources efficiently. Under such circumstances, it may make sense for the government to intervene in markets beyond providing a legal foundation for market transactions. Chapters 8 and 9, which deal with energy and the environment, discuss some regulations designed to address two such market failures—externalities and market power. These chapters look at both the benefits and potential problems that can result from imposition of regulations.

Poorly designed or unnecessary government regulations can actually reduce society's overall well-being. The possible costs of government regulation include the costs imposed on consumers and producers, impeded innovation, and unintended negative consequences such as the creation of unforeseen barriers to competition. It is essential to consider whether the costs potential regulations impose on society are greater than the benefits society receives from fixing any market failures.

Regulation and Externalities

Externalities (also known as *spillover effects*) can lead to a situation in which the price of a commodity does not reflect its full incremental cost to society. A *negative externality* exists when the voluntary market transaction between two parties imposes involuntary costs on a third party. For example, a power plant might produce and sell electricity to consumers to both their advantage, but the production process might emit air pollution that negatively affects the population. The costs that this pollution imposes on the population might not be considered when the firm decides where to locate a plant, which technologies to use, or how much electricity to produce. It could be that if these costs were taken into account in the same way as all of the other costs of producing electricity, the plant might be relocated to a place where its pollution would affect fewer people, the firm might put greater emphasis on pollution-reducing technologies, or the plant may not produce as much electricity. The existence of a negative externality can lead to an outcome that is worse for society than one that takes the externality into account.

As discussed in Chapter 9, *Protecting the Environment*, in many cases the best remedy for externalities is to define property rights and allow the affected parties to transact privately to achieve a mutually beneficial outcome. Sometimes, however, establishing property rights can be expensive. Even with clearly defined property rights, it may be costly for affected parties to collectively agree on a mutually beneficial transaction. Under such circumstances, other forms of government intervention may be appropriate, including taxes, subsidies, and direct regulation.

Addressing Externalities Through Taxes

One approach to dealing with externalities would be to levy a tax (known to economists as a *Pigouvian tax*) on market participants such that the amount of tax collected equals the incremental cost of the externality. For example, if a power plant's emissions are easy to monitor and the costs of pollution are easy to assess, the tax on each unit of pollution could be set equal to the cost of the externality. Alternatively, if the amount of pollution is not easily monitored, the tax could apply to each unit of production (each kilowatt produced by the plant, for example) rather than the pollution itself, and could be set equal to the additional external cost of pollution from each unit of production.

In general, taxes distort economic activity (see the discussion of the income tax in Chapter 4, *Tax Incidence: Who Bears the Tax Burden?*). However, proponents of Pigouvian taxation argue that it can improve the allocation of resources by forcing producers and consumers to confront the full costs of production. Indeed, some advocates of the use of such taxes go further and argue that revenues from Pigouvian taxes could be used to finance a reduction in the rates on other taxes that do distort behavior, such as the income tax. This idea is sometimes called the *double-dividend hypothesis* because it increases efficiency in the market with the externality *and* in the markets that are distorted by the income tax.

This argument must be viewed with caution. To see why, recall that Pigouvian taxes drive up the prices of the goods that are produced using technologies that involve pollution. The increase in prices reduces the buying power of households' incomes. This is effectively a decrease in the real wage rate because a given dollar amount of wages buys fewer goods and services. Put another way, Pigouvian taxes are, to some extent, also taxes on earnings. If the labor market is already distorted because of an income tax (as is the case in the United States and other industrial economies), the Pigouvian tax makes the distortion worse. In some cases, the added distortions in the labor market can actually outweigh the gains from correcting the externality. The desirability of Pigouvian taxes as a policy instrument must be determined on a case-by-case basis.

Addressing Externalities Through Limits on Quantity

Another possible problem with Pigouvian taxes is that determining their magnitude can be challenging because it may be difficult to measure the amount of pollution, as well as the value of the damage it causes. Moreover, the appropriate tax may change with market conditions. If, for example, the cost of the externality increases with output, the optimal tax would need to go up if output increases.

It is also difficult to know beforehand the tax level that will reduce emissions by the desired amount. Moreover, as the economy changes, the tax will need to be adjusted to maintain the desired amount of emissions reduction. A system in which a firm must own a government-issued permit for each unit of pollution addresses these problems because the government determines the number of permits to create. A *cap-and-trade* system, which allows firms to trade these permits, accomplishes the environmental goal at least cost.

Addressing Externalities Through Subsidies

Another option for dealing with externalities is to subsidize alternative behaviors that do not produce the negative externality. For example, concern over externalities from fossil fuels has led to government subsidies of some alternative sources of electricity, such as wind and solar power. However, such subsidies have some limitations. First, using the example of electricity, subsidies encourage overconsumption by keeping the cost of electricity below the level that market forces would set if the costs of the externality were taken into account. Second, subsidies raise some difficult administrative issues. In particular, the government needs to identify all the behaviors that should qualify for a subsidy. In the case of the power plant that emitted pollution, a fully efficient policy would be to subsidize all other ways of generating electricity and all conservation activities. Such attempts quickly become unwieldy in practice.

Addressing Externalities Through Command-and-Control Regulation

The government can also attempt to limit negative externalities with *command-and-control* regulations that mandate certain behavior. For example, the government requires automobile producers to meet overall fuel-efficiency standards. There have also been proposals to mandate that a certain percentage of electricity be generated by renewable fuels such as wind and solar power.

Command-and-control regulations can sometimes be the only way to deal with an externality. In general, however, they should be avoided because they discourage flexible and innovative responses to externalities and can result in higher costs than alternative policies. For example, mandating use of a particular technology to lower emissions could lessen firms' incentives to develop more effective techniques to reduce pollution. Furthermore, people adapt to command-and-control regulations in unintended ways that can limit their effectiveness over time. For example, one unintended consequence of the automobile fuel-efficiency standards was to increase the demand for light trucks and sport utility vehicles (SUVs), which were not as stringently regulated.

Regulation and Market Power

Market power, which arises in the presence of impediments to competition, is another potential source of inefficiency in a free-market system. Firms that have *market power* typically have the ability to charge prices above the competitive price level and maintain those high prices profitably over a considerable period. In some cases, the impediment is a law that makes it difficult for competitors to enter a market, but market power can also arise from the nature of the industry itself. For example, the high cost of wiring residential neighborhoods for electricity makes it unlikely that multiple firms would be willing to compete to distribute retail electricity. In these cases, regulation can be useful to prevent firms with market power from charging consumers prices that substantially exceed the cost of providing the good.

Policy makers need to recognize, however, that regulations themselves affect firms' and consumers' behavior and incentives. Regulations that do not take these effects into account can result in excessive consumption, misaligned incentives, stunted innovation and investment, and needless waste. Even regulations that do account for these effects may be rendered obsolete or counterproductive by changes in the industry that occur over time. For this reason, it is important to periodically reevaluate regulatory policies. Chapter 8, *Regulating Energy Markets*, discusses opportunities for reevaluation in further detail.

Regulation in the Absence of a Market Failure

Some government regulations attempt to reverse what would otherwise be efficient market outcomes due to beliefs that a particular market-based allocation of resources is undesirable. For example, regulations to prevent "price gouging" might be seen as fair, but the economic consequences of these regulations must be recognized (Box 7-1). Attempts to circumvent the market in this way must confront a basic reality—resources are scarce, so that if market prices are not used to ration commodities, some other mechanism has to be used instead. For example, resources could be allocated to consumers using ration coupons, a lottery, or first-come, first-served. Resources could also be allocated based on cronyism or other discriminatory means. These nonprice methods cannot guarantee that the scarce resources go to the consumers who value them the most. Furthermore, they reduce suppliers' incentives to increase production. For example, if prices are capped, suppliers may not work overtime to increase supplies or pay extra transportation costs to bring in supplies from distant areas. As a result, resources are not put to their best uses.

Box 7-1: Market Responses to Unexpected Shortages

When there are large, unexpected increases in demand or decreases in supply for a good, a normal market response is for prices to increase by enough to restore balance between supply and demand. Consumers might accuse sellers of "price gouging" when such price increases occur in response to a natural disaster or a failure of supply infrastructure. A number of states have laws that make price gouging illegal. Even without such laws, some businesses might choose not to increase prices during an emergency for fear of a consumer backlash. If prices do not increase, however, consumers do not receive a signal to cut their consumption and suppliers might not have the proper incentives to increase supply adequately.

By not allowing market forces to restore the balance between supply and demand after the shock, nonprice rationing must be implemented instead. For example, after a pipeline break reduced the supply of gasoline into the Phoenix, Arizona, area in August 2003, press reports indicated that some stations ran out of gasoline, consumers waited in line for hours, and some drivers started following gasoline tankers as they made their deliveries.

Changes in demand can induce shortages as well. For example, in the days leading up to the arrival of Hurricane Isabel in the Mid-Atlantic states in September 2003, press reports indicated that many retailers sold out of flashlights and D batteries. The flashlights and batteries went to the first people to show up at the store, rather than to those who valued them the most. It also meant that people who were able to buy the goods might have bought more than they would have at the higher price, leaving fewer for others. Without price increases, there was no mechanism to allocate the available goods to their highest-valued uses. For example, if prices were higher, early customers may have decided not to buy new batteries for their fifth flashlight and later customers would not have been forced to sit in the dark.

While allowing prices to increase in the face of a natural disaster or a supply disruption may seem unfair, the alternative would be to restrict the allocation of scarce supplies and to possibly keep supplies from those who need them most. Artificially low prices remove incentives for consumers to conserve and for suppliers to meet unfilled demand, potentially prolonging the shortage. Society must decide whether the perceived fairness resulting from regulations to hold down prices is more important than allowing the market to provide incentives for resolving the shortage as quickly as possible, while making sure that scarce resources are available for those who value them the most.

Conclusion

In general, market systems allocate resources toward their most highly valued uses. Importantly, no one *directs* society to this result. Rather, it is the outcome of a process in which each consumer and each producer observe prices and privately make the decisions that maximize their well-being. The coordination of economic activity is done by prices, which provide signals of the costs to society of providing various goods. However, in the presence of market power, externalities, and other types of market failure, market-generated prices may not incorporate all of the relevant information about costs. Under these conditions, there are opportunities for government to intervene and improve the allocation of resources.

The fact that the market-generated allocation of resources is imperfect does not mean that the government necessarily can do better. For example, in certain cases the costs of setting up a government agency to deal with an externality could exceed the cost of the externality itself. Therefore, proposed remedies for market failure must be evaluated on a case-by-case basis.

Energy and the environment are two areas in which government intervention may play a role in correcting market failures. Such interventions are likely to be more successful when they harness market forces to the extent possible. The next two chapters illustrate the challenges in properly designing regulations in these areas. An important implication of the analysis of both chapters is that in order to make society better off, regulatory policy must be based on a solid economic foundation.

CHAPTER 8

Regulating Energy Markets

Energy is essential to the U.S. economy, both as a final good and as an input into the production of most other goods. In 2000, energy expenditures equaled $703 billion, or 7.2 percent of GDP. The markets that provide this energy function well and are generally competitive. However, parts of the energy industry have characteristics that are associated with market failures. For example, the large fixed costs required to construct distribution networks for electricity and natural gas make it unlikely that more than one firm would be willing to invest in the infrastructure needed to serve residential customers in a particular area. The distribution company, therefore, may have *market power*, the ability to charge prices significantly above the competitive price level and profitably maintain those prices for a considerable period. Another type of market failure involves *negative externalities*, costs that economic transactions impose on third parties that the parties to the transaction do not face. For example, energy producers and consumers may not fully take into account the fact that burning fossil fuels may cause acid rain or smog.

This chapter discusses economic issues relevant to several different energy markets, including natural gas, gasoline, electricity, and crude oil. The use of these different types of energy involves different market structures and different potential market failures. An important focus of the chapter is on the design of regulations to address market failures in energy markets while minimizing disruptions to the market. The key points in this chapter are:

- Markets generally work well for energy products, which in most ways are like other products in the U.S. economy. While some aspects of energy markets may require regulation, most segments of these markets function well without regulation.
- Federal, state, and local regulations can have conflicting goals. If the conflicting goals are not balanced, competing regulations could lead to worse problems than the market failures the regulations attempt to address.
- Regulations need to be updated as markets evolve over time to ensure that the original goals still apply and that these regulations are still the lowest-cost means of meeting those goals.
- The United States benefits from international trade in energy products.