
The Costs and Benefits of Regulation: Implications for Developing Countries

J. Luis Guasch • Robert W. Hahn

The literature on the benefits and costs of regulation demonstrates that this issue can be explored systematically using standard economic analysis. It also shows that regulation can have a significant adverse impact on economic growth. Specifically, regulation aimed at controlling prices and entry into markets that would otherwise be workably competitive is likely to reduce growth and adversely affect the average standard of living. In addition, process regulation can impose a significant cost on the economy. Nonetheless, social regulations may have significant net benefits for the average consumer if designed judiciously.

There are several policies developing countries might consider adopting to improve their general approach to regulation. The appropriate regulatory tools and framework will depend on many factors, including bureaucratic expertise, resource availability, political constraints, and economic impacts. There is a general need to enhance the capability for evaluating regulation at the local and national levels.

The past two decades have witnessed two trends in regulation. First, there has been an unparalleled rise in new regulations related to health, safety, and the environment. Second, there has also been substantial economic deregulation of certain industries in some countries, including airlines, trucking, railroads, financial markets, energy, and telecommunications. At the same time, to complement the objectives of their far-reaching privatization programs, developing countries have begun to examine regulations that keep prices inefficiently high.

The increased interest in regulatory reform can be explained in part by a growing understanding of the impacts of regulation. The rationale that certain sectors had to be regulated because they were “natural monopolies” vital to national social or strategic interests is no longer considered valid. Moreover, the costs that regulations can impose on the economy are now better understood. Indeed, scholars now appreciate that regulation is subject to political influences and is rarely implemented with the sole purpose of improving economic efficiency; in many cases regulation has had

adverse effects on the economy. That argument forms the basis for the trend toward regulatory reform as globalization increases the pressure to reduce production costs and as officials react to the increased mobility of capital and labor by adjusting their policies to reflect the likely impact of regulations on price changes.

Not all regulation is on the decline, however. Citizens in many countries express a desire for more regulation in areas such as environmental protection, public health, and safety standards. Rising incomes partly explain the increased interest; as consumers become wealthier, they demand more amenities such as cleaner air and water and better sanitation. And as politicians seek to supply more of these goods and services, they will also explore more efficient ways of supplying them.

Current political concerns with limiting tax increases in many countries are also creating incentives to use certain kinds of regulation. When legislators rein in spending and tax levels, regulation can be a useful substitute for achieving political objectives, such as redistributing income to particular interest groups in exchange for political support. In this kind of political environment, legislators adopt regulatory requirements or mandates whose costs are not directly paid for by taxpayers; although less visible, these costs are nonetheless real. From the government's perspective, the effort appears to be relatively low cost. The federal budget is barely affected when a major change is mandated by regulation.

Why Regulate?

The most common economic arguments for regulatory intervention are market failure and considerations of equity. In the case of social regulation, a primary rationale is that without government intervention, individual companies may not take into account the full social cost of their actions. A firm may pollute excessively unless it incurs some implicit or explicit cost for polluting, for example, or workers may not have adequate information on health and safety hazards in the workplace to make fully informed choices. The argument for economic regulation has to do with the potential for improving production efficiency. If economies of scale exist, a single firm may, in theory, be able to produce more efficiently than several competing firms, but its monopolistic power may need to be restrained through regulation. There is some justification for pursuing these objectives, but experience suggests that such rationales are often not persuasive in practice.

Correcting market failures and ensuring equity are laudable goals, but achieving those goals through regulation is not always successful. Just as there is potential for many kinds of market failure, so too is there potential for government failure. Economic regulation involves an understanding of the cost and demand structure of an industry, but a regulator typically does not have access to such information. Simi-

larly, health, environmental, and other social regulations must frequently be based on very limited information.

Political problems also lead to inefficient economic results. Because regulation redistributes resources and rents, politicians often use it to secure political gains rather than to correct market failures. A large array of regulatory instruments, such as quotas, licenses, and subsidies, is used to channel significant amounts of wealth to influential groups in society. In the United States, for example, price supports on peanuts resulted in an average annual consumer-to-producer transfer of \$225 million (in 1987 dollars) with an associated deadweight loss of \$34 million (Rucker and Thurman 1990). Wealth transfers are also a consideration in social regulation. Environmental and energy mandates frequently carry a heavy price tag.

Of course, if regulation becomes very inefficient and visible, pressure for reform may build. Firms with new technologies may lobby for reduced regulation; consumers and businesses may find ways to buy products and services at lower prices and opt out of the regulated markets. These considerations are particularly apt when demand can be met by tradable goods. Then the pressure to deregulate will come from domestic producers who must compete with less regulated imports. In addition, producers of tradable goods that rely on heavily regulated suppliers will have an interest in facilitating deregulation of these sectors to lower their overall production costs.

Estimating the Impact of a Regulatory Change

Perhaps the most difficult task in estimating the impact of a regulatory change is specifying the counterfactual: What would have happened in the absence of that change? By comparing the effects of the counterfactual with the change induced by the regulation, it is possible to estimate the differences in costs and benefits between the two conditions and to calculate the impact on producers and consumers.

Once a counterfactual has been specified, there are five general approaches to estimating the cost of regulation—econometric analysis, expenditure evaluation studies, engineering cost analysis, productivity studies, and general equilibrium analysis.

- *Econometric studies* typically evaluate output markets directly or use production and cost functions to measure the impact of regulatory change. Although such studies do provide a formal statistical apparatus with which to test hypotheses, their formulation is typically quite general, glossing over the precise nature of actual production functions. Macroeconomic models are sometimes used in conjunction with econometric estimation to assess the economywide effects.
- *Expenditure evaluations* frequently rely on surveys of firms or businesses to determine costs of compliance. Direct surveys produce easily quantified (and often large) estimates of the cost of regulation, but such surveys face several

problems. The first involves potential respondent biases. For example, a firm or corporation may inflate its estimated costs in hopes that, if others follow suit, politicians will consider providing regulatory relief. More important, however, direct expenditure studies do not specify a counterfactual. For example, an automobile company may choose to install stronger bumpers on its cars even without a regulation forcing it to do so. Attributing the added cost of such bumpers to government regulation overstates the impact of regulation.

- *Engineering approaches* calculate the added cost of installing equipment directly, adjusting for quality changes. Again, the question is what kind of car would have been built in the absence of specific environmental regulations.
- *Productivity studies* chart the difference between observed productivity changes over time and those that would have occurred in the absence of one or more federal regulations. These studies suffer from several problems, such as their reliance on expenditure data and an inability to specify the determinants of macroeconomic performance over time.
- *General equilibrium models*, which have become more popular recently, examine how a perfectly competitive market responds to a new policy, such as a change in regulation. The effects of a regulation can be linked to changes in output, employment, and in some cases welfare. Although general equilibrium models are not without their problems, including substantial data requirements, their results provide a better picture of regulatory effects in some cases. Simply stated, the methodological issue boils down to defining the conditions under which it is reasonable to assume away all but the most important effects.

The two basic approaches to measuring benefits rely either on asking people what they are willing to pay for changes in regulatory standards (contingent valuation) or on inferring from observed behavior the amount individuals actually pay for such quality changes. Although contingent valuation is particularly useful when markets do not exist for the commodity to be valued (for example, wilderness areas), it suffers from a likely divergence between what people choose to tell the interviewer and how they would behave under actual, rather than hypothetical, conditions.

Researchers rely on studies of averting behavior and on hedonic (shadow) price or wage methods to infer a willingness to pay. For example, certain neighborhoods have constructed barriers to mitigate the effects of highway or airport noise. The benefits of the noise reduction are then assumed to be at least the cost of the expenditure. Shadow price or wage methods attempt to evaluate the marginal value of quality improvements in specific amenities. For instance, the value workers implicitly place on safety is assumed to be the wage premium received by those working in more hazardous, although otherwise identical, circumstances. As such, econometric analyses of the implicit wage (or price) premiums can reveal the amount workers are willing to pay for improved workplace safety and, in the aggregate, their willingness to

pay to prevent an expected fatality. The technique has been fruitfully applied in a number of settings, including the valuation of reduced crime, reduced highway or airport noise, cleaned-up hazardous waste sites, and other location-specific amenities.

Hedonic estimation procedures are useful but rely on very indirect methods that can, under certain circumstances, lead to identification problems. For instance, specifying all the relevant demand and supply characteristics that determine where people choose to live is a daunting econometric task, and one that may be severely biased if any of the determinants have been omitted. Moreover, in the case of estimating the value of improved visibility and health, statistical problems often arise. Further, people may not be completely informed about certain risks, such as those associated with particular jobs, hazardous waste sites, and polluted air. Despite these problems, rapid advances in this relatively new technique promise improved empirical estimates of commodities not explicitly traded in the marketplace.

Estimates of Benefits and Costs

In the first study to synthesize data on the costs and benefits of regulation, Hahn and Hird (1991) distinguished between transfer costs and efficiency costs. Transfers represent payments from one group to another (for example, producers to consumers); efficiency costs represent net losses in producer and consumer surpluses. Both measures are important, but for different reasons. Transfer payments provide a measure of the winners and losers from regulatory change, while changes in net surplus provide an indication of the overall impact of a regulation on the economy or industry under investigation.

Tables 1 and 2, which show estimates of the costs of economic regulation and the costs and benefits of social regulation in the United States, demonstrate that it is possible to explore systematically the costs and benefits of regulatory activity using standard economic analysis. According to the analyses summarized in the tables, the efficiency costs appear to be much smaller than the transfer costs—information that should be taken into account when considering the effects of regulatory intervention. For systematic economic studies of federal regulations in the United States, see Weidenbaum and DeFina (1978); Litan and Nordhaus (1983); Hahn and Hird (1991); Hopkins (1992); Winston (1993); and Office of Management and Budget (1997).

Hopkins (1992) argues that the costs of process regulation are also substantial. Table 3 shows that the total cost of federal regulation in 1991 was estimated at \$542 billion, or about 9.5 percent of gross domestic product (GDP), including transfers. The largest component of that cost was process regulation—the \$189 billion in annual expenditures related to government paperwork requirements, primarily for tax compliance. These costs do not necessarily represent efficiency costs, however; one must consider all aspects of a tax system in evaluating its impact on efficiency. None-

Table 1. Estimated Annual Costs of Economic Regulation in the United States, 1988
(billions of dollars)

<i>Sector</i>	<i>Efficiency costs</i>	<i>Transfers</i>	<i>Sources</i>
International trade	17.3	85.6–110.6	Hufbauer, Berliner, and Elliot (1986)
Telecommunications	< 14.1	< 42.3 ^a	Wenders (1987)
Agricultural price supports	6.7	18.4	Gardner (1987)
Air transport	3.8	7.7	Morrison and Winston (1986, 1989)
Rail transport	2.3	6.8 ^a	Winston (1985)
Postal rates	—	4–12	President's Commission on Privatization (1988)
Milk marketing orders/ price supports	0.4–0.9	0.9–3.5	Ippolito and Masson; Buxton and Hammond (both cited in MacAvoy 1977)
Natural gas ^b	0.2–0.4	5.0	Loury (1983)
Barge freight	0.2–0.3	0.6–0.9 ^a	Litan and Nordhaus (1983)
Davis-Bacon Act	0.2 ^a	0.5	Thiebolt (1975) (updated)
Credit	0.05–0.5	0.15–1.6 ^a	Litan and Nordhaus (1983)
Ocean freight	0.05–0.08	0.15–0.22 ^a	Jantscher (1975)
Total	45.3–46.5	172.1–209.5	

— Not available.

a. Figure estimated using 3:1 ratio of transfers to efficiency costs.

b. Cost of natural gas regulation is expected to approach zero as all price controls are lifted.

Source: Hahn and Hird (1991).

Table 2. Estimated Annual Costs and Benefits of Social Regulation in the United States, 1988
(billions of dollars)

<i>Sector</i>	<i>Costs</i>	<i>Benefits</i>	<i>Sources</i>
Environment	55.4–77.6	16.5–135.8	Hazilla and Kopp (1990); Freeman (1990); Portney (1990)
Highway safety	6.4–9.0	25.4–45.7	Crandall (1988)
Occupational safety and health (OSHA) ^a	8.5–9.0	Negligible	Crandall (1988); Denison (1979); Viscusi (1983)
Nuclear power	5.3–7.6	—	DOE policy study (cited in Litan and Nordhaus 1983)
Drugs	< 1.5–3.0	—	Peltzman (1973)
Equal employment opportunity	0.9	—	Weidenbaum and DeFina (1978); Litan and Nordhaus (1983)
Consumer product safety	> 0.034	—	Executive Office of the President (1990) (administrative costs only)
Total	78–107.1	41.9–181.5	

— Not available.

a. OSHA, Occupational Safety and Health Administration; DOE, Department of Energy.

Source: Hahn and Hird (1991).

Table 3. Costs of Federal Regulation in the United States, Selected Years
(billions of 1991 dollars)

<i>Regulations</i>	<i>1977</i>	<i>1988</i>	<i>1991</i>	<i>2000</i>
Environmental regulation	42	87	115	178
Other social regulation	29	30	36	61
Economic regulation-efficiency	120	73	73	73
Process regulation	122	153	189	221
<i>Subtotal</i>	<i>313</i>	<i>343</i>	<i>413</i>	<i>533</i>
Economic regulation-transfers	228	130	130	130
Total costs	540	473	542	662

Source: Hopkins (1992).

theless, their sheer magnitude suggests that reducing paperwork would dramatically improve efficiency.¹

Outside the United States, few studies have estimated the costs of regulation. In Australia the total cost of regulation was estimated to be 9–19 percent of GDP in 1986 (OECD 1996). Mihlar (1996) estimates that the costs of regulation in Canada amounted to 12 percent of GDP. Based on an assumed ratio between private compliance costs and spending on regulatory programs, he extrapolated national regulatory costs from federal and provincial administrative budgets. Although crude, the calculation gives a rough estimate of the size of the regulatory burden.

Because these cost estimates are often cited without careful analysis, several points about them are worth noting. First, the figures are highly uncertain and often incomplete. Where there are uncertainties in the data, these should be conveyed as clearly as possible to policymakers. Second, the figures developed using this approach to cost estimation are likely to understate the total impact of regulatory costs because they do not include the adverse effect that regulation typically has on innovation. Third, as shown in table 4, the cost of regulation as a fraction of GDP is significant for countries where such estimates are readily available, ranging from 7 to 19 percent. The Organisation for Economic Co-operation and Development, using a country-based macroeconomic model, has estimated that regulatory reform could increase GDP in the long run by as much as 3.5 percent in the United Kingdom and by as much as 6 percent in France, Germany, and Japan (OECD 1997a).

The Adverse Impacts of Regulatory Intervention

Many studies have attempted to estimate the adverse impacts of regulatory intervention:

- Christainsen and Haveman (1981) examined the effect of regulation on labor productivity and concluded that more than 10 percent of the contraction in

Table 4. *Costs of Regulation and Gains from Deregulation*
(percentage of GDP)

<i>Economy</i>	<i>Costs of regulation</i>	<i>Projected benefits of further economic deregulation</i>	<i>Source</i>
Australia	9–19	5.5	Commonwealth (1996) (cited in OECD 1996); Industry Commission (1995)
Canada	11.8	—	Mihlar (1996)
European Union	—	4.5–7.0	Emerson and others (1988)
Germany	—	0.3	Lipschitz and others (1989)
Japan	—	2.3–18.7	OECD (1997a)
Netherlands	—	0.5–1.1	Sinderen and others (1994) (cited in OECD 1997a); van Bergeijk and Haffner (1996)
United States	7.2–9.5	0.3	Hopkins (1992); Winston (1993)

— Not available.

Note: These numbers are underestimates of the effects of deregulation because the studies do not include all sectors in which deregulation can be beneficial. Further qualifications and elaborations of these estimates are available from the authors.

the growth of labor productivity in the mid-1970s was attributable to the expansion of federal regulations. Guasch (forthcoming), who also looked at labor costs, found that job growth was more robust in countries with more flexible labor markets (those at the top of table 5) than in those with strict controls. Although many other factors affect employment, there are strong reasons to believe that flexible labor market policies are likely to increase employment.

- In examining the long-term growth effects of regulation on eight industries from 1973 to 1987, MacAvoy (1992) found economywide losses of 1.5–2 percent of U.S. gross national product.
- Studies examining environmental, health, and safety regulations have yielded qualitatively similar impacts. For example, Jorgenson and Wilcoxon (1990) found that the costs of pollution control were associated with a reduction of more than 2.5 percent in the U.S. gross national product from 1974 to 1985. Robinson (1995) concluded that environmental and occupational health and safety regulations cumulatively reduced multifactor productivity in the manufacturing sector by more than 10 percent from 1974–75 to 1985–86.
- Research on the relationship between regulation and output growth in OECD countries by Koedijk and Kremers (1996) concluded from an index of regulatory intensity that countries with the least regulation enjoyed the highest growth in output per person. The measures the authors construct are admittedly rough, but they may serve as a proxy for the degree to which markets are regulated in different countries.

Table 5. Labor Regulations

<i>Country</i>	<i>Payroll taxes (as a percent of the wage bill)</i>	<i>Severance payments</i>	<i>Collective bargaining</i>	<i>Employment growth, 1992-95^a</i>	<i>Unemployment rate, 1996</i>
<i>More flexible markets</i>					
Australia	27.8	Low	Centralized	1.0	9.0
Chile	20.9	Low	Firm level	2.3	6.3
Japan	22.9	None	Firm level	0.6	2.5
Malaysia	24.3	Low	Firm level	3.3	2.8
New Zealand	11.5	None	Firm level	1.4	8.0
United States	20.1	None	Firm level	1.8	5.5
<i>Less flexible markets</i>					
Argentina	50.0 ^b	High	Centralized	-0.7	17.2
France	54.7	High	Centralized	-0.4	11.6
Italy	52.8	High	Centralized	-1.7	10.2
Spain	38.2	High	Centralized	-1.6	22.4

Note: The data for France, Spain, Italy, and Japan correspond to 1994, those for Malaysia to 1995, and those for Argentina and Chile to 1996. Severance payments are based on OECD indexes.

a. Employment growth is measured as annual average percentage growth.

b. Argentina amended its labor laws in 1996, and payroll taxes now average 41.0.

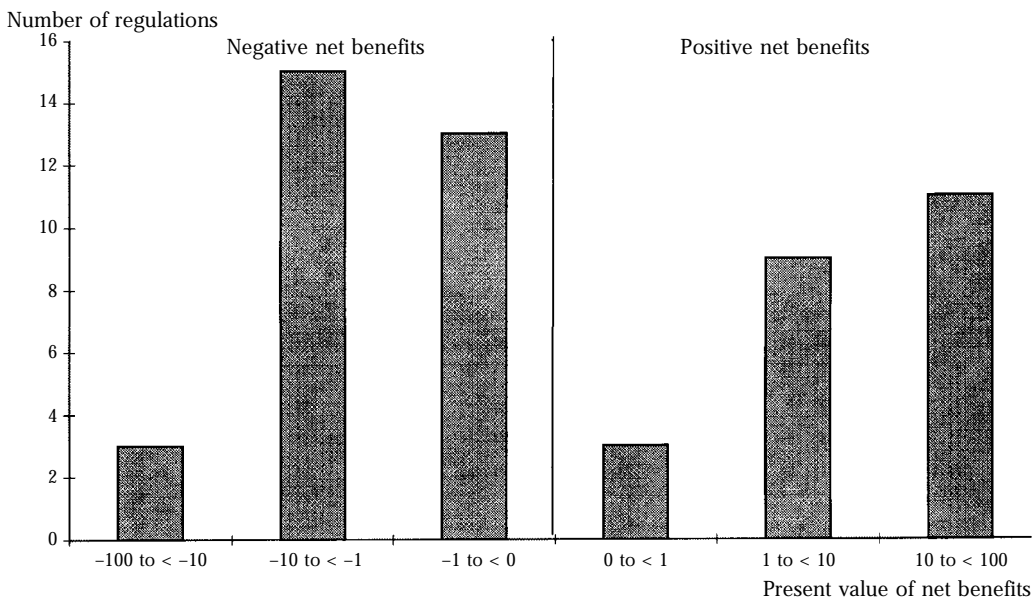
Source: Guasch (forthcoming).

Assessing the Gains from Regulatory Reform

In the area of social regulation, Hahn (1996), who reviewed more than five regulatory impact analyses (RIAs) covering health, safety, and environmental regulations from 1990 to mid-1995, reported considerable variation in the type and quality of analysis performed by government agencies. Cost-benefit analyses were often incomplete, and the costs of imposing the regulations were reported to be greater than the monetary benefits in more than 80 percent of the regulations. Based on this analysis, the net benefits from these regulations amounted to about \$280 billion (1994 dollars) since 1990. Figure 1 shows the distribution of net benefits for 54 rules. The left side of the figure shows the number of rules with net costs that fall in various categories. The right side of the figure shows the number of rules with net benefits that fall in various categories. The aggregate net benefits are positive because many of the rules have substantial benefits. Eliminating those that would not pass a benefit-cost test could increase the present value of net benefits by more than \$115 billion.

For various reasons, however, the RIA numbers cannot be taken at face value. Both theory and empirical evidence suggest that government agencies are likely to overstate substantially the aggregate net benefits of their programs (for instance, protecting the environment or improving safety in the workplace) to show that they are meeting the demands of interest groups.

Figure 1. *Distribution of Net Benefits of 54 U.S. Regulations, 1990 to mid-1995*
(billions of 1994 dollars)



Source: Hahn (1996).

A useful measure of the impact of regulations is how many lives are saved. Morrall (1986), in a review of several final and proposed regulations calculates that the amount needed to avoid each premature death varies over eight orders of magnitude—from roughly \$100,000 to more than \$5 trillion (1990 dollars)! This suggests that regulations could be developed that would prevent many more premature deaths while still saving consumers money. Tengs and Graham (1996) found that reallocating regulatory expenditures within the United States to those investments that are most effective could avert an additional 60,000 deaths, or twice the current number. In addition, reallocating \$8 billion (1994 dollars) in regulatory expenditures from the United States to developing countries could save more than 100 million additional life-years (Hahn 1996).

The Benefits of Deregulation in Industrial Countries

The overall welfare gains from deregulation in the United States have been substantial. Aggregate welfare gains from eliminating entry and exit restrictions and freeing prices to market levels ranged from \$35 billion to \$46 billion (1990 dollars) a year, of which consumers gained \$32 billion to \$43 billion from lower prices and better services, and producers gained about \$3 billion a year from increased efficiency and

Table 6. *Estimated Consumer and Producer Gains from Deregulation in the United States, 1990*
(billions of dollars)

<i>Industry</i>	<i>Consumers</i>	<i>Producers</i>	<i>Total</i>	<i>Further potential gains</i>
Airlines	8.8–14.8	4.9	13.7–9.7	4.9
Railways	7.2–9.7	3.2	10.4–12.9	0.4
Road freight	15.4	(4.8)	10.6	0
Telecommunications	0.7–1.6	—	0.7–1.6	11.8
Cable television	0.4–1.3	—	0.4–1.3	0.4–0.8
Stock market trading	0.1	(0.1)	0	0
Natural gas	—	—	—	4.1
Total	32.6–43.0	3.2	35.8–46.2	21.6–22.0

— Not available.
Source: Winston (1993).

lower costs (table 6). Winston (1993) estimates that additional gains from eliminating remaining distortions could be more than \$20 billion a year. Even so, there is evidence that the gains are likely to be significantly understated. In a recent paper, Winston (1998) notes that although industry may adjust prices to reflect marginal costs quickly after deregulation, it takes time to optimize production. He argues that policymakers and the public tend to notice only the short-term effects and therefore undervalue the benefits of deregulation; the positive impact that deregulation has on innovation is frequently overlooked. Such innovations increased productivity and reduced operating costs by one-fourth to more than one-half in different industries.

Sectoral studies yield similar results on the adverse consequences of economic regulation. Caves, Christensen, and Swanson (1981) compared the productivity growth of U.S. railroads from 1956 to 1974 with the growth of Canadian railroads during the same period. Both industries had access to the same technology, but Canada's railroads were not as heavily regulated as those in the United States. The authors argue that regulation substantially reduced productivity growth, estimating that if the U.S. railroads (with a growth rate of 0.5 percent) had experienced the same growth as Canada's (3.3 percent), the cost of providing rail services in 1974 would have been \$13.8 billion (1985 dollars) lower. Willig and Baumol (1987) estimated that, after rail deregulation in the United States, annual operating expenses dropped 26 percent from 1980 to 1985, while traffic volume remained virtually unchanged and investment increased.

The empirical evidence on the trucking, airline, telecommunications, and financial industries is impressive.

- Average unit costs in the U.S. trucking industry declined from 30 cents a ton-mile in 1977 before deregulation to 10 cents a ton-mile in 1983 after

deregulation (in 1977 dollars). The annual welfare loss from regulation of rail and motor carrier rates was estimated at \$1 billion to \$4 billion (1977 dollars) (Braeutigam and Noll 1984; Winston and others 1990).

- The airline industry reduced total costs per unit of service by approximately 25 percent; labor costs were cut as well (by 17 percent at American Airlines and 24 percent at United Airlines) with little effect on output in the first few years following deregulation (Caves and others 1987). In addition, excess capacity declined and productivity rose. Morrison and Winston (1995) estimate the net annual gains to passengers at \$18.4 billion (1993 dollars).
- By 1996 long-distance telephone rates in the United States had fallen by more than 70 percent as a result of the divestiture of AT&T in 1984 (Taylor and Taylor 1993; *Wall Street Journal* 1991). The emergence of profitable services such as cellular telephony and voice messaging after divestiture shows how regulation can slow the introduction of new products and discourage innovation. Although the concept of cellular phones was discussed in the late 1940s and the technology was available in 1973, the Federal Communications Commission did not begin to issue licenses until ten years later—a delay that, by one estimate, cost the U.S. economy more than \$25 billion a year in 1983 (Rohlf, Jackson, and Kelly 1991), or about 2 percent of gross domestic product. Similarly, the delay in introducing voice messaging services cost more than \$1.3 billion (1994 dollars) a year (Hausman and Tardiff 1996).
- Postderegulation effects have been observed in the securities, investment, and banking sectors. For example, when brokerage fees were deregulated, rates dropped by 25 percent and savings from overall consolidation and cost reduction amounted to 30 percent (Jarrell 1984).² Studies have shown that even after accounting for changes in the services offered, the cost reductions were significant. In the United States partial deregulation of the banking and savings and loan industries resulted in employment cuts of more than 20 percent during 1984–93 and an increase in productivity (as measured by revenue per employee) of more than 300 percent (Guasch and Spiller forthcoming).

Although the database outside the United States is less extensive, there is reason to believe that the gains from deregulation of many industries elsewhere could be substantial (see table 4). For example, airline fares in Europe are roughly twice as expensive as in the United States (Airfare Management Unit 1995, 1996; Consulting Services Group 1995, 1996), but profitability is well below that of U.S. carriers. Lifting price and entry restrictions could reduce fares and benefit consumers. Indeed, the high-cost carriers, such as Iberia and Air France (both state-owned), have survived only with government aid. Good, Röller, and Sickles (1993), who argue that liberalization would lead to competition between international carriers and a convergence of cost structures, estimate that if the European airline industry were as efficient as

the U.S. airline industry, it would have saved approximately \$4 billion a year in 1986 dollars.

Deregulation of electricity markets in Europe also offers significant opportunities for gains (Electricity Association Services Ltd. 1996). In Germany, for example, strict regulations require domestic companies to purchase electricity from regional producers even though cheaper power is often available nearby. The extent of the potential gains for German consumers is difficult to estimate, but in the United Kingdom, energy deregulation resulted in a 70 percent increase in productivity and an 18 to 21 percent reduction in franchise contract prices (OECD 1997a). Elsewhere in the European Union, firms pay over 50 percent more for their electricity than do their American counterparts. Moreover, the impact of higher energy prices on the overall economy can be quite significant (Navarro 1996). For example, a 30 percent increase in electricity prices tends to raise the prices of goods such as paper and pulp, metals, chemicals, and glass by roughly 2.5 percent.

Benefits of Deregulation in Developing Countries

In countries that have deregulated, the efficiency gains have been quite significant. For example, deregulation of entry into the long-distance telephone market in Chile has cut rates by 50 percent, making them close to U.S. rates (Guasch and Spiller forthcoming). In some Latin American countries, private sector participation in the telecommunications sector has cut waiting time for installation of new lines from a minimum of two years to a matter of weeks. At the port terminals in Buenos Aires, competition in operations has led to an 80 percent reduction in the fees charged. And opening port operations to multiple parties in the port of Montevideo has increased productivity by 300 percent. All those results were achieved within a year of deregulation (Guasch 1996).

A study of Argentina (Fundación de Investigaciones Económicas Latinoamericanas 1991) assesses the welfare cost of regulations and other government interventions in the 1980s (table 7). The total costs of regulation and state intervention amount to more than \$4 billion a year (1990 dollars), and this is only for the selective listed interventions. Using a general equilibrium model, Chisari, Estache, and Romero (1997) estimate the gains from privatization and regulation in Argentina at about 1.3 percent of gross domestic product, or \$3.3 billion. They also find that *all* income classes benefit.

It would be useful to assemble data on regulatory costs in other developing countries comparable to those assembled for Argentina. Yet there is no shortage of specific cases where economic regulation has had adverse consequences. For example, Uruguayan firms and consumers are paying an implicit tax of at least 30 percent for water, phone, and electricity, thus hindering the competitiveness of Uruguay's products compared with those of Argentina, Brazil, and Paraguay, its fellow members in

Table 7. The Costs of Regulation in Argentina

(millions of 1991 dollars)

<i>Sector</i>	<i>Period</i>	<i>Average annual cost</i>
Financial system		
High reserve requirements and subsidized credit by the central bank	1987	1,000
Inflation taxes on checking accounts	1983–87	670
Fuel price controls	1977–87	350
Health services		
Extra costs from double affiliation	1986	150
Idle capacity in public hospitals	1987	172
Fish export subsidies	1986–87	12
Efficiency costs from domestic consumption restrictions in cattle markets	1984	104
Efficiency costs of the special fund for tobacco	1987	30
Air transport regulations	1988	75
Restrictions on rail transport of cement, wine, and grain	1987	95
Truck transport		
Costs of road deterioration	1987	100
Costs of provincial regulations on the transport of grains	1987	30
Port restrictions on price and entry	1987	90
Regulations imposed on business	1965–87	1,200
Regulations on employment in the public sector	1987	120

Note: The costs of regulation measure different concepts, such as efficiency losses in the economy, cost premiums to consumers, tax reductions, and subsidies. Thus, it might not be technically correct to total the costs.

Source: Fundación de Investigaciones Económicas Latinoamericanas (1991).

the trade association Mercosur. In Brazil regulations have forced industry to ship by road, although the costs are almost three times higher than railroad charges; only 12 percent of relatively short trips and a negligible 3 percent share of longer trips are made by rail. Similar effects are seen in Argentina. Additional anecdotal evidence of regulation and of its impact in developing countries is quite ample, as shown in box 1.

The costs of various kinds of process regulation caused by inefficient bureaucracies and high levels of corruption can add substantially to consumer burdens in developing countries. For example, customs administrations tend to be plagued by inefficiency and corruption, imposing a high cost on traded goods. The Nigeria Manufacturers Association (1996) says that permission to clear goods in that country requires 27 stages and takes five to eight weeks. Inefficient regulation of port operations has contributed to implicit tariffs of 5 to 15 percent on exports in Latin America (Guasch and Spiller forthcoming). Surveys indicate that managers spend between 10 and 30 percent of their time managing process regulation, incurring costs on produced goods or services in the range of 5 to 15 percent (World Bank 1997).

Box 1. *Montevideo Taxicab Market*

Entry restrictions for taxicabs in Montevideo, Uruguay made the 1990 market price of a taxicab license \$60,000 (in 1990 dollars). Although the license is nominally lower than the \$125,000 price in New York, lower Uruguayan per capita income means that the market value of the license as a proportion of per capita income is more than four times higher. The regulation of the taxicab market has led to a scarcity of taxicabs, as reflected in difficulty in hailing taxicabs, in high costs borne by consumers, and in capture and wasteful rent-seeking activity by the taxi owners association.

Source: Guasch and Spiller (forthcoming).

As noted earlier, Mexico is reviewing regulations for major federal agencies. The purpose of the review is to eliminate unnecessary regulations, simplify regulations that are unnecessarily burdensome, and make the process more transparent (box 2). By the end of 1997, approximately half of all regulations (called formalities) had been reviewed in seven of twelve ministries. Of those reviewed, 38 percent were scheduled to be eliminated and an additional 54 percent were scheduled to be simplified in 1998.

Conclusions

Regulations receive relatively little scrutiny, both because politicians wish to hide the cost of regulation from citizens and because estimating the costs and benefits of regulation is difficult. A better information base on the economic impact that different regulations have would enhance public decisionmaking. There are several poli-

Box 2. *Regulatory Reform in Mexico*

The government of Mexico is undertaking an examination of regulatory structure at the federal, state, and local levels. The aims of the Agreement for the Deregulation of Business Activity include streamlining federal regulations, reducing corruption by codifying regulation, and helping to promote more efficient and effective regulation. The program has enjoyed some early successes. Recent legislation simplifies administrative procedures, requires a quicker administrative response time, and reduces paperwork for foreign investors. In addition, a series of legal reforms aims to simplify court proceedings and reduce the costs of commercial lending. As a result of these reforms, Mexico City's Superior Court reports that the number of civil suits filed fell by 24 percent from 1995 to 1996. Agency-by-agency rule simplification and elimination are also proceeding swiftly. For example, the approval time for a business to begin operation has been reduced from an average of more than 200 working days to a maximum of 21 working days. Finally, a complete inventory of federal rules in effect is available on the Internet; easy access should help to reduce corruption and compliance costs.

Source: Secretaría de Comercio y Fomento Industrial (1997).

cies that developing countries might consider; the recommendations here are purposely general. In that spirit, the first important point to make is that effective policies will differ across countries. The appropriate regulatory tools and framework will depend on several factors, including bureaucratic expertise, resource availability, political constraints, and economic impacts.

There is a general need, moreover, to enhance the capability for evaluating regulation at the local and national levels (Hahn forthcoming), as illustrated by the absence of even rudimentary data in many countries on the effects of regulation. Countries should attempt to develop a "regulatory budget" that would show the economic effects of regulations and that would be published along with the government's fiscal budget. Such a capability will take time to develop.

Several jurisdictions, including some in developing countries, are putting procedures in place that would require a benefit-cost analysis before significant regulations could be implemented (OECD 1997b). This is likely to have a constructive influence on public policy by providing better information and holding government officials and political leaders more accountable (Hahn and Litan 1997). In the short term, it is important for agencies charged with administering regulations to begin by assembling crude cost and benefit data. For example, an agency could specify the rationale for a proposed regulation, the likely direct and indirect costs, a qualitative description of benefits, an assessment of other alternatives, including the status quo, and an explanation of why other alternatives were not selected if they are likely to be better for the average citizen.

Such analyses should not be too burdensome. For regulations that have a limited impact, no analysis may be necessary. For regulations with potentially large economic consequences, more resources should be devoted to evaluation. Ideally, such analyses should be both prospective and retrospective, so that analysts can learn how to improve their impact assessments by comparing their predictions with actual political outcomes. To start with, we recommend developing a low-cost information management system that highlights some of the more important economic impacts of regulation. Front-line agencies need to be involved in the process so that they become more sensitive to the economywide impacts of their proposals.

As administrative capabilities evolve, a more thorough cost-benefit analysis will be required to support regulatory reform. Because economic regulation often results in economic inefficiency, the burden of proof should be on those who wish to maintain such regulation. In the case of social regulation, flexibility should be encouraged so that consumers and producers are able to innovate in response to regulations. Thus, for example, performance standards for meeting a pollution goal are generally preferred to standards that dictate the use of a particular technology. Of course, the amount of flexibility in a regulatory policy should be based, in part, on the ability of the administrative agency to implement it effectively (Hartman and Wheeler 1995).

Although an economic analysis of regulatory policies can be helpful, regulations often have unexpected and perverse consequences (Ackerman and Hassler 1981). Thus it is better to proceed with extreme care and err on the side of less regulation, particularly when dealing with economic interventions. Where there is no clear economic rationale for a regulation, it should be removed (Hahn 1998). Licensing and price or quota interventions, for example, do not serve the public interest but instead transfer political favors to preferred constituencies (Huber and Thorne forthcoming; Guasch and Spiller forthcoming). Removing such distortionary favors may not be easy in many cases and may involve resource transfers to politically powerful constituencies.

As they consider reforms, policymakers need to give a great deal more thought to the design of regulatory frameworks. In some instances, partial deregulation may not lead to an improvement over the status quo. For example, removing price restrictions but retaining entry barriers could lead to inefficient pricing. Full deregulation can lead to problems with monopoly unless great care is taken in managing the transition to a deregulated environment. The point is that the strategy for regulatory reform is critical to its effectiveness. Another set of problems stems from a tendency for a single-mission agency (health or education, say) to consider its mandate exclusively and to overstate the benefits of its program and understate the costs. As noted above, one way to address this problem is to require the agency to develop more data on the costs of specific regulatory proposals. A second is to limit the agency's mandate. Other options include sunset requirements that would limit an agency's authority to a fixed period unless renewed by legislative mandate and requiring the approval of a central—independent—agency that is primarily concerned with the economywide impacts of regulations (Hahn 1997). Because officials are concerned about issues of equity and efficiency, the regulations they write tend to be unduly complicated. This complexity not only gives bureaucrats and lawyers control over decisions but also makes it difficult for average people to understand the economic implications involved. The more transparent the regulations, the more they are likely to reduce the potential for corruption and increase the perceived legitimacy of the system. Straightforward language makes careful scrutiny possible and limits the likelihood that political interest groups will capture the benefits. A move toward greater transparency will occur as people begin to understand some of the hidden costs of regulation.

Developing countries have begun to realize the benefits of reforming economic regulation, but much remains to be done in the area of social regulation. Yet, it is beginning to appear on the policy agenda, if not from domestic pressure, then from interest groups in industrial countries.

The overall lesson is not that regulation is generally undesirable but that it often has undesirable economic consequences. Moreover, these effects result partly from

political forces that lead to inequitable redistribution of wealth (Stigler 1971). We believe such forces can be mitigated by more sharply evaluating the consequences and tradeoffs involved before a regulatory policy is set in stone.

Notes

J. Luis Guasch is lead economist for the Latin America and the Caribbean Regional Office and for the Development Economics Group at the World Bank and is professor of economics at the University of California, San Diego. Robert W. Hahn is director of the American Enterprise Institute (AEI)–Brookings Joint Center for Regulatory Studies, a resident scholar at AEI, and a research associate at the Kennedy School of Government, Harvard University. The authors thank Ed Campos, Michael Klein, Brian Levy, Joseph Stiglitz, and the referees for their helpful comments and Jonathan Siskin, Lisa Taber, and Fumie Yokota for their excellent research assistance.

1. Hopkins' estimate for the total cost of regulation includes transfer costs and process costs. Subtracting transfer costs yields an estimate of \$413 billion, or more than \$1,500 per person for 1991. Process costs account for about half of the \$1,500. For a critique of Hopkins' analysis, see Office of Management and Budget (1997).

2. Employment declined from 260,000 in 1987 to 190,000 in 1990.

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