

## Regulation in a Dynamic Economy

Competition is essential to the vitality of the American economy. Both government and the private sector play important parts in creating markets that are competitive, and thus efficient and equitable. The private sector is the primary source of competition and innovation, whereas the government, often through its regulatory activities, enforces property rights and contracts, the necessary foundations for competitive private enterprise. In addition, the government provides those goods and services that the private sector cannot profitably produce, such as national defense, public safety, a more healthful environment, and social programs to benefit the underprivileged. Together government and the private sector can work to produce a vibrant, dynamic economy that offers its people the greatest possible opportunity to satisfy their wants and needs. To realize these benefits, the government must work to foster flexibility and dynamism in the economy by promoting sound monetary, fiscal, tax, and regulatory policies.

This chapter focuses on the role of Federal regulation in fostering or hindering economic dynamism. By its nature, regulation can be a double-edged sword. Although some demands for regulation reflect a desire to improve the efficiency of intrinsically imperfect markets, other demands for regulation seek to change market outcomes, for reasons that range from the compassionate to the opportunistic. Well-designed regulation can provide society with improved market outcomes and other benefits; poorly designed regulation stifles economic efficiency and dynamism. Regardless of their underlying motivation, many regulations are not well designed and impose both short-run efficiency costs and long-run dynamic costs on the economy that far exceed their benefits to individuals or society. This Administration supports the development of Federal regulation based on sound science, economics, and law—all important facets of a viable regulatory policy.

The definition of regulation encompasses both any authoritative rule dealing with details or procedure, and any rule or order issued by an executive authority or regulatory agency of a government and having the force of law. Regulation can thus be promulgated by government at all levels, or by the private sector, or by private authorities working in conjunction with government agencies. This chapter largely focuses on Federal regulation and the potential of private sector regulatory efforts, but the principles discussed can apply to regulation at all levels of government. Also important to recognize is that regulatory efforts generally consume a large amount of economic resources and that the demand for regulation has been growing over time.

Two basic approaches to government regulation of economic activity can be identified, each with very different implications for the dynamics and efficiency of the economy: command-and-control regulation, and performance- or incentive-based regulation. Command-and-control regulation typically uses the coercive power of the government to intervene in market activity by setting prices, quantities, technological requirements, or barriers to market entry or exit. Performance-based, market-oriented regulation, in contrast, harnesses market forces to achieve the same social goals. Regulation of this type includes taxes, subsidies, and cap-and-trade permit or quota systems. Recent experience, notably in the area of environmental regulation, has demonstrated that these market-based methods of regulation, which regulate results and not processes, achieve dynamic and static efficiencies that command-and-control regulation does not. This Administration's regulatory policy recognizes the importance of making regulation efficient by focusing on the use of performance- and incentive-based approaches.

Regulatory review and regulatory reform, including reductions in the amount and scope of regulation, provide a safety valve when the costs and other burdens of regulation become excessive. Such a safety valve is important because some regulations, even when first introduced, may impose short-run and long-run costs that exceed their economic and social benefits. Moreover, new scientific knowledge, new technologies, other economic changes, demographic changes, and changes in the social consensus can make even well-formulated, flexible regulations obsolete. For example, society should not abandon health and safety regulation that protects people or the environment, but regulatory reform may achieve such protection in ways that are more efficient. This greater efficiency may arise from applying new science and technology, focusing on outcomes rather than processes or technologies, or permitting regulated parties greater flexibility to meet specific performance requirements and providing market incentives for them to do so.

Recent changes from command-and-control to performance-based food safety regulation by the Department of Agriculture illustrate this potential. Until recently, meat and poultry processors were required to adhere to strict regulations that prescribed in detailed fashion how food safety objectives were to be achieved. Inspectors relied heavily on human sight, smell, and touch to determine the safety of raw meat and poultry products. Although the traditional approach has not been totally displaced, the new regulation has supplemented this inspection process with scientific practices for identifying and reducing microbial contamination. This new approach gives the industry a greater incentive to take advantage of new technology and scientific information to identify pathogens, and increased flexibility to take appropriate measures to improve food safety.

Similarly, in some potentially competitive industries, government controls on prices or profits effectively shield certain government-favored companies from competition. Here reductions in regulation can yield benefits for consumers, potential market entrants, and the economy as a whole. Regulatory reform in the airline, railroad, and trucking industries and the lifting of geographical restrictions on bank expansion are all cases in point. The resulting increase in competition in these industries has caused prices to fall, innovation to increase, and resources to be more efficiently allocated.

These issues are of particular importance now, a time of increased demand for regulation to restore the Nation's sense of security and economic well-being. The national effort to enhance homeland security has resulted in the rapid development and implementation of new regulations for a variety of industries and activities. The expected payoff to enhanced homeland security is reductions in the risk of future terrorist events and their consequences. The response to the need for greater security in economic activity—whether, for example, in the form of Federal air marshals on commercial flights or in the form of backup computer systems—raises the overall cost of transacting business. It is in the Nation's economic interest to balance the benefits of new regulations with their costs.

Regulatory review and regulatory reform offer mechanisms to reduce these costs, particularly as more is learned about the effectiveness and efficiency of various types of regulation. Unfortunately, some of the most costly recent episodes of market instability, such as the California energy crisis of 2000-01 and the crisis in the savings and loan industry in the 1980s, have been associated with poorly designed efforts at reduced regulation. The consequent fear of further instability generates resistance to regulatory reform, even when it holds the promise of significant economic benefit.

This chapter continues with a discussion of what causes demand for regulation and how such demand can lead to regulations that may or may not be economically beneficial. The chapter then considers several principles that produce smarter regulation and illustrates those principles with a number of recent case studies. Of course, no matter how beneficial a regulation is when first introduced, some regulations may outlive their usefulness. Thus the discussion also addresses issues of regulatory reform. Because reform can be a complex process, the discussion specifically focuses on some of the potential pitfalls of regulatory reform. The chapter concludes by showcasing how the Administration's regulatory policies regarding the environment embody the principles of sound regulation.

# The Demand for Regulation

As already mentioned, some regulations arise from the recognition of market imperfections that hinder economic efficiency or harm public health or safety. Other regulations stem from the desire of individuals, interest groups, or society at large to modify market outcomes because of dissatisfaction with the distributions of production, income, and wealth that can result even when markets function well. Unfortunately, these sources of demand for regulation can come into conflict.

Regulation to correct market imperfections and market failures can enhance the productivity of an economy and the wealth and satisfaction of its people. This motivation also addresses the lack of markets for certain important goods, such as environmental quality. In contrast, the second motivation, whether the result of altruism or economic “rent seeking,” inherently involves a net economic cost. This cost arises because resources will be allocated to or captured in less productive uses than would have been the case absent the regulation. It is often difficult to distinguish between these motivations, because the effects of a given regulatory proposal usually have aspects of both. Market-improving regulations do create winners and losers, and although the winners should be able to compensate the losers, in practice this is rarely required. Similarly, regulations whose effects are primarily redistributive may often have aspects consistent with the public good.

Distinguishing between these two types of demand for regulation is an important function of economic analysis and a motivation for requiring such analysis of major Federal regulations. However, even regulations that primarily seek to enhance economic efficiency and whose benefits exceed the associated costs in a static world can unduly harm economic dynamism in the real world and may have unforeseen consequences. This happens because unintended consequences may at times prove important, and in the long run regulation may lead to an inferior, less efficient outcome.

## Regulation to Address Market Imperfections

Imperfections in the market cause resources to be misallocated or allocated inefficiently. Unless these imperfect markets are regulated or overseen in some manner, the result can be the inefficient use of resources, waste, and lost economic value. Generally, this occurs for any of four primary reasons. First, external costs and benefits (often called spillovers) may not be taken into consideration when private production or consumption decisions are made. Second, the private sector may either underproduce or fail to produce public goods. Third, firms or consumers may lack information required to allocate their resources efficiently. Fourth, if existing firms have market power, they may underproduce and overprice their goods.

## *Ensuring Public Health and Safety*

Public health and safety issues can arise because of economic spillover effects. (Spillover effects, or externalities, occur when one person's actions unintentionally affect another person for good or ill, and no compensation is made to the person providing the good or suffering the ill.) Depending, among other things, on who holds the relevant legal rights, on the costs of enforcing those rights, or on the costs of negotiating other arrangements, producers or consumers may have little or no incentive to consider the costs borne by, or benefits enjoyed by, other people as a result of their actions. Markets provide an incentive for producers to maximize the profits they earn and to minimize the costs they must bear directly, but not to consider the profits or costs of others. In the absence of regulation, for example, profit-maximizing producers may choose cheaper, more polluting production processes, dispose of hazardous waste with less care for health and environmental consequences, or take greater risks of inadvertently harming the environment than is socially optimal. Although private negotiations may lead to full consideration of these external costs when few parties are involved, this approach quickly becomes unworkable as the number of parties increases. Thus, without government or private regulation, public health and safety may not be adequately protected.

Specific examples of spillover effects on health and safety and of the associated regulatory responses abound. For example, in the past, chlorofluorocarbons (CFCs) were used as propellants in aerosol cans and as coolants in air conditioners. CFCs have been identified as a major cause of atmospheric ozone depletion, which in turn is associated with adverse human health and environmental outcomes. These outcomes are external to private decisions to use CFCs as coolants or propellants. Ultimately, the Environmental Protection Agency (EPA) banned certain specific uses of CFCs as propellants in 1978, and an agreement in early 1990, the Montreal Protocol, banned their use internationally.

The choices of consumers, too, can produce spillover effects that influence health and safety. Cigarette smokers may not fully take into account the displeasure of or the health risks to others who breathe their secondhand smoke. Drivers of automobiles that emit pollutants such as hydrocarbons and nitrogen oxides may choose not to curtail their use on days when tropospheric ozone is above healthful levels, especially if the unhealthy air is blown to another area. In such cases a role may exist for public policy or private collective action to improve or protect the public welfare.

## *Ensuring Economic Efficiency*

Spillover effects are not limited to costs, such as the damage to public health and safety in the examples just given. At other times, markets may not suffice to allow producers to capture the spillover benefits of their activities. For

example, when an attractive real estate development increases surrounding property values, or a successful tourist attraction lures customers to nearby businesses, other property owners and these businesses may benefit without having to compensate their benefactor. It is easy to imagine circumstances that can lead to the underproduction of goods or services that provide these external benefits.

Private producers may also underproduce or fail to produce public goods. These are defined as goods that are both nonrival in consumption and nonexcludable. Goods that are nonrival in consumption are those that can be enjoyed by many people without reducing their availability to others. A simple example is a piece of music: once written, a song or a symphony can be performed and enjoyed over and over without ever being exhausted. For a nonrival good to be a public good, however, it must also be nonexcludable; that is, its use cannot be limited to only those who pay for it. Examples of nonrival, nonexcludable public goods include national defense, police protection, public health, a clean environment, wilderness preservation, and public parks.

Public goods merit the name because although they are desirable to produce, their nonexcludability makes it unprofitable for private businesses to produce them, or at least to produce them in sufficient quantity to maximize economic efficiency. “Free riders” can enjoy these goods without having to pay. Similarly, nonrival goods tend to be underproduced because, individually, consumers may be unwilling to pay a sufficiently high price to warrant their production even though, collectively, their willingness to pay exceeds the cost of their production. This poses the immediate question of who, then, will provide public goods. In certain cases it makes sense for the Federal Government to step in and provide the good or service at an efficient level, because private provision will be insufficient.

Information is also essential to the efficient allocation of resources. Consumers and producers must have sufficient knowledge of the characteristics and quality of products, their prices, and other information to make good economic decisions. The absence of sufficient information can dampen market activity because of distrust between potential buyers and sellers. Alternatively, too many transactions may occur if buyers are too trusting and make purchases they would have avoided given full information. In either case the result is a misallocation of resources and lower economic well-being. Markets as diverse as those for used cars and financial services are subject to informational imperfections, and regulation has often stepped in to address these imperfections. For example, the Food and Drug Administration requires nutrition content labels on many foods so that potential consumers have the information they need to protect their health.

The exercise of market power is a fourth reason why market outcomes may be less than optimal. Market power arises when there are too few producers in a market to ensure adequate competition and significant barriers to entry exist. Firms with market power may choose to underproduce, overprice, or limit consumer choices in terms of quality and service. The exercise of market power hurts consumers while allowing firms to use resources inefficiently or to make extraordinary profits. These issues are the subject of antitrust policy and regulation, which last year's *Report* discussed in detail.

## Regulation to Address Specific Interests

A second set of demands for regulation arises from the desire of individuals, interest groups, or society at large to modify the distributions of output, income, and wealth that markets produce, whether or not those markets function well. In contrast to the first set of demands for regulation, which focus on improving economic efficiency, this set focuses directly on distributional issues. For moral or altruistic reasons, members of society might conclude that the distributions determined by the market are not entirely fair. Market economies are efficient at producing wealth, but they distribute income in a way that creates a gap between the well off and the poor. For example, those with rare skills that are highly sought after will, by the laws of supply and demand, receive high incomes, while those with more common skills that are not widely demanded will receive lower incomes.

Through its democratic processes, American society has often demanded regulatory actions that alter these distributions of income and wealth. Many of these actions seek to expand the availability of education, training opportunities, medical care, welfare, nutrition, housing, or other goods and services, especially for lower and middle-income individuals. An example is regulation under the Americans with Disabilities Act, which requires that persons with disabilities be accommodated in public, work, and educational facilities. Another example is the requirement of equality in support for men's and women's athletics under Title IX of the Education Amendments of 1972, which prohibits discrimination based on sex in education programs or activities that receive Federal financial support. Unfortunately, fulfilling these demands often entails a tradeoff between maximizing production and achieving a more equal distribution of that production. Accepting something less than the maximum possible output may be economically desirable if members of society care about each other's well-being.

Sometimes, however, the desire to circumvent market outcomes has motivations that are far from altruistic. "Rent seeking" is the process by which interest groups spend resources to influence legislative and regulatory processes to receive favorable treatment for themselves. This, of course, is a normal and

legitimate exercise of political rights in a democratic society. However, the results have economic consequences that are important to understand.

Regulation can foster industry interests in many ways. Many regulations set prices, allocate marketing quotas, or control the entry and exit of firms in an industry. Such regulations bestow market power on firms in the target industry, raising their profits much as in a private cartel, but with the advantage of government sanctions and enforcement. For example, for years the New York State Department of Agriculture and Markets, which issues licenses to sell milk in New York, blocked the entry of out-of-state producers into New York City's milk market, thus allowing New York milk producers to control the milk supply to the whole city. As a result, New Yorkers paid more for their milk than did consumers in adjacent areas. For example, when milk was imported from New Jersey to Staten Island, declines in the price of milk were experienced as expected. In 1987 a Federal district court ended the regime by ruling that the denial of licenses amounted to economic protectionism and was unconstitutional.

Rent seeking can also result in product quality standards that restrict supply or promote the interests of a dominant, established, or technically advanced firm at the expense of new entrants or firms with less advanced capabilities. For example, a dominant airline promoted the use of uniform size templates for carry-on luggage at airport security checkpoints. Because at least one competing airline had invested in larger overhead cargo bins to attract customers, the dominant airline may have viewed the uniform, restrictive templates as a means of negating this competitive threat.

## Principles of Regulation

Although the two basic motivations for regulating described above may be inherently at odds, during periods of political and market volatility both types of demand for regulation increase. For example, since September 2001, the terrorist attacks of that month, the ongoing threat of further terrorism, and the war on terrorism as well as turmoil in financial and energy markets have eroded Americans' sense of security and well-being. As a result, the Federal Government has received myriad proposals for new regulations or regulatory authorities, and it has generated many proposals of its own. Areas of proposed regulation related to homeland security include animal and plant health, trade and immigration, airport security, airline security, port security, chemical facility security, nuclear security, cybersecurity, the maintenance of backup facilities for critical components of the financial system, terrorism risk insurance, airline war risk insurance, and money laundering, among others. Recent corporate misbehavior and the resulting volatility in

financial markets and certain energy markets have also led to a host of new regulatory proposals on issues connected to corporate governance and accounting (see Chapter 2 of this *Report*), trading of energy derivatives, safeguards for workers' retirement savings, the conduct of investment research by investment banking firms, and various issues related to information disclosure and transparency in financial markets, among others.

No matter how pure and public-spirited the motivations for these proposals, each has the potential to impose considerable costs on the economy. Especially during a period of accelerating demand for regulation, understanding and applying basic principles of good regulation will improve the chances of achieving laudable regulatory goals without paying too dearly for the benefits. The following questions can serve as guides when contemplating and designing regulatory intervention to maximize public welfare:

- Can the market achieve the desired outcome without regulation?
- Can private sector regulation achieve the desired outcome instead of government regulation?
- Will government regulation impede or distort market dynamics?
- Is there a less restrictive alternative to the proposed regulation?
- Are the costs justified by the prospective benefits, and how are both distributed?

Imposing new regulation without careful consideration of each of these questions risks inflicting an unnecessary burden on the economy, slowing economic growth, and reducing the well-being of Americans. The significance of each of these questions will next be examined in turn.

## Can the Market Achieve the Desired Outcome?

Markets are powerful institutions. They allow an economy to adapt quickly to changes in technology, availability of resources, consumer preferences, external threats, or other aspects of the environment in a way that best meets the needs and desires of consumers and producers. The American economy relies heavily on private initiative, mediated through the marketplace, to respond to change. Through the voluntary interactions of many buyers and many sellers, markets create and reveal information about the scarcity and value of goods and services and reward efficiency. By promoting competition, markets induce producers to reveal the cost of producing additional goods and services, and consumers to reveal their willingness and ability to pay for those goods and services. As consumers and producers respond to market prices, resources are shifted among firms so as to meet consumer demands at the lowest possible prices. By rewarding with profits those firms that meet the desires of customers, and imposing losses on those firms that do not, the market encourages and enables the migration of resources to their most valuable uses.

When markets alone cannot achieve these societal goals, performance-based, market-oriented regulation can be used to harness some of the positive qualities of markets such as efficiency and flexibility. Such an approach is desirable because the contrasting characteristics of markets and government regulation imply that society can achieve greater flexibility and productivity with greater reliance on markets and less on government regulation.

In contrast to the voluntary interactions of markets, government regulation relies on the potentially coercive authority of the state to achieve desired ends. Since government regulation is largely motivated by displeasure with market performance or outcomes, it may ignore market information and may risk directing resources away from their most productive uses. For the same reasons, regulation may obstruct market signals and reduce flexibility in the economy. Interference with market dynamics can reduce the rate of technological innovation and the efficient allocation or reallocation of resources across firms or industries. Ultimately, such interference can reduce the rate of economic growth. (This line of argument as it applies to developing countries is further explored in Chapter 6 of this *Report*.)

Historical evidence on the conduct of commercial and investment banking serves as an example of how markets can respond to challenges that might otherwise be addressed by regulation. The Glass-Steagall Act of 1933 separated commercial and investment banking in order to avoid conflicts of interest. Researchers have shown, however, that market participants react in ways that discourage such conflicts on their own. Thus regulation under Glass-Steagall may have provided little additional benefit while preventing banks from achieving economies of scale and scope.

During the 1920s, commercial banks circumvented existing rules segregating investment and commercial banking services by establishing State-chartered affiliate banks that could underwrite securities. The Glass-Steagall Act was passed in part as a response to the potential conflicts of interest that arise when bankers have superior information relative to both investors and depositors. The primary danger is that when risky investment banking activities are combined with commercial banking, bankers will be tempted to use their superior information to take advantage of less well informed investors or depositors. In the absence of deposit insurance, depositors could be harmed if commercial banks, through their investment banking affiliates, held risky or poorly performing assets without appropriately increasing their equity capital to protect depositors from losses. With deposit insurance, this conflict of interest arises with respect to insurers. It is generally mitigated through the imposition and enforcement of minimum capital requirements, among other measures. Interestingly, historical evidence indicates that banks in the 1920s actually held higher capital-to-asset ratios before safety net regulations were imposed. Recent international experience suggests that banks substitute government deposit

insurance or public capital for private capital. Thus the safety net may induce bankers to exchange one form of prudent behavior for another.

Researchers have also found that investors in that era penalized the “universal banks” that offered both investment and commercial banking services: the securities underwritten by universal banks commanded lower prices and had to pay higher yields when investors perceived a conflict of interest. To avoid being thus penalized in the markets, universal banks tended to create distinct investment banking affiliates, with their own capitalization and boards of directors. Evidence shows that firms that organized investment banking services as a department rather than as a separate affiliate obtained lower prices for securities before Glass-Steagall’s enactment. Analysis of the quality of securities sold by integrated banks shows that quality did not suffer from the joining of investment and commercial banking services, and at the same time banks benefited from economies of scale and scope through the use of common resources, assets, and knowledge. Perhaps in recognition of this evidence, the Congress passed the Financial Services Modernization Act (also known as the Gramm-Leach-Bliley Act) in 1999, which repealed many of the provisions of Glass-Steagall relating to the separation of commercial and investment banking services. Chapter 2 of this *Report* further examines the importance of market forces in providing appropriate incentives for socially responsible behavior by corporate managers.

## Can Private Regulation Suffice?

A common misconception is that government is the only source of regulation. In fact, trade associations and other private organizations also administer regulation. Private regulation may arise in response to the threat of government regulation or as a spontaneous private solution to a market imperfection. For example, private organizations are often effective at providing regulation to overcome informational problems through standard setting, certification, monitoring, brand approval, warranties, product evaluations, and arbitration. They often act in cooperation with government regulators, certifying or guaranteeing compliance with government-set or government-sanctioned standards, or acting as self-regulating organizations under the purview of a government regulator. Such private regulations may be effective because private regulators have their own independent, reputational capital at risk and can enforce their regulations.

Just as markets and government regulators are imperfect, however, so, too, are private regulators. And just as government regulators may face conflicts of interest, so, too, may private regulators. For example, one form of private regulation is the regulation of professional ethics by professional associations, such as those in the medical and legal professions. Members of such boards may face a conflict between the interests of consumers and the income

potential of their fellow professionals. They may also be reluctant to reveal professional misconduct for fear of reducing public regard for their profession. Private regulators, like government regulators, may also face incentives or pressure to provide incumbent or dominant firms with competitive advantages or barriers to competition.

Despite such imperfections, private regulation offers a variety of benefits over government regulation in some circumstances. Because private regulatory mechanisms cannot be backed up with the use of coercive force, they tend to be more flexible and have lower compliance costs. Private regulators are less able to dictate command-and-control regulations, and therefore the regulated businesses and individuals typically spend less time and other resources complying. To be effective, private regulators need to be open to suggestions from industry members, consumers and consumer groups, universities and other scientific organizations, and government agencies. As a result of these dynamic relationships, private regulators have a market incentive to closely follow changes and technological advances so as to preserve their expert status and protect their reputation.

Private regulators face market pressures to control the burdens they impose on businesses and consumers. These pressures can provide an incentive to minimize their costs and facilitate flexibility. By increasing their own cost-effectiveness, private regulators also lower compliance costs for businesses if they operate in competitive markets. In contrast, although many government regulatory agencies also rely on fees for their services, their budgets are set in the political arena and may rely on general government revenue. Private regulators have an incentive to provide firms with well-formulated guidelines and firm-specific recommendations, helping firms reduce compliance costs while meeting necessary standards. Private regulation may also require less paperwork, which significantly reduces the time cost of regulation.

Although private regulators lack certain powers that governments have, their regulation can nonetheless be effectively enforced through legally enforceable contracts, sanctions (including revoking approvals, assessing fines, and pulling products off the market), and public announcements. Both private regulators and the companies that use their services also put their reputations—often one of their most valuable assets—on the line. Firms choose to comply with voluntary private regulation because they perceive it as an important marketing tool, and the associated compliance costs as a necessary cost of doing business rather than as a burden.

One example of successful and longstanding private regulation involves the establishment by the insurance industry of an independent, not-for-profit organization to test and certify product safety. This organization, founded in 1894, provides voluntary certification for a variety of industries and products including electrical appliances, automotive products, medical appliances, alarm systems, and chemicals. In 2001 alone, 64,482 manufacturers produced

certified products, and 108,296 product evaluations were conducted. Beyond testing and certification, this organization takes an active role in developing industry standards. To protect their reputation for quality, many retailers are reluctant to purchase goods unless they have received the organization's approval, even though Federal law does not mandate certification. Furthermore, the market for safety certification and testing is competitive, with at least 11 other private organizations providing similar services. In a competitive market, all of these organizations face incentives to minimize the cost of their services. Similar organizations exist to certify the environmental soundness of products and services, showing that they meet established standards for reducing pollution and waste, conserving resources and habitats, and minimizing global warming and ozone depletion.

These examples illustrate how independent private regulators can provide a market-based solution to a market failure, namely, imperfect information. In all these cases consumers cannot on their own readily verify production processes or quality characteristics that are important to them. Imperfect information is also important in financial markets, and there, too, the answer has often been third-party verification. For example, several firms specialize in providing risk ratings for firms seeking to issue stocks and bonds or enter into customized derivatives contracts. This service helps firms market their securities at more attractive prices, because third-party certification from the credit rating agencies enhances the transparency of the risks associated with these securities and the credibility of those offering them.

Some of the benefits of private regulation can most efficiently be captured when private regulatory activity operates under government sanction. The United States has a number of self-regulating financial organizations, including stock exchanges and futures markets. These organizations operate as private entities that establish rules, policies, and standards of conduct for their members and member organizations. However, these regulatory activities are overseen and approved by a government agency: the Securities and Exchange Commission in the case of stock markets, the Commodity Futures Trading Commission in the case of futures markets. Government regulators may also choose to work in cooperation with private, third-party certifiers. For example, the Department of Agriculture recently completed the implementation of regulations governing the production and labeling of foods as organic. These new standards rely primarily on independent, private sector firms to certify that producers of foods claiming to be organic meet the government-set standards. The market incentives faced by both the producing firms and the certifying firms should help reduce the cost of meeting and enforcing these standards from what it would be under pure government enforcement.

Private regulation or government-sanctioned self-regulation may also be an option for some aspects of homeland security. The chemical industry faces the

risk of terrorist attack due to the potential to turn common, useful chemicals into weapons of mass destruction. About 15,000 facilities in the United States handle large quantities of dangerous chemicals already regulated under the EPA's Risk Management Program (RMP). These are chemicals that, if released, would pose a significant threat to public health and safety.

Both private and public regulatory approaches could be used to improve chemical site security. As an example of the former, one industry trade association imposed regulation on its members, requiring them to assess and reduce their vulnerability to terrorist attack. However, only about 1,500 facilities, or 10 percent of those handling chemicals covered under the RMP, are owned by members of this association. At least two public sector approaches have been suggested to extend this regulation more broadly. A command-and-control approach would require certain designated actions or technologies to reduce the threat. This approach focuses on reducing the use and storage of chemicals, changing methods and processes, employing safer technology, and generally improving security, all of which might reduce the threat but fail to consider marginal (that is, incremental) risks or costs. An alternative approach is a market-based mechanism, in which a chemical facility would be required to obtain insurance coverage against liability arising from an unanticipated release of chemicals, subject to review by the appropriate government agency. The level of required coverage would depend on an assessment of the facility's vulnerability and the hazard to security, undertaken by the facility itself or its agent, which would include an estimate of the probable range of losses resulting from a terrorist attack. This insurance-based approach to chemical facility security would rely on market flexibility to attain the socially desired level of security at the least cost.

This market-based approach has several advantages over government-mandated standards. First, insurance prices that are adjusted for risk can provide incentives for the owners and operators of chemical facilities to invest in safety and security measures to the extent this is socially optimal. In contrast, government-mandated standards may over- or underspecify investments relative to that optimum. Second, reliance on the insurance market rather than the government to provide regulation gives owners and operators the flexibility to implement the most efficient and cost-effective precautionary measures given their facility's existing technology and situation. Third, under a government-mandated standards regime, chemical facility operators would likely slow or halt the deployment of new security measures until any uncertainty about security requirements was resolved. In contrast, an insurance-based mechanism, with its inherent flexibility, can build on existing security measures, encouraging quicker deployment. However, the insurance-based approach will work only if private insurers are willing and able to provide coverage at an affordable price and if the insurance industry itself is

sufficiently competitive. If these conditions are not met, the appropriate government agency could promulgate regulations mandating compliance with certain safety standards but waive those standards for facilities that obtain a sufficient level of insurance.

## Will Government Regulation Impede or Distort Market Dynamics?

Regulating economic behavior in a dynamic economy, especially through traditional command-and-control regulation, is a laborious undertaking, with the potential for unintended and unwanted results. Government regulation can lead to the expenditure of effort and resources inconsistent with the initial regulatory intent. This happens because regulation does not suspend or eliminate market forces but rather suppresses or redirects them. When government promulgates and enforces regulations, it alters the incentives of economic decisionmakers (consumers, managers, and investors) by changing costs, prices, information, or risks. Decisionmakers respond by changing their behavior, often in ways that are unintended or even contrary to the aims of the regulation. If regulation is static in design, failing to anticipate these reactions, the ratio of intended to unintended consequences tends to diminish over time, which in turn may increase the demand for regulatory reform. Dynamic regulation, in contrast, seeks to anticipate the reactions of consumers and firms to regulatory changes, to ensure that the regulation achieves the intended results.

Firms may respond to the regulatory constraints imposed on them by increasing or decreasing production, entering or exiting industries, changing lines of business, or developing new technologies. Consumers may look to unregulated sources to obtain products or services that regulation has made more expensive or rendered unavailable. Investors may shift capital from regulated to unregulated industries or among research and development projects to technologies that are more likely to be profitable under the regulatory regime. For example, when airfares were regulated and airlines competed on the quality of their service, the airlines demanded that manufacturers develop faster, longer range aircraft. After regulatory reform led airlines to adopt the hub-and-spoke system, allowing them to serve many locations at less cost, they largely switched their new purchases to shorter haul aircraft.

Performance-based regulation, too, can impede or distort market dynamics. For example, corporate average fuel efficiency (CAFE) standards distinguish between cars and light trucks, imposing less strict standards on the latter. This provided automobile manufacturers with an incentive to shift production away from cars to light trucks, to meet consumer preferences for

larger vehicles as real fuel prices dropped. This regulation has also affected the relative profitability of production locations for vehicles sold in the United States.

CAFE standards were established under the Energy Policy and Conservation Act of 1975 in an effort to reduce oil consumption after the 1973 Arab oil embargo. At the time, high gasoline prices and long lines at the pump induced a shift in consumer demand to more efficient vehicles. The least expensive way to attain better fuel economy was to downsize passenger cars, but this downsizing had two safety-related consequences: the smaller vehicles were less stable when a driver lost control, and they offered less protection in a collision. The result was an increase in traffic fatalities. Because light trucks were used mostly as commercial and agricultural work vehicles and made up a relatively small part of the market, lower fuel economy standards were instituted for them than for passenger cars.

The effects of the 1970s oil crisis dissipated when gasoline prices declined in the 1980s, and American consumers again demanded larger vehicles. Because the CAFE standard was substantially lower for light trucks than for passenger cars, manufacturers designed their new larger vehicles as minivans and sport utility vehicles (SUVs) to qualify as light trucks rather than passenger cars. Consumer acceptance of these vehicles has sharply increased U.S. sales of light trucks (including minivans and SUVs), raising their share of the vehicle fleet from approximately 20 percent in 1976 to 28 percent in 1985 and nearly 50 percent in 2001 (Chart 4-1). When the CAFE standards are binding, manufacturers must sell smaller, more fuel-efficient vehicles for less but can sell larger, less fuel-efficient vehicles for more than they would in the absence of these standards. The shift in vehicle production from passenger cars to light trucks has thus offset the intended effect of the regulation.

Another market-distorting characteristic of the CAFE standards is the “two-fleet rule,” which applies to passenger cars but not light trucks. Under this provision, automobile production is divided into two fleets: vehicles made in North America and those made elsewhere. This encourages the manufacture of small cars in North America, to bring the domestic fleet’s average fuel economy up to the CAFE standard, but encourages the manufacture of large vehicles abroad, because overseas manufacturers tend to produce more fuel efficient fleets than CAFE requires. Thus foreign manufacturers can produce higher profit, less fuel efficient cars without facing CAFE penalties. Moreover, there is some evidence that because CAFE standards induce manufacturers to raise the price of less fuel efficient vehicles and lower the price of more fuel efficient vehicles, they tend to shift market shares toward imports at the expense of domestic automakers.

Alternative, market-oriented solutions are available to boost fuel economy while reducing market distortions and regulatory burdens. One option would be to allow manufacturers to trade fuel economy credits. Such a policy

would allow manufacturers to concentrate production in their area of comparative advantage, whether it be small, fuel-efficient vehicles or large, less fuel efficient ones. Trading CAFE credits would also equalize the cost of attaining the standards across manufacturers, a precondition for economic efficiency. Thus, if combined with an overall cap on credits, this approach would reduce the total cost of attaining any particular level of fuel economy that policymakers choose to target. Other options would focus on policies that more directly address fuel consumption rather than vehicle design, because the key to reducing fuel consumption efficiently is to focus on the desired outcome rather than specific technologies or processes.

## Is There a Less Restrictive Alternative?

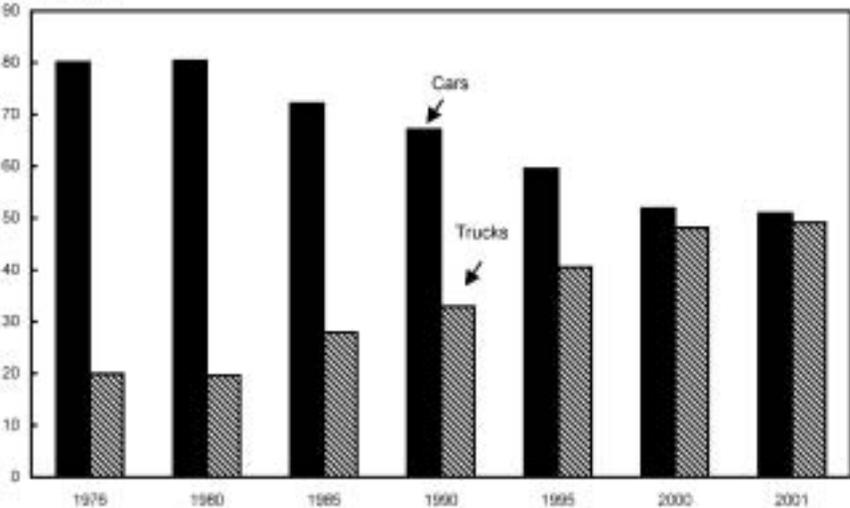
When public regulation is necessary, government agencies should respond to the demand by promulgating regulations that are both statically and dynamically efficient. Measures aimed at static efficiency are those that are the most cost-effective that can be taken today to address the problem at hand. Dynamically efficient regulation, in contrast, gives firms an incentive in the long run to innovate and discover technologies that lower costs and avoid negative spillover effects in the future.

Command-and-control regulation relies on dictating prices or quantities, restrictions on technologies or processes, or who may enter or exit a market. Agriculture in the United States, for example, has long been characterized by

Chart 4-1 Light Vehicle Sales

Light vehicle sales have shifted from cars to trucks since CAFE standards were established in 1975.

Percent of total



Note: Sales period is October 1 of the current year through September 30 of the next year.

Source: Oak Ridge National Laboratory, Light Vehicle and MPG Market Shares System.

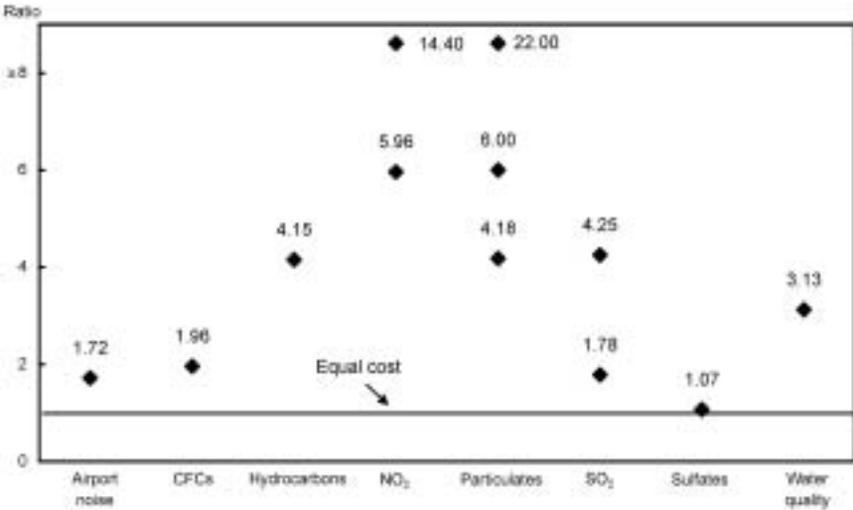
price and quantity restrictions. Government programs effectively guarantee minimum prices to growers of major crops such as cotton, rice, wheat, corn, and soybeans. Sugar and tobacco are marketed subject to government quotas, and many fruits and vegetables are subject to marketing orders that limit the quantity and quality that may be offered for sale. Entry and exit restrictions often apply to government-regulated monopolies such as cable, telephone, electricity, and transportation services. Many early environmental regulations, including the landmark clean water and clean air legislation of the 1970s, include provisions that require polluters to adopt certain pollution-reducing technologies. For example, the Clean Water Act effectively requires pollution sources to adopt the “best practicable technology,” and the Clean Air Act Amendments of 1977 require such sources to adopt the “best available control technology” in certain regions of the country.

Performance-based regulations, in contrast, stipulate a performance goal but allow firms flexibility in determining how best to meet that goal. Vehicle emissions standards are one example. An advantage of this kind of regulation is that it uses market forces to encourage firms to find low-cost solutions to meet a given standard. Market-based approaches, which include tradable permit systems, emissions taxes, and compliance subsidies, are similar to performance-based approaches but are even more efficient. The gain in efficiency arises from the equalization of marginal compliance costs across firms. If the regulatory goal is to reduce pollution, for example, the polluter is afforded the flexibility to discover the most efficient techniques to decrease its emission levels. Simultaneously, the market ensures that innovation and creativity are rewarded.

Command-and-control regulations, such as technology standards, may induce polluters to lower their emissions and in some cases may involve lower enforcement costs for the regulator, but they fail to provide the long-term dynamic incentive that induces innovative behavior. Indeed, command-and-control regulation often does not even meet the criterion of static efficiency—achieving the regulatory goal at lowest cost given current technology—because it may fail to provide the greatest benefits per dollar spent on solving problems today. This point is highlighted in Chart 4-2, which compares costs under a command-and-control regime with those under a least-cost program, such as a market-based mechanism, across studies of a variety of regulatory initiatives. For example, one study of sulfur dioxide abatement found that command-and-control regulation imposed costs that were approximately 1.8 times what they would have been under an efficiently designed market-based mechanism; another sulfur dioxide study found that those costs were 4.3 times higher. Other comparisons across a variety of antipollution programs all paint a similar picture: much the same environmental improvement could have been achieved with far fewer resources if market-based policies had been adopted.

Chart 4-2 Ratio of Costs of Command-and-Control to Least-Cost Regulation

Studies indicate that market-based methods achieve regulatory goals with fewer resources than command-and-control programs.



Note: NO<sub>2</sub>: nitrogen dioxide, SO<sub>2</sub>: sulfur dioxide.

Source: Barry C. Field, *Environmental Economics*, 2nd Ed., New York: McGraw-Hill, 1997.

Command-and-control regulation typically provides few incentives for producers or consumers to search for more cost-effective ways to reduce pollution in the future. This happens because regulators have directed attention to the wrong target. Rather than focusing efforts on developing cheaper ways to use mandated technologies, as command-and-control regulations typically do, regulators should target the real problem: finding or developing the most cost-effective way to reduce emissions.

This fact is highlighted when one considers the incentives created under the 1977 and 1990 Clean Air Act Amendments. Before 1990, electric utilities faced command-and-control regulation centered on the adoption of certain specified pollution control technologies. Although the 1970 Clean Air Act had already established national ambient air quality standards for a number of pollutants, including sulfur dioxide, it was the 1977 Clean Air Act Amendments that clarified national standards for sulfur dioxide and added a specific technology requirement for electric utilities. The amendments required that most new coal-burning plants use flue gas desulfurization units, or “scrubbers,” to achieve the required maximum emissions rates. To achieve the air quality standards, plants were required to demonstrate the use of “best available control technology” for each pollutant emitted, including sulfur dioxide. Because the legislation mandated the specific means by which the

utilities were to control their pollution, it created no incentive for them to innovate to increase the ability of the scrubbers to reduce pollution. Rather, the utilities faced only an incentive to develop methods to lower the operating costs of scrubbers, to reduce the costs of complying with the regulation.

The 1990 Clean Air Act Amendments, by enacting a market-based trading regime, radically shifted the utilities' approach to complying with the emissions reductions mandate. Utilities were required to hold permits for each ton of sulfur dioxide emitted. These permits were made tradable: a plant that found itself unable to cover its total emissions with the initial allocation of permits could purchase permits from another plant that had more permits than it needed. Plants were no longer required to install scrubbers; instead they could choose the method of reducing emissions that they found to be most cost-effective and thus were given an incentive to engage in research and development that would reduce emissions further.

Indeed, research into patents granted before 1990 in the electric utilities industry shows that innovation in that industry had no effect on how much pollution the scrubbers were removing, but instead sought to lower their operating cost. After the 1990 Clean Air Act Amendments, innovations, again as measured by patents granted, continued to lower operating costs but also increased the removal efficiency of scrubbers. By using a market mechanism, regulators were able to meet the goal of reduced emissions in a much more efficient and environmentally conscious manner: the dynamic market-based approach not only spurred environmentally friendly innovation, but also encouraged firms to control emissions in a more efficient and cost-effective way.

Creating a regulatory environment that enhances economic efficiency is a difficult task. Just as markets are not always perfect, so, too, government agencies are not inherently benevolent, omniscient, or omnipotent (Box 4-1). Unlike market participants, who are motivated primarily by the self-interested goal of maximizing their profits, government regulators often are motivated by several, sometimes conflicting, mandates. Regulators can also make mistakes. They may make assumptions or estimates that result in unintended consequences and increase the burden of regulation by imposing inappropriate standards, penalties, production restrictions, or prices. Further, the government may suffer from persistent problems in retaining sufficient knowledge and staffing expertise in the activity being regulated. Finally, individuals motivated by rent seeking or economically inefficient social goals may unduly influence regulatory decisions. All of these factors may lead regulators to make decisions that impair economic efficiency.

The President's Management Agenda for fiscal year 2002 provides a strategy for addressing inefficiencies in government and government regulation. This strategy aims to refocus government activities in ways that are citizen-centered, results-oriented, and market-based and that actively promote

### Box 4-1. The Government Is Not Perfect, Either

There are many ways in which markets may fail, or at least fall short of the “perfect” market described in any elementary economics textbook. A common result of such imperfections is that more or less of a good or service is produced than is optimal from the perspective of society as a whole. Nonetheless, when market failure is diagnosed, it is important to avoid a reflexive leap to the conclusion that the government can necessarily bring about a better outcome. Just as the actual operation of a market may deviate from the idealized model, so, too, government intervention may not always achieve the ideal outcome envisaged by lawmakers or regulators.

Whenever markets are alleged to have failed, policymakers need to consider the following question: Can the government bring about a particular outcome more efficiently than the market? Actual government regulators, unlike their omnipotent theoretical counterparts, face an array of potential complications that may make the answer to that question negative. The following are some examples:

- *Inability to respond effectively to market dynamics.* The bureaucratic environment in which regulators typically operate may impede their ability to act quickly in response to changing technology or market conditions. The result can be a significant drag on the economy.
- *Imperfect information about particular industries.* Government regulators may lack the necessary information or foresight to devise or implement effective regulation for an industry. Regulation that is uninformed can result in unforeseen consequences.
- *Lack of competitive pressure.* Regulators and other government officials do not face the same competitive pressures that firm owners and managers and other private sector actors do. It is precisely this competitive pressure that induces private firms to innovate and enhance their productivity, and its absence may prevent government regulation from being equally innovative and efficient.

Complications such as these may mean that even an imperfect market might achieve a more efficient outcome than government regulation, even if theory suggests that government intervention would improve on the market outcome. Policymakers, therefore, should consider not only market failure but also government failure, and should ask themselves tough questions about the likely efficacy of government intervention in the circumstances at hand.

innovation. By mandating more strenuous review of government costs and performance, the President's agenda seeks to balance the imperfections of government activity against those of the market. As part of this agenda, citizen-oriented government activities are intended to limit rent seeking by bureaucrats and private interests; results-oriented activities will be regularly reviewed and their impacts on overall economic efficiency assessed, to allow a better understanding of program costs and benefits; and market-based activities will be used to reduce informational and incentive discrepancies between the public and the private sectors, to help improve the quality of information available to regulators and the quality of their decisions.

## Do the Benefits Justify the Costs, and How Are Both Distributed?

On the one hand, one reason that regulation sometimes has an adverse impact on the general public may be that proponents of the regulation focus on its benefits and disregard its costs. On the other hand, proposed regulations whose benefits would justify the associated costs may be blocked because opponents focus on the costs and downplay the benefits. Whether or not a regulation is adopted may depend on how hard interest groups work to influence the legislative process and the regulatory agencies. As a result, some regulations may be adopted that benefit a particular group to the detriment of overall societal goals, whereas others that could be socially justified are blocked because they would impose significant net costs on particular groups. Appropriate regulation is based on the balancing of marginal costs and marginal benefits to society in general. When both costs and benefits are considered simultaneously, regulations that are particularly beneficial or detrimental can more easily be identified. In this process it is important to consider the regulatory cost to the whole economy, not just the direct budgetary cost to the government. Regulatory costs also include the private sector's direct and indirect compliance costs as well as incentive effects such as reductions in the incentive to innovate. To improve information about the benefits and costs of major Federal regulations (those with annual impacts in excess of \$100 million), the Administration is currently reviewing and revising its guidelines on regulatory analysis (Box 4-2).

From an economic perspective, the standard rule of thumb to ensure efficiency is that resources should be allocated across activities in such a way that the marginal benefit is equal to the marginal cost. For example, in the context of homeland security, it may be the case that additional resources devoted to international counterterrorism efforts would reduce the risk of terrorist attack much more than would additional resources spent on border enforcement. If so, resources should be shifted toward counterterrorism up

## **Box 4-2. Assessing the Economic Impact of Major Regulatory Initiatives**

Federal regulatory agencies issue approximately 4,500 new rulemaking notices each year. About 600 of these are projected to have effects of such magnitude as to warrant review by the Office of Management and Budget (OMB). Of those 600, between 50 and 100 each year meet the necessary criteria to be designated “economically significant,” that is, creating annual benefits or costs worth more than \$100 million. Every “economically significant” proposal must undergo a formal analysis by the agency initiating the proposal of its benefits and its costs. The OMB establishes guidelines for the regulatory agencies on how to perform these economic analyses. In an effort to promote their transparency and maximize the net benefits to society, the OMB and the Council of Economic Advisers are currently revising these guidelines.

Consistent with the principles of good regulation outlined in this chapter, one proposed revision would have agencies complement their benefit-cost analysis of proposed economically significant regulations with a cost-effectiveness analysis. The two types of analysis are conceptually very different: a cost-effectiveness analysis identifies those options for achieving the regulation’s objectives that make the most effective use of the resources available, but it does not require quantification in dollar terms of the relevant costs and benefits. This exercise provides the analyst with a transparent means of comparing regulatory outcomes across an array of policy choices while maintaining scientific rigor. Yet it is important to note that although all efficient policies are cost-effective, not all cost-effective policies are efficient. This fact highlights the advantages of properly recognizing the total benefits and the total costs of promulgating new regulations, reviewing existing ones, and developing legislative proposals concerning regulation.

In this spirit, the guidelines highlight several state-of-the-art techniques by which to estimate the benefits of a regulation, and they outline appropriate methods for estimating its costs. On the benefits side, the guidelines endorse the use of stated and revealed behavior in actual markets as signaling economic values. On the costs side, the guidelines urge that all of the costs associated with the regulation—including monitoring and enforcement costs, direct compliance expenditures, and other direct costs such as legal and transactions costs, product substitution, and discouraged investment—be recognized.

This major revision of the conduct of regulatory analysis is consistent with the Administration’s goal to establish a greater focus on accomplishment by producing performance-based budgets. Under this new approach, high-performing programs will be reinforced and poorly performing activities reformed or terminated. This paradigm change

**Box 4-2. —continued**

increases accountability and provides the necessary structure to more completely integrate information about costs and program performance in a single oversight process. This is a necessary first step in shifting budgetary resources among programs to ensure that the greatest possible benefits are achieved with the available funds.

to the point where the marginal impact on overall homeland security is unaffected by further resource shifting—that is, when risk mitigation per dollar is equalized across activities. This kind of economic analysis of major regulations generates information that can be used to distribute limited regulatory resources to those areas where they will do the most good.

Because even socially efficient regulation creates winners and losers, firms and other interest groups have an incentive to spend considerable resources trying to capture the benefits of regulation for themselves. Even when the benefits far exceed the costs, regulation rarely affects all participants equally. For example, regulation can create barriers to competition by raising the cost of market entry, or by imposing fixed compliance costs, which put smaller firms at a disadvantage relative to larger ones that can spread those fixed costs over their larger revenue base. Sometimes existing firms may successfully lobby for exemptions from new rules. For these reasons, the Regulatory Flexibility Act, as amended by the Small Business Regulatory Enforcement Fairness Act of 1996, specifically requires a separate analysis of the impact of new regulation on small businesses. Such analyses can limit, or at least shed light on, the rent-seeking activities of dominant firms and other interest groups.

Recent experience with regulation governing the introduction of generic pharmaceuticals illustrates these points. In this case, manufacturers of brand-name pharmaceuticals took advantage of government regulation to shelter their products from competition from lower priced generic substitutes. The brand-name manufacturers circumvented the spirit of the law, but not necessarily its letter, by listing minor variations on their patents in order to extend their protection from competition. Generic drugs represent a cost-effective means of providing Americans low-cost access to important medical technology. The market entrance of generic drugs, typically priced far below their branded counterparts, logically leads to their rapid substitution in place of name-brand drugs. The Hatch-Waxman Amendments to the Federal Food, Drug, and Cosmetic Act, enacted by the Congress in 1984, amounted to a major reform of the approval process for generic drugs and has led to a large

increase in the number of such drugs available to consumers. This profusion of generic drugs, whose use is also encouraged by health insurers, has saved consumers vast sums of money.

However, it has recently come to light that certain provisions of the Hatch-Waxman amendments are subject to potential abuse. Under the amendments, a generic drug maker may seek permission from the Food and Drug Administration to produce a generic equivalent of a brand-name drug whose manufacturer claims patent protection. However, the brand-name manufacturer is given the opportunity to obtain a stay on the marketing of the competing generic, during which time it can defend its patent in court. In recent years brand-name drug manufacturers have increasingly adopted a strategy of listing new patents—often for characteristics such as product packaging—following a generic manufacturer’s application to market an equivalent generic. Such a move forces the generic manufacturer to resubmit its application and effectively extends the government-enforced stay on generic competition. The Administration has proposed a new rule that seeks to counter this strategy and balance the need for property rights protection and innovation against the need for competition and greater access to lower cost generics. The new rule does this in two ways. First, it would limit a brand-name manufacturer’s ability to forestall generic competition by limiting the government-enforced stay on generic competition. Second, it would tighten the patent listing process to ensure that only appropriate patents are filed. The potential savings to consumers from these changes are estimated at \$3 billion annually.

## The Demand for Regulatory Reform

The more regulation limits the choices of producers, consumers, or investors, the greater is the possible harm to economic activity, and the greater the demand for regulatory reform. Moreover, the impact and efficacy of regulations can change over time. With time, regulations are more likely to become constraining, or simply irrelevant, because of changes in technology or in the products and services available in the marketplace. Such changes are often a prerequisite for successful regulatory reform, because they weaken resistance to reform from those interest groups that benefit from the status quo.

When government regulation controls prices, profits, or entry into a potentially competitive industry, effectively shielding certain incumbent firms from competition, regulatory reform can yield benefits for consumers, potential market entrants, and the industry as a whole. Reform of regulation in the airline, railroad, and trucking industries and the lifting of geographical restrictions on bank expansion are all cases in point. As a result of the

competition that followed regulatory reform of these industries, prices fell, innovation increased, and resources were more efficiently allocated. Gains may also be available from reform of government regulations that address persistent market imperfections, for example with regard to health, safety, or environmental quality. In these cases, reforming regulation to more closely comply with the principles of regulation outlined earlier in this chapter can reduce the costs of meeting regulatory goals.

Like the demand for regulation itself, the demand for regulatory reform arises for two distinct and conflicting reasons. Sometimes such regulatory harm comes to light when producers or investors perceive potential profit opportunities if the regulation is removed. Some calls for reform arise from the recognition that a regulation is imposing more costs than it is creating benefits, or providing unfair advantages to some at the expense of others. For example, when the restrictions on entry in the New York City dairy market, discussed above, raised milk prices there, New Jersey dairies saw the chance for profit if those restrictions could be jettisoned. The courts agreed, finding that if the New Jersey dairies were allowed to sell milk in New York City, the price of milk there would drop to that in other nearby locales where ample competition existed. In other cases, consumers themselves may discover that regulation is preventing them from finding desired products and services. For example, the regulatory requirement that certain prescription drugs be supplied in child-resistant containers made opening the container difficult for the elderly and the handicapped. Subsequently, the Consumer Product Safety Commission launched an educational awareness program to inform the public and pharmacists about appropriate exemptions from and requirements of safety cap regulations.

Other calls for reform, however, may arise because a firm perceives an opportunity to gain or take advantage of market power. This demand for regulatory reform is a type of rent seeking, as the firm is attempting to influence regulatory outcomes in order to receive favorable treatment for itself.

## Regulatory Review and Regulatory Reform

The President recently declared that, “There comes a time when every program must be judged either a success or a failure. Where we find success, we should repeat it, share it, and make it the standard. And, where we find failure, we must call it by its name. Government action that fails in its purpose must be reformed or ended.”

Regulation often has unintended consequences or causes changes in economic behavior that make it less desirable or effective than anticipated. This makes it important to revisit from time to time the question of whether the results of a regulatory initiative solve real problems that the American

people care about. In this sense, regulatory review represents an important backstop against policies that are misguided, ineffective, or outdated.

This principle can be illustrated by a simple anecdote in which a specific command-and-control regulation that appeared to offer a straightforward solution to an apparently uncomplicated situation in fact provoked a dynamic reaction that few if any had anticipated. This story shows how, even in the seemingly most innocuous cases, government regulatory failure can greatly complicate matters, reducing consumer choice and economic efficiency.

In 1972, in an effort to reduce the incidence of burns among children, the Federal Government implemented a regulation requiring newly manufactured pajamas for small children to be made flame-resistant. Amended in 1974 to include larger children's sleepwear, this standard required that fabrics used for children's sleepwear self-extinguish when exposed to a small open flame such as from a cigarette lighter, candle, or match. Although the regulation neither prescribed specific fabrics nor required flame-retardant treatments, in order to comply, manufacturers either switched to synthetic materials (mostly polyester) that were inherently flame-resistant or treated fabrics such as cotton with flame-retardant chemicals.

One such chemical, called TRIS, was widely used by industry as a flame retardant to treat acetate, triacetate, and some polyester garments. However, TRIS was subsequently found to be carcinogenic and was therefore banned from use in cotton sleepwear. Polyester then became the fabric of choice for manufacturers, since it did not require the use of a flame-retardant chemical. Parents, however, began to express a demand for natural fibers such as cotton for their children's sleepwear. In response to this demand, retailers began increasing their stocks of cotton and cotton-blend long underwear sets that did not meet the Consumer Product Safety Commission's flammability standard for children's sleepwear, in some cases intermingling them with flame-resistant sleepwear on children's sleepwear racks. Responding to this change in consumer preferences, in 1996 the commission voted to exempt snug-fitting sleepwear (and all infants' clothing up to size 9 months), after concluding that snug-fitting pajamas exhibited a lesser propensity to burn.

Once again, consumers responded to this restriction by altering their choices. They continued to purchase children's long underwear in large quantities, as well as traditional flame-resistant polyester sleepwear that had improved in style and comfort. They did not show a preference for snug-fitting pajamas, which tended to be less comfortable, and comfort was likely the primary concern of parents who preferred cotton sleepwear to synthetic garments in the first place. Unit sales of children's underwear increased from 1993 to 1996 by about 22 percent (98 million pieces). According to a well-known clothing trade publication, this gain in underwear sales was attributable to underwear being used as sleepwear. Unit sales of children's

sleepwear (excluding underwear) increased over the same period by about 28 percent (36 million pieces), reflecting an increase in sales of traditional fire-resistant sleepwear garments. In 2000 the Consumer Product Safety Commission launched an educational program for parents by requiring manufacturers to place hangtags and permanent labels on garments reminding parents to choose either snug-fitting or flame-resistant sleepwear.

This example highlights how even well-intended regulations can have a high cost and unexpected consequences. It also demonstrates that market forces continue to function after regulation is imposed: although the regulation sought to limit the options of producers and consumers, consumers' preferences ultimately determined what was actually manufactured and sold.

## Effects of Reform on Prices

When reformed regulation opens an industry to new entrants and frees prices to respond to market forces rather than regulatory fiat, prices typically fall. Deregulation of the airline industry is a prime example. Almost from its inception and through the late 1970s, the airline industry was subject to strict Federal regulation. The Civil Aeronautics Board (CAB), established by the Congress in 1938, exercised nearly complete control over the industry, with authority to establish maximum and minimum fares, control market entry and exit, and govern airlines' route structures. By the mid-1970s, however, pressure for reform of airline regulation was building, motivated in part by research arguing that regulation suppressed competition and resulted in welfare losses to society. The CAB responded to this pressure in the late 1970s by reducing entry restrictions and control over fares. Major cuts in fares soon followed, accompanied by higher industry profits. These initial positive results spurred the Congress to pass the Airline Deregulation Act (ADA) in 1978. From 1977 to 1996, airfares fell approximately 40 percent in inflation-adjusted terms. According to a recent estimate of the welfare gains from this regulatory reform, before September 2001 consumers were saving about \$14.8 billion (in 2000 dollars) annually in lower fares compared with what they would be paying if the previous system were still in place. One may reasonably assume that this downward pressure on prices resulted, at least in part, from increased industry competition: as of late 2002, 32 domestic carriers flew scheduled service in the United States, compared with only 15 in 1978.

Regulatory reforms in other industries have had a similarly salutary effect on consumer prices. Until 1980 the Interstate Commerce Commission (ICC) regulated shipping rates for railroads and prevented railroads from abandoning unprofitable lines. After partial regulatory reform in 1980, rates on rail freight fell steadily: by 1999 real rates were roughly half their 1984 level. Regulatory reform in the trucking industry, which took place primarily between the late 1970s and the early 1980s, resulted in similar rate declines.

From the mid-1930s to the beginning of reform in 1980, regulation had effectively controlled shipping rates and given incumbent truckers veto power over the extension of new or expanded authority to transport goods. This stifled competition from potential entrants. Declines in shipping rates by truck and rail, combined with improved flexibility and on-time dependability, also made possible by regulatory reform, are estimated to have saved U.S. industry between \$38 billion and \$56 billion annually.

## Effects of Reform on Innovation and Consumer Satisfaction

Another common effect of the competition fostered by regulatory reform is increased innovation, resulting in greater variety and higher quality for consumers. Before deregulation of the trucking industry, both permitted routes and goods carried were narrowly specified, creating costly inefficiencies. Reform allowed truckers to offer on-time delivery and more flexible service, so that manufacturers could order components to arrive “just in time” at the assembly line, and retailers could have the finished goods “just in time” to be sold. This streamlining resulted in greatly reduced costs of holding and maintaining inventories.

The case of the airline industry is particularly revealing of the potential for innovation unleashed by regulatory reform, and the resulting benefits to consumers. Before reform, airlines competed primarily by attempting to provide better service to customers, since they were essentially prohibited from competing on the basis of price. In the spirit of such nonprice competition, airlines attempted to offer more flights while decreasing the number of passengers on each flight and emphasizing the quality of food and other in-flight services. Following reform, it was expected that fares would fall but that service quality would decline as well, in accord with consumer preferences. In reality, however, the unanticipated development of an entirely new route structure—the hub-and-spoke system—allowed airlines to increase flight frequency, giving customers a wider variety of departure times from which to choose. Under the regulated regime, with its restrictions on entry of existing carriers into currently served markets, such massive route restructuring would have been impossible. Research has shown that consumers valued this innovation, an unexpected benefit of unregulated competition, far more than enough to compensate for other declines in service quality such as longer average travel times. Research has also shown that the benefit to consumers is about \$10.3 billion each year from increases in flight frequency, thanks to the hub-and-spoke system, in addition to the billions in gains from lower fares.

The same competition that produced the efficiencies of the hub-and-spoke system continues to inspire innovation and reshape the structure of the airline industry in efficiency-enhancing ways. Following the hub-and-spoke revolution, another wave of innovation resulted in the emergence of carriers offering low-fare, no-frills, point-to-point service as an alternative to the major airlines that dominated the major hubs. This, too, was a direct response to consumer preferences. More recently, the introduction of the “regional jet,” a new type of small jetliner, is again changing the face of air travel. The low operating costs of regional jets make it more economical to serve medium-length routes capable of supporting only a modest number of passengers. This innovation opens up the prospect of adding smaller cities, more frequent service to the spokes of hubs, and possibly even a new market for point-to-point service. Without the stimulus of competition associated with regulatory reform in the airline industry, these efficiency-enhancing, cost-saving innovations in air travel would likely not have been conceived, much less brought to fruition.

## Effects of Regulatory Reform on Resource Allocation

In general, regulation that stifles entry and competition presents an attractive opportunity for reform to improve the efficiency of resource allocation. A corollary, however, is that, in some instances, reform can result in transitional losses to parties that were protected under the regulatory scheme. For example, truckers who had benefited from entry barriers that kept shipping rates artificially high saw a 10 percent drop in their wages relative to workers in the rest of the economy; before reform, however, ICC-licensed truckers paid their workers about 50 percent more than comparable workers in other industries. Another efficiency-enhancing reallocation of resources can be seen in the airline industry, where some carriers succumbed to competition following reform but were replaced by new, more competitive entrants. By 2001 the total market valuation of the major airlines alone, adjusted for inflation, was more than double that of all carriers in 1976, before regulatory reform.

The lifting of restrictions on the geographic expansion of banks provides yet another example of the efficiency gains and economy-wide benefits that result when regulatory reform induces a reallocation of resources. These reforms involved both State and Federal actions, including the passage of the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994. Beginning in the 19th century and continuing through much of the 1970s, States imposed geographic restrictions on the ability of banks to open branches. Such restrictions were motivated in part by a desire to protect bank profitability, since taxes on banking activity were an important source of revenue in some States, as well as by fears that unfettered bank expansion

would lead to a concentration of financial power. The development of large corporations with interstate banking needs ultimately created pressure for a less fragmented banking system, but that need was not fully met until a major episode of reform occurred at the State level, which began in 1978 and was essentially complete by the end of 1992.

Although little evidence is available on the effects of the Federal-level reforms, studies of State-level reforms indicate impressive net benefits. Bank efficiency, and thus the efficiency of economy-wide resource allocation, increased following the introduction of statewide banking, as loan losses, noninterest expenses, and loan rates all fell significantly. With these improvements came more rapid growth of both personal income and State government revenue in States that had embarked on branching reform. These increases in bank efficiency reveal the implicit cost of the old branching regulations and are attributable to a number of factors. First, restrictions on branching and interstate banking may have limited opportunities for the most efficient banks to expand. When those restrictions were lifted, the weaker banks lost some of the protection from competition they had enjoyed and gave up market share to the stronger banks, improving efficiency in the allocation of resources. Second, the lifting of geographic restrictions may have increased pressure on managers concerned about takeovers, resulting in increased managerial discipline; evidence of this is a higher turnover rate for banks' chief executive officers and a tighter relationship between pay and performance. This increased discipline may also have improved banks' performance. Finally, the geographic restrictions had limited banks' ability to expand to their most efficient size; removing these restrictions thus allowed small banks to grow and to take advantage of economies of scale by reducing their average costs and increasing their opportunities to diversify the risks associated with lending.

## Pitfalls of Regulatory Reform

The potential benefits from regulatory reform for firms, consumers, and the broader economy are great. Yet reform holds several potential pitfalls if not undertaken with considerable care. Efforts to reform the regulation of thrifts in the 1980s and of electricity markets in California in the 1990s led in both cases to costly debacles, increasing public skepticism about reform. But regulators, advocates of reform, and the general public can learn much from these experiences, and applying those lessons will help ensure the success of future efforts. Although reform in these markets held great promise for efficiency gains, with corresponding benefits to consumers, the precise form that reform took in these instances illustrates the complexity of the issues with which reform must typically contend. The two cases explored here underline the

dangers of partial or incomplete reform. They also show the dangers of not considering potential deviations from competitive conditions or the creation of perverse incentives.

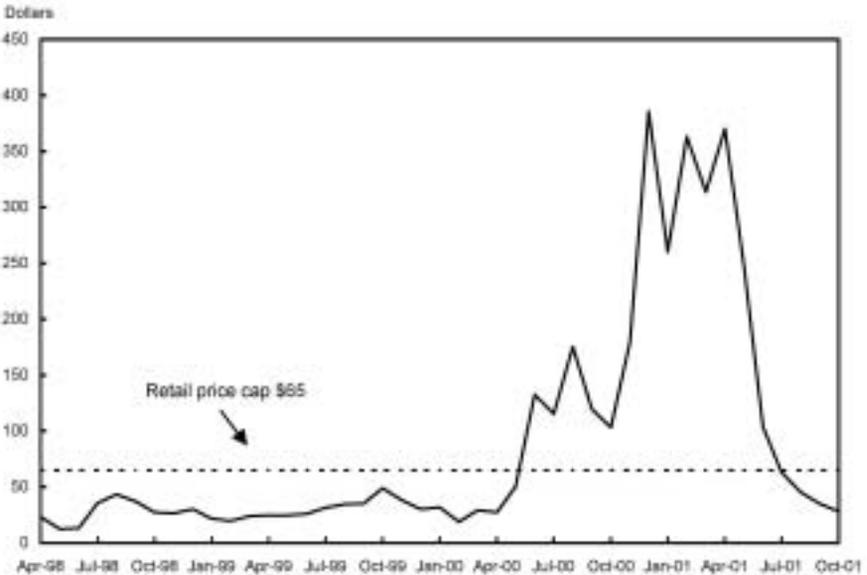
## Failure to Coordinate Reforms

California's recent attempt to deregulate its electricity markets demonstrates the potentially expensive consequences of regulatory reform that lifts restrictions in one part of an industry without addressing restrictions elsewhere in the same industry. For most of its history, the electricity industry in California was heavily regulated and heavily concentrated: a few privately owned, vertically integrated monopolies owned and operated electricity generation, transmission, and distribution facilities throughout most of the State. Under pressure from consumers, who paid some of the highest electricity prices in the Nation, the California legislature in 1996 passed a restructuring law. Among other things, this law required the traditional monopolies to open their transmission and distribution lines to competing generators and wholesale marketers, and it encouraged utilities to divest their existing generating capacity. Independent power producers were allowed to apply for environmental and siting permits and to sell power to eligible wholesale and retail customers. Retail customers were permitted to choose between purchasing electricity directly on the wholesale electricity market and continuing to pay regulated rates to obtain the "default" service from their local utility distribution company. Utilities serving retail customers were required to obtain electricity at unregulated rates through newly established wholesale market institutions and to charge customers a regulated rate for that electricity.

The restructured wholesale and retail markets for electricity functioned reasonably well as long as demand remained low or moderate and generation remained high. Regulators did not sufficiently anticipate, however, that the excess capacity that prevailed in the industry before restructuring would dissipate as rapidly as it did. Many interdependent factors, including an increase in electricity demand, rising natural gas prices, rising prices for pollution emissions permits, and other problems on the supply side, combined to drive wholesale energy prices higher than regulators had expected. This proved financially disastrous for the utilities, because the fixed price at which they were compelled to sell electricity to retail customers was now far below the wholesale price at which they could purchase electricity. In December 2000 utilities were paying almost \$400 a megawatt-hour for electricity in the wholesale market and reselling it to retail customers at \$65 a megawatt-hour (Chart 4-3). Their burden was compounded by the fact that regulators refused to allow the utilities to enter into long-term forward contracts to hedge their short positions. Ultimately, the failure to coordinate the reform of wholesale and retail electricity markets in California proved a leading factor in

Chart 4-3 California Power Exchange Prices per Megawatt-Hour

During the California electricity crisis wholesale prices exceeded the retail price cap, bankrupting utilities.



Source: Paul L. Joskow, "California's Electricity Crisis," *Oxford Review of Economic Policy*, Vol. 17, No. 3, 2001.

the effective bankruptcy of California's two largest utilities and the collapse of the wholesale markets, which precipitated an expensive effort to guarantee continued electricity availability.

## Deviation from Competitive Conditions

Other factors also contributed to the failure of California's experiment in electricity deregulation. Although spot markets worked reasonably well at low and moderate levels of demand relative to supply, the fact that consumers were sheltered from price fluctuations meant that, in situations where demand was high relative to supply, even small producers had considerable market power. Generators quickly found that, under these circumstances, withholding electricity supply led to higher prices that increased their profitability, further roiling markets. From November 2000 until May 2001, about 35 percent of total generating capacity was not in service—roughly double the typical historical outage rate. California government officials have argued that, in some cases, plants were withdrawn from service for strategic reasons, a claim that generators dispute. In any case, regulators had not planned for this extreme situation and had not built adequate flexibility into the regulatory structure to respond effectively. Moreover, by keeping retail prices fixed, regulators short-circuited the pricing mechanism and precluded the possibility that consumers would respond to higher electricity prices by curtailing consumption.

Furthermore, by failing to address problems in the licensing process for new power plants and by creating an atmosphere of uncertainty over their potential profitability, regulators may have diminished the ability and the incentives of market participants to respond to high prices in the longer term by developing new generating capacity.

To prevent widespread blackouts, the State of California itself eventually had to enter into the sort of long-term contracts for electricity production that regulators had previously prevented utilities from entering. However, because these contracts were signed in the spring of 2001 at the height of a spot market crisis, California committed itself to purchase power at prices at least three times those prevailing in futures markets by the end of that summer. Had all of the factors complicating electricity deregulation been carefully considered, had the possibility of deviations from competitive conditions been entertained, or had lessons from successful reform efforts in other jurisdictions been learned, California might have avoided this costly experience.

## Creating Perverse Incentives

In any regulatory reform, special care must be taken to ensure that the proposed changes do not inadvertently foster incentives for parties to engage in activities or take risks that are likely to be harmful to the public good or counter to the purpose of the reform. Another telling case of a reform that created perverse incentives is that of the thrift industry, where regulatory reform without appropriate safeguards resulted in imprudent risk taking at the expense of the government.

Until the late 1970s, government regulation set limits on the activities that savings and loan associations, or thrifts, could undertake, essentially constraining them to taking in deposits and making mortgage loans. Because the deposits they accepted were short term and the mortgages they issued long term, the thrifts were exposed to interest rate risk: a sharp increase in short-term interest rates would increase their deposit interest costs while leaving their interest income from mortgages substantially unaffected. In 1966 Regulation Q, which established an interest rate ceiling on bank deposits, was extended to cover thrift deposits as well. This regulation temporarily resolved the interest rate squeeze facing the thrifts, but at the expense of depositors, for whom few alternative instruments offered safety and liquidity comparable to thrift or bank deposits. Other financial firms soon learned to circumvent Regulation Q by creating money market mutual funds. With this innovation, Regulation Q ceased to provide interest rate protection to thrifts, which then began to run substantial losses with the rising inflation and sharply higher interest rates of the late 1970s and early 1980s. In response to the thrifts' pleas for relief, the Congress passed legislation in 1980 and 1982 that significantly expanded the thrifts' lending authority: federally chartered thrifts were now

permitted to make commercial real estate loans, commercial loans, and consumer loans and to take direct ownership positions in investment projects. The reform also allowed thrifts to offer adjustable-rate mortgages and phased out interest rate ceilings on deposits.

In industries throughout the economy, creditors protect their interests by monitoring the management and financial health of the firms they lend to. Owners and managers who enjoy limited liability may face incentives to take excessive risks with the firm's assets or to operate in other ways that conflict with the creditors' interests. This danger is particularly acute when the firm is running losses that put it in danger of imminent bankruptcy. In the case of banks and thrifts, however, Federal deposit insurance short-circuits this usual safeguard. Thus no mechanism existed to induce potential depositors to avoid the riskier thrifts. A thrift's principal creditors—its insured depositors—have little incentive to monitor the institution's financial health or its risk taking, because their deposits are insured by the Federal Government to a maximum of \$100,000 per account. Also, thrifts faced flat rates for deposit insurance, instead of rates adjusted for the likelihood of insolvency. Accordingly, no economic disincentive deterred thrift managers from taking excessive risks.

The usual regulatory response to the absence of this normal, market-based protection is "safety and soundness" regulation, in which the government exercises the oversight role normally carried out by a firm's creditors. The Achilles' heel of thrift reform was precisely that it failed to accompany the thrifts' deregulation with enhanced safety and soundness regulation. The effective bankruptcy of the Federal Savings and Loan Insurance Corporation (FSLIC) in the early 1980s constrained the regulatory response as the capital positions of some thrifts eroded. In contrast to the airline industry, where safety regulation was maintained as reform proceeded, the necessary safety and soundness regulation of thrifts was undermined. Minimum net worth requirements for thrifts were actually lowered in both 1980 and 1982. Accounting rules were liberalized, so that thrifts could avoid the consequences of failing to maintain inadequate capital. Also, the number of field-force examiners declined between 1981 and 1984, and the number of examinations per thrift and per billion dollars of thrift assets fell significantly. Moreover, the Congress raised the per-account limit on federally insured deposits from \$40,000 to the present \$100,000, further discouraging depositors from taking an active oversight role and increasing the exposure of the Federal Government to the risky behavior of thrift managers. These conditions enabled thinly capitalized or insolvent thrifts to act on their incentive to shift risk to the FSLIC, and ultimately the taxpayer, through increases in asset risk and capital distributions to shareholders.

Regulatory reform of the thrift industry could have been just as beneficial as that in other industries. The reforms provided thrifts with new opportunities to improve their financial condition by opening up new investment

and loan markets to them and by increasing their ability to attract new deposits. Without the check of additional safety and soundness regulation, however, those thrifts whose financial condition was deteriorating faced incentives, and were given the means, to engage in excessive risk taking. Ultimately, this combination contributed importantly to an industry-wide crisis, which culminated in 1989 in a Federal bailout whose ultimate cost to taxpayers was \$124 billion.

## Putting the Principles to Work

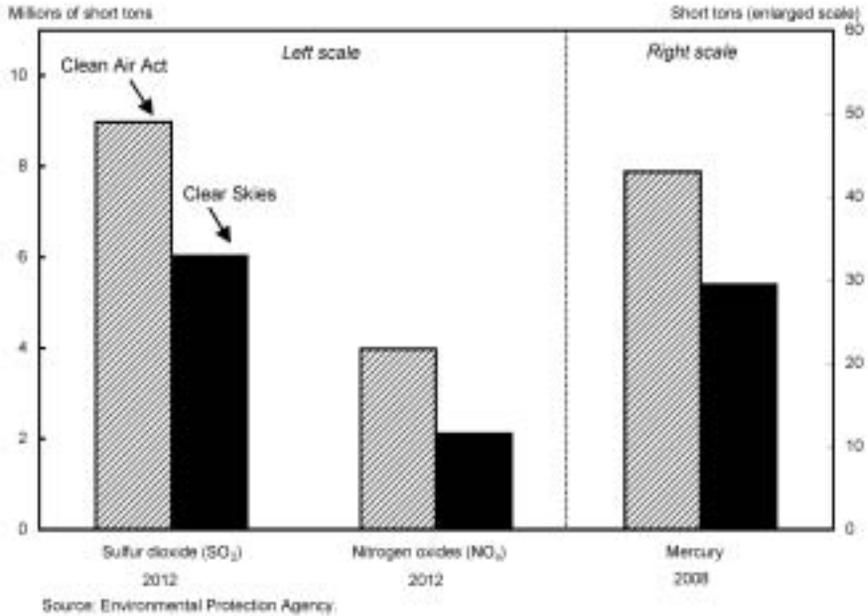
Of course, inventorying and showcasing sound regulatory principles is not enough; good principles that are not acted upon represent lost opportunities and frustrate effective public policymaking. Whether the principles outlined in this chapter become a dead limb on the tree of regulatory policy evolution or a vibrant branch depends on whether policymakers act to put these ideas into practice.

This Administration has pursued the principles of sound regulatory reform while recognizing that sound science drives good policy. It is now undertaking a major revision of the guidelines for conducting regulatory analysis that utilizes these principles to ensure a greater focus on performance and efficiency. The new guidelines emphasize transparency and increased accountability, which together will provide the necessary structure for the sharing of information across regulatory agencies. This will ensure that the funds available for regulatory activity achieve the greatest possible benefits.

Examples from the environmental arena show that the Administration is pursuing these principles in its regulatory initiatives. Efficient policies are a hallmark of the President's strategy. The President's Clear Skies Initiative to improve air quality in the United States uses market-based regulation to tackle a pollution problem on which a scientific consensus has emerged. Announced by the President on February 14, 2002, Clear Skies will reduce emissions by power plants of three noxious air pollutants by well over half—sulfur dioxide by 73 percent, nitrogen oxides by 67 percent, and mercury by 69 percent—over the next 16 years. The reductions will also occur in a timely fashion, as illustrated in Chart 4-4, which compares the near-term reductions under Clear Skies with those under the Clean Air Act Amendments of 1990.

Clear Skies uses a dynamic approach to regulation that provides firms with the flexibility to reduce emissions in the most efficient and least costly manner possible. Through a market-based cap-and-trade program, Federal emissions limits, or caps, are set for each pollutant, and emissions permits are distributed

**Chart 4-4 Emissions of Selected Pollutants Under the Clean Air Act and Clear Skies**  
 The President's Clear Skies proposal achieves more emissions reductions than the Clean Air Act.



to electricity generators. The cap is to be reduced over time, first in 2010 and again in 2018, and firms are required to respond by reducing their emissions accordingly. The advantage of this market-based approach lies in its ability to allow individual firms to choose for themselves the most efficient methods to reduce emissions. If they reduce emissions by more than the cap requires, they can sell their unneeded permits on the open market or bank them for later use; if their emissions exceed the cap, they can purchase unused permits from other firms. Within this structure, firms can design an efficient and cost-effective strategy tailored to both their current budgets and their future plans. Further, this approach creates an incentive for firms to innovate to find economical techniques for reducing emissions. This dynamic approach to regulation is in sharp contrast to previous methods of command and control, which were characterized by uncertainty over their enforcement.

The Clear Skies Initiative is modeled on the highly successful acid rain reduction program under the Clean Air Act, which also used a cap-and-trade system. This program accomplished dramatic reductions in sulfur dioxide emissions at two-thirds the compliance cost of a traditional emissions reduction program. It resulted in a decrease in pollution greater than all other Clean Air Act programs combined. Emissions were reduced more quickly than required: annual sulfur dioxide emissions were cut in the first phase by

50 percent below allowed levels. Just as remarkable, the program requires only a handful of EPA employees to administer. By taking this successful program as its model, the Clear Skies Initiative hopes to achieve the same levels of efficient and cost-effective emissions reductions.

The Clear Skies Initiative is an example of a new, original program that enjoys scientific consensus and adheres to the principles of good regulation. The Administration has also aggressively pursued reform of existing regulatory programs in the area of air pollution. An example is the proposed changes to New Source Review (NSR). Established as part of the 1977 Clean Air Act Amendments, NSR is intended to protect public health and welfare as new sources of air pollution are built and when existing sources are modified in a way that significantly increases air pollutant emissions.

When the Congress established NSR, its intent was to maintain and improve air quality while providing for economic growth. Through the issuance of mandatory permits, regulators oversaw the construction and modification of plants by establishing various actions that the sources had to undertake to control emissions. Although this appeared at the time to be a viable approach to emissions regulation, over time NSR has become substantially more complex as industrial practices and regulations have evolved.

In June 2002 the EPA issued a report to the President on NSR, citing several adverse impacts of the regulation. Generally, the report found that NSR impedes or results in the cancellation of projects that would maintain or improve the reliability, efficiency, or safety of existing power plants and refineries. Not only did the regulatory uncertainty and lack of flexibility surrounding NSR hinder investment, the report found, but the added costs and delays imposed by the NSR process had become quite burdensome as well. The NSR permit process can add more than a year to the time needed to review proposed modifications to a plant and can cost over \$1 million. Such obstacles might lead firms to delay or forgo plans to modernize their facilities in ways that would benefit the environment.

To take just one example, a manufacturer that operates a process that includes a drying system determined that the system's energy efficiency could be improved if the existing drier nozzles were replaced with Teflon-coated nozzles. The firm found, however, that the replacement would be economical only if the expense of obtaining an NSR permit could be avoided. NSR currently does exclude repairs and maintenance activities that are deemed routine, but it relies on an intricate and lengthy analysis to determine whether a given repair meets the definition of "routine." Since the firm could not readily discern whether the installation of new nozzles would be considered routine maintenance, a repair, or a replacement, it decided not to proceed with the project. In this way, NSR deters firms from conducting needed repairs and often results in unnecessary emissions of pollutants. In this case NSR requirements actually made the environment worse off.

The Administration recognizes that government action that fails in its purpose must be reformed or ended. Recent EPA research points to the conclusion that the NSR program has become outdated and is in need of revision: although NSR was intended to be a method of reducing pollution, it has led to actions by the private sector that were not intended and that do not promote the goals of the regulation. After careful consideration of the detrimental effects of the regulation, this Administration has chosen to undertake reforms that will remove constraints on firms that wish to make plant-level modifications that will have beneficial impacts on the environment.

## Conclusion

Administered effectively, government regulation can contribute greatly to the Nation's economic well-being. But regulation is not a silver bullet. Unintended consequences occur and can negate the positive effects of regulation. Although no regulatory agenda is foolproof, this chapter has showcased some fundamental principles of regulation and regulatory reform that can foster competition and correct market failures while maintaining both static and dynamic efficiency. These principles include the encouragement of economic flexibility and dynamism, an increase in market orientation, and a reduction in reliance on command-and-control regimes. In addition, regulatory review is an important safety valve for relieving the regulatory burden.

The two policy initiatives summarized above—the adoption of Clear Skies legislation and the reform of NSR—highlight the shortcomings of a one-size-fits-all regulatory approach. In some cases, when the science dictates it, regulation must be made more stringent. In others, where regulation impedes progress, reforms must be instituted that reduce or change the nature of the regulation. The principles laid out in this chapter, together with the lessons learned from past experience, can lend important insights into efficient ways to tackle such difficult issues as homeland security and corporate reform.