

8

REGULATING POLLUTION

In previous chapters, we discussed the virtues of markets for allocating goods and services but also the problems markets have in allocating environmental goods, particularly pollution. In the last chapter, we took a first step toward correcting the market failure associated with pollution by introducing the concept of a Pigovian fee, which generally works to correct the efficiency problems associated with pollution. But a Pigovian fee does not spontaneously emerge as markets do for conventional goods. It needs a central authority—a government—to implement the fee.

In this chapter we introduce the government as an active player in solving the problems associated with pollution. In some cases, the government will play a modest role, simply laying down the ground rules for a quasimarket to operate to solve the pollution problem. In other cases, the government will play a much more visible role, directing specific polluters as to what emissions are allowed. Although governments can solve problems that decentralized markets cannot, governments can also fail. Government failure is not a focus here, but we should be aware that government intervention to cure market failure is not always successful.¹ Some ways of intervening to solve pollution problems are better than others.

I. RATIONALE FOR REGULATION

The theory of economic regulation goes far beyond the issues of concern in environmental regulation. In fact, environmental regulation is a special, and relatively recent, example of economic regulation. For that reason, it is appropriate to place it in a larger context.

Economic regulation involves the government intervening, in a variety of ways, in the private actions of firms and individuals. There are two basic theories of regulation, the public interest theory and the interest group theory.² The public interest theory of regulation views the purpose of regulation as the promotion of the public interest. In this context there are three general reasons why regulation might exist: imperfect competition,

imperfect information, and externalities. The interest group theory of regulation views the purpose of regulation as promoting the narrow interests of particular groups in society, such as individual industries.³ We consider these in turn.

To a certain extent, the public interest theory of regulation is a normative theory. Recall that normative theory seeks to explain what should happen in an ideal world. In contrast, the interest group theory is a positive theory, attempting to explain why the world works as it does.

Imperfect competition, particularly natural monopoly, is the traditional normative justification for government regulation.⁴ In the case of natural monopoly (such as an electricity distribution company), economic efficiency calls for a single firm. It is not a good idea to have multiple sets of poles and wires traveling down streets, connecting residences to sources of power.⁵ The role of government is to guarantee a monopoly to a particular firm (restrict the entry of new firms) and, in addition, to control prices in order to protect consumers from monopoly pricing.

A related role of government is to prevent undue concentration of power in markets in which multiple competing firms represent the best organizational structure. In this case, the government attempts to prevent collusion and restricts mergers that will create excessive market power. The array of U.S. antitrust laws, starting with the Sherman Act of 1890, is designed to preserve a competitive environment in the United States, outlawing practices that are deemed anticompetitive. Many other countries have a more *laissez-faire* attitude toward anticompetitive activities, since such activities often serve to bolster domestic industries in the international marketplace.

The second major rationale for government regulation is the case of imperfect information. Acquiring information is costly. As a consequence, when consumers are about to enter into a transaction, they may not always have complete information on items such as product quality. Furthermore, because of the cost of acquiring information, it may not even be desirable for consumers to acquire complete information—the costs may far exceed the benefits. Imagine that each time we entered a grocery store we had to conduct extensive tests on the safety of each food item. This is a justification for the government to step in to compensate for incomplete information.⁶ The role may be a relatively “hands-off” type of intervention such as establishing a set of liability rules to encourage the provision of safety-related quality. If problems occur in consuming a product, a firm can be held liable. Properly designed, such liability rules can induce firms to provide an efficient level of safety-related quality. Of course, government can also more directly intervene in the market, specifying acceptable levels of quality, such as is generally the case with regulations on food additives.

A third rationale for government regulation is in the area of the provision of public goods and bads. Public bads and externalities are of course our focus. As we know from earlier chapters, when there are elements of “publicness” (nonrivalry or nonexcludability), private markets are inefficient. Government intervenes to try to correct the problem. Government may step in to directly provide these goods or bads at efficient levels, effectively eliminating the private market. This is frequently the case with public goods (e.g., national defense) and rarely the case with public bads. In the case of public bads, the usual approach is for government to define a set of institutions and regulations to govern the provision of these public bads, e.g., the government establishes a set of regulations to restrict the production of pollution.

The interest group theory of regulation maintains that rent seeking is the primary rationale for regulation.⁷ As will become clear, rent seeking is less a justification for regulation than an explanation of why some regulations exist—a positive theory of regulation. What is meant by rent seeking? Rent seeking involves private individuals or firms using the government to guarantee extra profits (rents) through government-mandated restrictions on economic activity. For instance, U.S. requirements that a certain fraction of clean-fuel gasoline additives be from renewable sources is fundamentally a subsidy to producers of ethanol in the midwest United States (the requirement is largely unrelated to air quality). Groups that benefit from such regulation lobby government for regulations that provide them with rents that would not exist in a competitive market.

II. A POLITICAL ECONOMY MODEL OF REGULATION

The basic problem of environmental regulation involves the government trying to induce a polluter to take socially desirable actions, which ostensibly are not in the best interest of the polluter. But the government may not always be able to precisely control the polluter. To further complicate matters, the government faces a complex problem of determining exactly what level of pollution is best for society. In reality, the government faces pressures from consumers and polluters. Although a full development of this interaction is beyond the scope of this discussion, Figure 8.1 captures some of this complexity. Shown in Figure 8.1 is a highly stylized schematic of the interactions among government, polluting firms, and consumer citizens.

The government is shown in Figure 8.1 as consisting of three branches, the legislature, the judiciary, and the regulators. Although the nomenclature may vary from country to country, this is a reasonably general representation of basic government. In the United States, the legislature would be Congress, the regulators would be the EPA, and the judiciary would be the Federal courts. In the United Kingdom, Parliament would be the legislature. The regulator would be the Department of Environment, Transport and the Regions, although other branches of national and local government also oversee pollution control (as in the United States). The courts and the House of Lords would be the equivalent of the judiciary, though the regulatory process tends to be less litigious in the EU than in the United States. The legislature passes laws defining what the regulators are to do in controlling pollution. The regulators are charged with the detailed implementation of the legislature's laws. The regulator's actions are tempered by the judiciary. Note that the legislature may have difficulty achieving its goals since it does not directly influence the polluter but must act through another part of government. This other part of government—the regulator—may have different goals. For instance, regulators may be interested in job security or the size of the bureaucracy they control as well as in reducing pollution levels. Furthermore, the judiciary may temper the actions of the regulators.

The firm, as shown in Figure 8.1, consists of several pieces. The Board of Directors is the core of the firm, although it is subject to oversight by the owners—the stock and bond holders. The Board issues directives to the managers; the managers issue directives to employees who produce the product of the firm as well as pollution. The key point is that regulators direct the Board to take certain actions, but the Board is removed,

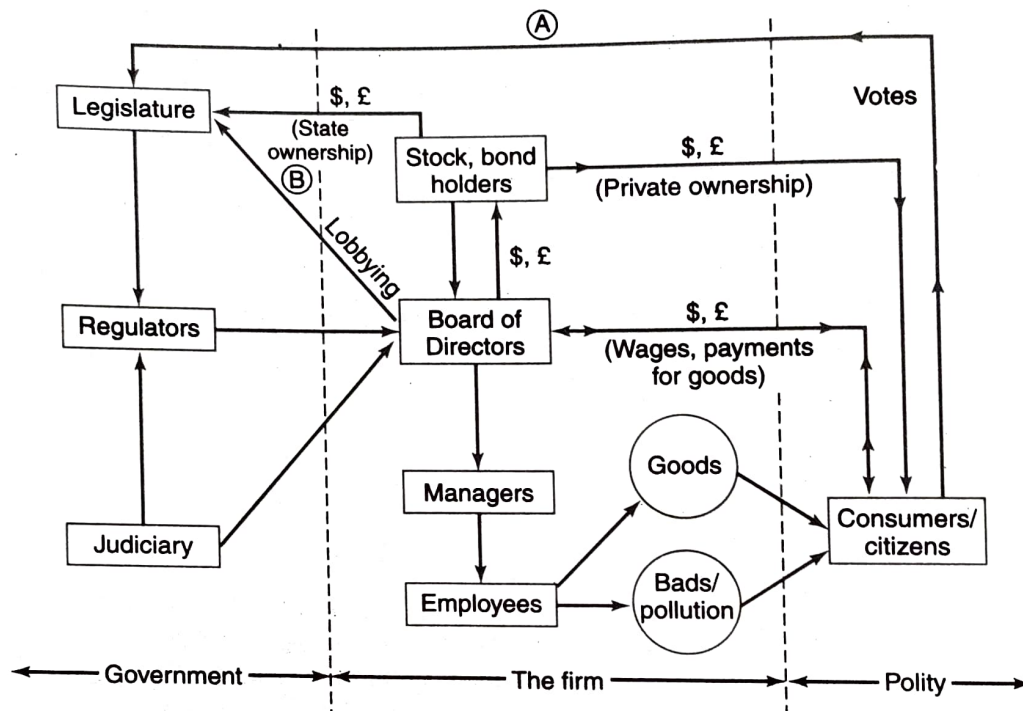


Figure 8.1 Schematic of interactions among government, polluting firms, and consumer citizens.

by several steps, from the employees who actually generate the pollution. Furthermore, the Board has other objectives in addition to pleasing the regulators (such as pleasing the stockholders). Generally, this is termed the principal-agent problem because of the inability of the EPA (the principal) to completely control the polluter (the agent). Note that the firm may not be a passive entity but may in fact influence legislation, through lobbying or financial incentives. These are shown as line B in Figure 8.1.

Finally, it is the consumers who consume the goods produced by the firm as well as the pollution generated by the firm. Consumers in turn are the citizenry whom the legislature is supposedly serving. Thus consumers direct votes and other influence to the legislature (line A), while at the same time sending money to the firm in exchange for the goods consumed.

There is obviously much detail missing from Figure 8.1. We could have employees or stockholders lobbying the legislature, for example, or firms lobbying the citizenry through advertising. Nevertheless, the essence of the process is represented in Figure 8.1.

There are really two important lessons that should be taken from Figure 8.1. The first is that there are many imperfect links between the legislature and the pollution-generating process. Since the legislature cannot physically control pollution directly, it must rely on indirect means to obtain its ends, and often these indirect means may be less than perfect. Regulation may be excessively costly, may result in excessive time delays, and may result in considerable cheating.

The second point to take from Figure 8.1 is that the legislature does not necessarily act as an efficient benevolent maximizer of social well-being. Although we may think it is "best" if the legislature is influenced only by citizen welfare, as represented by line

A in Figure 8.1, the legislature will likely be influenced by other interests, such as the well-being of the polluter, as reflected in line B. This is the distinction between normative theory, what *should* happen (perhaps maximizing citizen welfare with some concern for equity), and positive theory, what *will* happen (a balancing of interests, some “legitimate,” some not). This distinction is important. Sometimes we are trying to design a best regulation, in which case we want to know what *should* happen. In other cases, we are trying to understand why a certain regulation is on the books, in which case we should be interested in what *will* happen or why something has happened. Often the inclusion of line B is termed regulation with *endogenous* politics; the omission of line B is termed regulation with *exogenous* politics.

We can also view exogenous politics as coinciding with the public interest theory of regulation. Though it may be quite difficult to induce the firm to do the right thing, the fundamental objective of the regulatory agency is to maximize social welfare (however defined), subject to the regulatory constraints it faces. Typically, the objective of the regulator is viewed as maximizing the sum of producer and consumer surplus, perhaps with a slight bias toward consumer surplus.

The positive interest group theory mentioned earlier is consistent with the endogenous politics model of regulation. With endogenous politics, we are conscious of the ability of interest groups (boxes in Figure 8.1) to influence the regulators, legislators, and perhaps the judiciary. Environmental regulation is particularly susceptible to interest group influence. One interest group is clearly the firms potentially subject to environmental regulation—the polluters, or “browns.” Another interest group, however, is the “greens,” or environmental interest groups. Understanding how the browns and greens interact with the legislature and regulatory agencies can explain why we see the environmental regulations we do.