

The Impact of Regulatory Costs on Small Firms

a report for

The Office of Advocacy, U. S. Small Business Administration

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by

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Executive Summary

To comply with federal regulations, Americans spent \$843 billion in 2000. Had every household received a bill for an equal share, each would have owed \$8,164. That bill would be in addition to the \$19,613 share each household contributes (directly or indirectly) to federal revenues.

While all citizens and businesses of course do share in these costs, the distribution of this burden is quite uneven. In the business sector, those hit hardest are small businesses. Firms employing fewer than 20 employees face an annual regulatory burden of \$6,975 per employee, a burden nearly 60 percent above that facing a firm employing over 500 employees.

Environmental regulations and the paperwork burdens of tax compliance are particularly disproportionate in hitting small business. Such regulation imposes about 40 percent of total business regulatory burden. Other regulatory burdens—those of workplace rules, and of constraints on pricing and the products firms can sell or buy (“economic” regulation)—are distributed more evenly.

The basic picture highlighted above and detailed in this report emerges from a new analysis of the regulatory record previously explored in a 1995 study for the Office of Advocacy in the U.S. Small Business Administration. Subsequent regulatory developments and the availability of new data clarify and in some cases amplify the basic 1995 findings: regulatory burdens continue to climb, and to disadvantage small businesses.

I. Introduction and Highlights

In 2000 U.S. federal government regulations cost an estimated \$843 billion, or 8 percent of the U.S. Gross Domestic Product (GDP). This cost of complying with federal regulations was nearly half as large as total U.S. federal government receipts, which equaled 20 percent of GDP in 2000. Combined, these two costs of government programs impose a substantial burden on U.S. citizens and businesses.

Policymakers know a great deal about U.S. taxing and spending programs; the annual federal budget process and the *Budget of the United States* provide considerable detail regarding where the money comes from and how it is spent. The same cannot be said for federal regulatory programs. Of course, accounting for the costs and benefits of regulations is inherently more difficult than accounting for fiscal programs. Yet the impact of regulations on business and citizen activities is no less real than the impact of fiscal programs.

In a 1995 study for the Office of Advocacy, U.S. Small Business Administration, Hopkins began to fill the information vacuum regarding the federal regulatory burden.¹ That report presented a profile of the level and distribution of federal regulatory compliance costs using data through 1992, and made cost projections through 2000.

This report updates the 1995 Hopkins study and seeks to improve our understanding of who bears what burdens from regulation. In particular, the report responds to SBA's mandate to identify the federal regulatory burden on small U.S. firms, and whether this burden creates a disproportionate impact on small business. This mandate derives both from federal statutes and an Executive Order.² Underlying these

¹ Thomas D. Hopkins, *Profiles of Regulatory Costs. Report to the U.S. Small Business Administration*, U.S. Department of Commerce, National Technical Information Service #PB96 128038, November 1995; that 1995 report also is available online at <http://www.sba.gov/advo/> and its key conclusions are restated for comparative purposes in Appendix 5 of this report.

formal requirements is the fact that ninety percent of all firms in the U.S. employ fewer than 20 employees. By comparison, large firms (those with 500 or more employees) account for only 0.3 percent of all U.S. firms.

Perhaps our most important finding is that small businesses bear a disproportionately large share of the federal regulatory burden. This result is broadly consistent with that of the 1995 Hopkins report as well as with other studies completed during the past two decades, pursuant to the Regulatory Flexibility Act.³ Table 1 summarizes the incidence pattern by firm size based on the aggregate data for all business sectors (comparable data from the 1995 Hopkins report appear in Appendix 5).

² In recognition of the important role of small business in the US, the federal Regulatory Flexibility Act of 1980 (RFA) requires federal agencies to analyze the impact of proposed regulations on small firms. The RFA also requires agencies to conduct periodic reviews of existing regulations, again to determine whether a regulation creates a disproportionate impact on small business. If the analysis finds that a regulation has a disproportionate impact, the RFA directs agencies to seek means within the intent of the law to minimize the impact on small firms. To tighten compliance with the RFA, Congress in 1996 passed the Small Business Regulatory Enforcement Fairness Act (SBREFA). SBREFA allowed an affected small entity to take an agency to court if, among other things, it failed to make a good faith effort to analyze the impact of regulatory costs by firm size, and it expanded the authority of the chief counsel for Advocacy of the U.S. Small Business Administration to file *amicus curiae* briefs in such cases. If the court finds that an agency did not comply with the law, various remedies are available including injunctive relief and requiring the agency to make an appropriate analysis. In 1993, President Clinton issued Executive Order 12866, which further requires federal agencies to consider the distributional impact in the design and choice of regulations.

³ Such studies include Henry B. R. Beale and King Lin, *Impacts of Federal Regulations, Paperwork, and Tax Requirements on Small Business*, SBAHQ-95-C-0023; Microeconomic Applications, Inc., prepared for the Office of Advocacy, U.S. Small Business Administration, September, 1998; Roland J. Cole and Paul Sommers, *Costs of Compliance in Small and Moderate-sized Businesses*, SBA-79-2668, Battelle Human Affairs Research Centers, Seattle, WA, February, 1980; *Improving Economic Analysis of Government Regulations on Small Business*, SBA-2648-OA-79, JACA Corporation, Fort Washington, PA, January, 1981; Robert J. Gaston and Sidney L. Carroll, *State and Local Regulatory Restrictions as Fixed Cost Barriers to Small Business Enterprise*, SBA-7167-AER-83, Applied Economics Group, Inc., Knoxville, TN, April, 1984; and, *Economies of Scale in Regulatory Compliance: Evidence of the Differential Impacts of Regulation by Firm Size*, SBA-7188-OA-83, Jack Faucett Associates, Chevy Chase, MD, December, 1984. For a theoretical discussion, see William A. Brock and David S. Evans, *The Economics of Small Businesses: Their Role and Regulation in the U.S. Economy*, Holmes & Meier, New York, NY, 1986, especially chapters 4 and 5.

Table 1: The Incidence of Federal Regulations by Firm Size, All Business Sectors *

Type of Regulation	Cost per employee for firms with:			
	All Firms	<20 employees	20-499 employees	500+ employees
All Federal Regulations	\$ 4,722	\$ 6,975	\$ 4,319	\$ 4,463
Environmental	\$ 1,213	\$ 3,328	\$ 1,173	\$ 717
Economic	\$ 2,065	\$ 1,616	\$ 1,648	\$ 2,485
Workplace	\$ 779	\$ 829	\$ 873	\$ 698
Tax Compliance	\$ 665	\$ 1,202	\$ 625	\$ 562

* Note to Table 1: These aggregate cost data use employment shares to weight the respective business sectors. The estimates are for 2000 and are denominated in 2000 dollars.

Considering all federal regulations and all business sectors, regulations cost firms with fewer than 20 employees nearly \$7,000 per employee per year. Regulations cost medium-size firms about \$4,300 and large firms \$4,500 per year per employee. Costs per employee thus appear to be 55 to 60 percent higher in small firms than in medium-size and large firms.

This report details the distribution of regulatory costs for four major business sectors: Manufacturing, Trade (wholesale and retail), Services, and Other (a residual containing all other enterprises). The findings reveal that the disproportionate cost burden on small firms is particularly stark for the manufacturing sector. In that sector the cost per employee for small manufacturers is more than double the cost for medium-size and large firms. In the trade sector (wholesale and retail businesses) the regulatory cost differential between small businesses and the larger-size firms is not nearly so large, in the range of 11 to 18 percent. The disproportionate regulatory burden on small firms in the other major sectors falls somewhere between these two cases.

The cost disadvantage facing small business is driven largely by compliance with environmental regulations and tax-related paperwork, as Table 1 illustrates.⁴ However, the particular drivers of the cost distribution differ across the four business sectors. Later sections of the report lay out these distinctions in considerable detail. Not all regulations fall more heavily on small businesses than on larger firms. For example, in the aggregate estimates for all sectors (Table 1) the cost per employee of economic regulations falls most heavily on large firms. The cost per employee of workplace regulations falls most heavily on medium-sized firms, which most likely reflects the fact that small firms are explicitly exempt from many workplace regulations.

The remainder of the report has three sections and five appendices. Section II gives an overview of the regulatory accounting methodology and describes the primary sources for the cost estimates used in the report. Section III begins with a snapshot of American enterprise, showing the distribution of firms, employees, and receipts across major sectors of the U.S. economy. It then explains the assumptions underlying our allocation of the total federal regulatory burden and maps the methods used to allocate: (i) the total regulatory burden that falls on business, (ii) the regulatory costs across business sectors, and (iii) the regulatory costs by firm size within each sector. Section IV provides the main findings for the distribution of the federal regulatory burden across

⁴ Other studies are consistent with this finding of economies of scale in environmental regulatory compliance. See, for examples, Thomas J. Dean, "Pollution Regulations as a Barrier to the Formation of Small Manufacturing Establishments: A Longitudinal Analysis," Office of Advocacy, U.S. Small Business Administration: Washington, D.C., 1994; and Thomas J. Dean, *et al.*, "Environmental Regulation as a Barrier to the Formation of Small Manufacturing Establishments: A Longitudinal Analysis," *Journal of Environmental Economics and Management* 40, 2000, pp. 56-75. These two studies suggest that regulatory costs lower the startup rate for new firms, especially in the manufacturing sector, because of its higher capital requirements from environmental and other types of regulations. They also indicate that environmental regulations increase the minimum efficient scale of production. See also the related study by Samuel Staley, *et al.*, *Giving A Leg Up to Bootstrap Entrepreneurship: Expanding Economic Opportunity in America's Urban Centers*, Los Angeles: Reason Public Policy Institute, 2001.

sectors and firm sizes. The appendices contain details for the various analytical procedures used in the report.

No data appear in this report concerning regulatory benefits, an important challenge that would be a logical next step toward achieving a more rational regulatory system. This report, thus, should be seen as a building block toward a more adequate understanding of regulation, much but not all of which creates important and substantial benefits. It addresses cost concerns that are significant in their own right, but more remains to be done.

II. Scope of Regulatory Costs

Perspective on Regulatory Accounting

The total direct cost of federal regulations consists of resources employed by government agencies as well as by private sector enterprises. The regulatory costs included in this report focus on the latter: the resource costs over and above those that show up in the federal budget. The report provides an accounting of the non-budgeted costs imposed by regulations. A simple example illustrates our perspective on regulatory accounting. The total direct cost to the nation of, say, a pollution control regulation consists of spending by the U.S. Environmental Protection Agency for monitoring and enforcement activities, plus spending by business to install abatement equipment, hire engineers, and so on to comply with the regulatory rules. EPA spending shows up in the federal budget, and therefore would not be included in our accounting. Rather, this report includes estimates of the impact on those who are regulated: the spending by business to install abatement equipment, hire engineers, and so forth. In this sense, our estimates understate the full cost of federal regulations.

Regulatory agency spending — the cost component this report excludes — amounts to only about 2 percent of the non-budgeted regulatory compliance costs on which we focus. Nonetheless, spending by federal regulatory agencies on regulatory activity reached \$18.9 billion in fiscal year 2000, so it is not trivial. Appendix 4 provides the on-budget costs of federal regulations, and shows how these costs have grown over time.⁵ Between 1970 and 2000 regulatory agency budgets grew by 203 percent in inflation-adjusted dollars, a 3.7 percent annualized growth rate. Total staffing in federal regulatory agencies in fiscal year 2000 equaled nearly 130,000 full-time equivalent

⁵ These data are from Melinda Warren, *Federal Regulatory Spending Reaches a New Height: An Analysis of the Budget of the U.S. Government for the Year 2001*, Center for Study of American Business, Washington University, Regulatory Report No. 23, June 2000.

employees. These staffing levels grew by 86 percent between 1970 and 2000, or 2.1 percent on an annualized basis. While these on-budget indicators of federal regulatory costs are substantial, they pale in comparison to the non-budgeted compliance costs on which this report focuses.

Other important regulatory costs exist that are not captured in this report's estimates, most notably activities by state and local governments, and indirect burdens. Each of the 50 American states has an array of regulations superimposed on federal regulations. These costs are not explicitly considered here, but do add to the nation's total regulatory burden. Similarly, this report makes no attempt to go beyond an accounting for the direct, or initial cost of regulations even though such indirect costs may be substantial. For example, environmental regulations directly affect the cost of producing electricity, and these show up as a direct cost for electric utilities. We account for these types of direct costs. Yet increases in the cost of electricity create a ripple effect throughout the American economy in the form of higher energy costs, thus causing indirect effects in virtually every productive sector. We do not attempt to account for indirect effects of this nature. Other indirect, or general equilibrium, effects include a reduction in dynamic efficiency, such as slowing innovations that would lead to productivity gains and therefore general economic expansions over time. Omission of these indirect and general equilibrium effects simply means that our accounting procedure understates the full burden of federal regulations.⁶

⁶ Hazilla and Kopp provide estimates of the indirect effects of environmental regulations as well as the dynamic consequences. Their evidence suggests that both of these costs are substantial. See Michael Hazilla and Raymond Kopp, "The Social Cost of Environmental Quality Regulations: A General Equilibrium Analysis," *Journal of Political Economy*, Vol. 98 (4), 1990.

The report divides federal regulations into four categories: Environmental, Economic, Workplace, and Tax Compliance.⁷ A description of each category follows, along with an explanation of the primary sources from which we derive our cost estimates.

Environmental Regulations

The cost estimates for environmental regulations adopt the estimates provided by the U.S. Office of Management and Budget (OMB) in their two latest reports to Congress.⁸ In their most recent 2001 Report OMB provides an update for regulations promulgated between April 1999 and March 2000. In their 2000 Report, OMB compiles an estimate of the total cost of regulations issued through April 1999. That cumulative compilation starts with the baseline cost estimate for environmental regulations in the 1991 study by Hahn and Hird, and increments this baseline cost for subsequent regulations.⁹ OMB's incremental cost estimates use regulatory impact analyses (RIAs) issued mainly by the U.S. Environmental Protection Agency.

OMB appropriately discusses the shortcomings in these estimates, including the basic fact that cost estimates do not exist for all environmental regulations, and the inherent difficulties in performing the RIAs. For example, OMB does not include an estimate for the cost of the Superfund program, which is likely to be quite large. To

⁷ We note that these four categories differ slightly from those used in the 1995 Hopkins study. Hopkins used the following four categories: Environmental, Other Social, Economic, and Process. The revised categories used in this report conform reasonably well with the standard divisions used by the U.S. Office of Management and Budget in its annual reports to Congress that began in 1997.

⁸ U.S. Office of Management and Budget, Office of Information and Regulatory Affairs, *Report to Congress on the Costs and Benefits of Federal Regulations*, 2000, and 2001.

⁹ Robert W. Hahn and John A. Hird, "The Costs and Benefits of Regulation: Review and Synthesis," *Yale Journal of Regulation*, Vol. 8 (1), Winter 1991, pp. 233-278.

account for these shortcomings, OMB provides a range of cost estimates for most regulations. We use the high-end of the cost estimates provided by OMB in our analysis below. This reflects a judgment on our part that cost estimates are absent for important environmental regulations and that government agencies tend to be conservative in estimating regulatory costs.¹⁰ For comparison, if we were to use the mid-point of the OMB high and low estimates the cost of environmental regulations in this report would decline by roughly \$40 billion, a 20 percent reduction.¹¹

Economic Regulations

The burden of economic regulation includes two broad elements, typically labeled efficiency costs and transfer costs. An efficiency cost reflects the value of the resources foregone in direct response to restrictions on firm entry, output and pricing decisions, or cost-minimizing production techniques. In other words, what is the value of the product or service that is lost as a result of an economic regulation? A transfer cost, as the name implies, refers to the redistribution of income or wealth in direct response to a regulation. For example, a law restricting the importation of foreign sugar into the U.S.

¹⁰ For example, the upper bound estimate in the OMB report includes efficiency costs and builds upon the Hahn and Hird (1991) study. In contrast, the lower bound estimate focuses on compliance costs and essentially sums the costs presented in the available EPA RIAs. Several regulatory experts draw a similar conclusion about the OMB environmental cost estimates. See, for example, the discussion in Robert W. Hahn, "Regulatory Reform: What Do the Government's Numbers Tell Us?" in Robert W. Hahn (ed.) *Risks, Costs, and Lives Saved: Getting Better Results from Regulation*, New York: Oxford University Press and AEI Press, 1996, pp. 208-253. Hahn makes a strong case that government agencies overestimate benefits and underestimate costs systematically. In addition, the review article by Jaffe, *et al.*, "Environmental Regulation and the Competitiveness of U.S. Manufacturing," *Journal of Economic Literature*, Vol. 33 (1), 1995, suggests that environmental costs in the long run have exceeded compliance cost estimates. Finally, the study by Winston Harrington, *et al.* "On the Accuracy of Regulatory Cost Estimates," *Journal of Policy Analysis and Management*, Vol. 19 (2), 2000, examines the estimates for 28 particular rules promulgated by EPA and OSHA and finds, contrariwise, that overestimation of unit costs occurs about as often as underestimation.

¹¹ The baseline cost estimate that OMB takes from Hahn and Hird (1991) is lower than others (such as that of the Council on Environmental Quality) included in Hahn and Hird's review.

raises the price of sugar in the U.S. market. This import restriction thus redistributes income away from candy makers, carbonated soft drink manufacturers, and myriad other firms that purchase sugar domestically. A portion of this redistribution burden ultimately gets passed along to candy eaters, soft drink drinkers, and so on. On the receiving end of this income transfer are the domestic growers and sugar manufacturers.

A lively, on-going debate persists over whether and to what extent regulation-induced transfers should be scored as a real cost. In brief, the main argument for counting transfers as a cost is that it approximates the real resources that will be devoted to acquiring, maintaining, or eliminating the responsible regulation. For example, if U.S. domestic sugar producers benefit, say, by \$5 billion annually from import protection, they will devote a commensurate amount of resources to maintaining this protection. Likewise, candy makers and soft drink manufacturers will devote real resources toward its repeal; these resources might include lobbying, legal, and other public relations activities. The real resources used in activities to acquire and maintain, or to prevent and eliminate economic regulations are diverted from other, productive economic activities. As such, economic regulations cause transfers and thereby create a real resource burden on the economy.

To accommodate both sides of this debate, this report provides two alternative estimates of the cost of economic regulations. One includes both efficiency costs and transfer costs, and the other includes only the efficiency costs. We denote these two alternative estimates as Method A and Method B in the presentation of the results.

The report provides a two-part estimate of the cost of economic regulations. One is for regulations covering domestic commerce, and the second is for international trade restrictions. For domestic commerce regulations, we rely on the 1999 study by the

Organization for Economic Cooperation and Development (OECD).¹² The OECD estimates that reforms in the transportation, energy, and telecommunications sectors would lead to an increase in U.S. GDP of one percent. One percent of U.S. GDP in 2000 (equal to \$10.1 trillion) yields an efficiency cost estimate of \$101 billion. We approximate the transfer costs using the approach suggested by Hahn and Hird, namely by estimating transfers as a multiple of efficiency costs.¹³ By this method and using a multiple of two (the conservative end of the range suggested in Hahn and Hird), we estimate the transfer costs to be \$202 billion.

For international trade regulations, the report follows the approach described in the 2000 OMB Report and in the *1998 Economic Report of the President*.¹⁴ The potential gains from removing U.S. trade barriers equal to 1.3 percent of U.S. GDP, or \$132 billion in 2000. We apportion this between efficiency costs and transfer costs again using the "multiple of two" rule, which places the efficiency costs at \$44 billion, and the transfer costs at \$88 billion. All told, we arrive at an aggregate efficiency cost of economic regulations (domestic plus international trade) equal to \$145 billion, and an aggregate transfer cost equal to \$290 billion.

¹² Organization for Economic Cooperation and Development, *Regulatory Reform in the United States*, OECD Reviews of Regulatory Reform, Paris, 1999. OMB in its 2000 Report also adopts the OECD method for estimating economic regulations.

¹³ The method we use to approximate the transfer costs of economic regulations is the same method used by Hopkins, 1995 and OMB, 2000.

¹⁴ OMB, 2000, p. 32, and Council of Economic Advisers, *Economic Report of the President*, 1998.

Workplace Regulations

The source of our cost estimates on workplace regulations is a 2001 study by Johnson.¹⁵ The Johnson study provides the most comprehensive analysis to date, covering twenty-five statutory acts and executive orders that encompass all significant workplace regulations promulgated by the federal government. Johnson surveys numerous government reports (including RIAs) and academic studies that estimate costs for specific regulations, and identifies from these the most reliable.

Aggregating across the twenty-five statutory acts and executive orders, Johnson places the efficiency cost of workplace regulations at \$24 billion and the transfer costs at \$58 billion (here converted into 2000 dollars).

Tax Compliance

Prior studies of federal regulations stress the substantial burden of paperwork costs on the American public and businesses. Of this burden, the tax-related paperwork required to comply with the federal tax code accounts for the lion's share. Of course, the federal government requires a host of additional forms that also impose a paperwork and reporting burden. However, to a great extent these other paperwork requirements are tied to specific economic or workplace regulations. This means that our cost estimates for economic regulations and workplace regulations already account for most of the non-tax-related paperwork burden.

Our estimate of the cost of tax compliance relies on a 2000 report by the Tax Foundation.¹⁶ The approach in that study is straightforward and easy to summarize. It

¹⁵ Joseph Johnson, *The Cost of Workplace Regulations*, Mercatus Center, George Mason University, Arlington, Virginia, April 2001.

¹⁶ J. Scott Moody, *The Cost of Complying with the U.S. Federal Income Tax*, Background Paper No. 35, The Tax Foundation, Washington, DC, November 2000. Moody uses data for 1999.

uses data from the Internal Revenue Service on the hours of compliance time required for each type of tax form, and the number of filings for each type of form. These total hours spent on compliance are then multiplied by various hourly wage rates that reflect either the value of the preparer's time or the rate for a tax professional.¹⁷ Based on the Tax Foundation findings, the estimated cost of federal tax compliance is \$129 billion (in 2000 dollars). To be clear, this \$129 billion estimate includes the combined costs on individual filers and business filers.

¹⁷ Interestingly, the Tax Foundation study states that tax professionals prepare 56 percent of all forms.

III. Incidence of Regulatory Costs: Accounting Methodology

A. A Snapshot of American Enterprise

The report uses a three-part firm size classification, relying on SBA data on employees per firm:

- Small Firms Fewer than 20 employees,
- Medium Firms 20-499 employees, and
- Large Firms 500 + employees.

We segment businesses and present data separately for four sectors:

- Manufacturing
- Trade (Wholesale and Retail Trade)
- Services, and
- Other (a residual containing all other enterprises).

These firm size and business sector classifications mirror those used in the 1995 Hopkins report.

Table 2 shows the distribution of American industry by sector and firm size using the most recently available data from the Small Business Administration.¹⁸ We present three relevant business indicators in Table 2: the number of firms, the number of employees, and total receipts.

¹⁸ American industry is obviously not static and these 1997 data on the distribution of business activity do not match exactly with the years for the data on regulatory costs. However, changes in the basic structure of American industry generally occur only in gradual increments. These data provide a reasonable approximation for the relevant years of the proportions of firms, employees, and receipts across our firm size and sector classifications.

Table 2: Size Distribution of American Business, 1997 *

Sector	Size Measure	All Firms ^a	<20 employees	20-499 employees	500+ employees
All Sectors ^a	No. of Firms	5,541,918	4,958,641	567,198	16,079
	Employment	105,299,123	20,118,816	34,426,554	50,753,753
	Receipts (\$000)	19,578,199,806	2,990,867,758	5,024,101,537	11,563,230,510
Manufacturing Firms		333,670	243,702	85,011	4,957
	Employment	18,633,065	1,359,740	5,917,403	11,355,922
	Receipts (\$000)	4,283,180,224	175,423,861	886,321,225	3,221,435,138
Trade	Firms	1,511,347	1,316,655	188,098	6,594
	Employment	28,814,058	6,058,285	9,503,449	13,252,324
	Receipts (\$000)	5,618,473,214	1,228,464,729	1,758,341,502	2,631,666,983
Services	Firms	2,224,348	2,016,246	199,168	8,934
	Employment	37,384,595	7,830,968	12,751,477	16,802,150
	Receipts (\$000)	2,851,573,176	699,226,249	832,305,375	1,320,041,552
Other	Firms	1,472,553	1,382,038	94,921	4,406
	Employment	20,467,405	4,869,823	6,254,225	9,343,357
	Receipts (\$000)	6,824,973,192	887,752,919	1,547,133,436	4,390,086,837

Notes to Table 2:

* Source: U.S. Small Business Administration, Office of Advocacy, "Statistics of U.S. Businesses: Firm Size Data," Web Site: <http://www.sba.gov/advo/stats/data.html>. Receipts are converted into 2000 dollars. The Office of Advocacy contracts with the U.S. Census Bureau to provide employer firm size data.

^a These "Statistics of U.S. Businesses" data cover almost all nonfarm employer businesses. It omits farms, railroads, and most government-owned establishments, the U.S. Postal Service, and large pension, health and welfare funds (100 + employees) and non-incorporated firms with no paid employees.

Table 3 organizes the distribution of these same business indicators in a different, and for our purposes more useful, fashion. There we simply convert the raw data from Table 2 into percentage terms. For example, consider the data in Table 3 that describe the manufacturing sector. That sector accounts for six percent of all U.S. firms, 18 percent of all U.S. employees and 22 percent of all U.S. business receipts. Within the sector, 73 percent of the firms classify as small businesses, 7 percent of

manufacturing employees work in small firms, and small firms generate 4 percent of the sector's receipts.

Table 3: Size Distribution of American Business (in Percentages)

Size Measure	Sector Share of All U.S. Industry			
	Manufacturing	Trade	Services	Other
No. of Firms	6%	27%	40%	27%
Employees	18%	27%	36%	19%
Receipts	22%	29%	15%	35%

	Percent of Firms, by Sector				
	Manufacturing	Trade	Services	Other	All Sectors
<20 employees	73%	87%	91%	94%	89%
20-499 employees	25%	12%	9%	6%	10%
500+ employees	1%	0.4%	0.4%	0%	0.3%

	Percent of Employees, by Sector				
	Manufacturing	Trade	Services	Other	All Sectors
<20 employees	7%	21%	21%	24%	19%
20-499 employees	32%	33%	34%	31%	33%
500+ employees	61%	46%	45%	46%	48%

	Percent of Receipts, by Sector				
	Manufacturing	Trade	Services	Other	All Sectors
<20 employees	4%	22%	25%	13%	15%
20-499 employees	21%	31%	29%	23%	26%
500+ employees	75%	47%	46%	64%	59%

Source: See Table 3

We use the percentages displayed in Table 3 extensively in the allocation of regulatory costs across sectors and firm sizes, procedures that we describe in considerable detail below.

B. Cost Allocation Assumptions

Business Portion of the Regulatory Burden

First we seek to separate the regulatory burden that falls initially on business from the burden that falls initially on individuals and state and local governments. As discussed in Section II, the report makes no attempt to trace the subsequent shifting of this burden from business to individuals (*e.g.*, in the form of higher retail prices) or from one business sector to another (*e.g.*, in the form higher energy costs). The cost allocations for each separate category are as follows:

- Environmental — business 65%, other 35%
- Economic — business 50%, other 50%
- Workplace — business 100%, other 0%
- Federal Tax Compliance — business 54%, other 46%

The allocations for environmental regulations and economic regulations are adopted from the 1995 Hopkins study.¹⁹ We base the allocation for workplace regulations on the simple fact that these only apply to business enterprises. The allocation for federal tax compliance uses the apportionment data from the Tax Foundation study.²⁰

Allocation of Regulatory Costs Across Business Sectors

The second task is to allocate the business segment of regulation costs across the four business sectors. Table 4 lists these allocations by sector, and we describe the allocation basis for each type of regulation in turn.

¹⁹ The basis for the allocation of environmental costs in Hopkins (1995, p. 13) was compliance data from the Environmental Protection Agency, "Environmental Investments: The Cost of a Clean Environment," EPA 230-11-90-083, November 1990, pp. 2-5; In the absence of allocation data for economic regulation, a default judgment of 50-50 was applied.

²⁰ See Footnote 11.

Table 4: Allocation of Business Regulatory Costs Across Sectors

Type of Regulation	Sectoral Allocation			
	Manufacturing	Trade	Services	Other
Environmental	54%	0%	1%	45%
Workplace	19%	26%	34%	21%
Economic	22%	29%	15%	35%
Federal Tax Compliance	22%	29%	15%	35%

The allocation for environmental regulations is taken from Hazilla and Kopp.²¹ Almost all of these costs fall on the manufacturing sector (54 percent) and the residual, or “other” sector (45 percent). The “other” sector includes such businesses as Coal Mining, Ore Mining, Oil and Gas Extraction, Coal Gasification, and Electric Utilities, all of which are heavily affected by regulations promulgated under the Clean Air Act and the Clean Water Act.

The allocation for workplace regulations is based on a decomposition of all workplace regulations into six types. These six types are shown in Table 5, and the specific statutes and Executive Orders that fall within each are listed in Appendix 1.

Table 5: Basis for Allocating Workplace Regulations Across Business Sectors *

Type of Workplace Regulation	Manufacturing		Trade		Service		Other		Allocation Basis
	Share	Cost	Share	Cost	Share	Cost	Share	Cost	
Labor Standards	30%	\$ 1,502	13%	\$ 659	22%	\$ 1,106	35%	\$ 1,727	% Unionized Emp. % U.S.
Employee Benefits	18%	\$ 781	27%	\$ 1,208	36%	\$ 1,567	19%	\$ 858	Employment
Labor-Management Relations	30%	\$ 1,198	13%	\$ 525	22%	\$ 882	35%	\$ 1,377	% Unionized Emp. % U.S.
Occupational Safety and Health	18%	\$ 9,837	27%	\$15,211	36%	\$19,736	19%	\$10,805	Employment % U.S.
Civil Rights	18%	\$ 1,791	27%	\$ 2,770	36%	\$ 3,593	19%	\$ 1,967	Employment % U.S.
Employment Decision Laws	18%	\$ 511	27%	\$ 790	36%	\$ 1,025	19%	\$ 561	Employment
All Workplace Regulations	19%	\$15,620	26%	\$21,163	34%	\$27,910	21%	\$17,295	

* Note to Table 5: All dollar figures are in millions, and denominated in 2000 dollars.

²¹ Hazilla and Kopp, p. 858.

For two categories of workplace regulations, Labor Standards and Labor-Management Relations, we allocate costs based on each sector's share of all U.S. private sector employees represented by a union. For example, of the nearly 10 million private sector workers in the U.S. represented by a union in 2000, almost 3 million (30 percent) worked in the manufacturing sector.²² We use unionization shares for the somewhat obvious reason that these two types of regulations largely include union wage-related issues (e.g., the Service Contract Act, the Walsh-Healey Act, and the Davis-Bacon Act) and collective bargaining issues (e.g., the National Labor Relations Act). For the four other types of workplace regulations, Employee Benefits, Occupational Safety and Health, Civil Rights, and Employment Decision Laws, we allocate costs based on each sector's share of total U.S. employment. We then sum the total workplace costs for each sector separately and compute each sector's share of all workplace regulations. These final allocation shares are shown on the last row of Table 5.

Regarding economic regulations and federal tax compliance, we allocate the costs based on each sector's share of total U.S. business receipts.²³ These revenue shares are shown in Table 3 above. In the case of economic regulations, the rationale underlying this allocation formula is that both the efficiency costs and the transfer costs will be proportional to industry output and price, which of course determine industry

²² The source for union representation data by sector is the U.S. Bureau of Labor Statistics, "Labor Force Statistics from the Current Population Survey," <http://stats.bls.gov/news.release/union2.t03.htm>.

²³ The source for the industry receipts data is U.S. Small Business Administration, Office of Advocacy, Statistics of Businesses: Firm Size Data, Web Site: <http://www.sba.gov/advo/stats/data.html>. As noted in Table 2, these data cover almost all nonfarm employer businesses, and omits non-incorporated firms with no paid employees. According to the Census Bureau, in terms of receipts, non-employers account for roughly 3 percent of all business activity (see U.S. Census Bureau, "Nonemployer Statistics," <http://www.census.gov/epcd/nonemployer/>).

receipts. In the case of tax compliance, we expect the time and resources devoted to record keeping, tax accountants, paperwork, and litigation to be correlated highly with industry receipts.

Allocation of Regulatory Costs By Firm Size

The third task involves allocating the costs of regulations by firm size. As noted above we adopt a three-division scheme: firms with fewer than 20 employees (“small”), firms with 20 to 499 employees (“medium”), and firms with 500 or more employees (“large”). The specific allocation procedure differs for each type of regulation

Appendix 2 provides a complete technical description of the methodology used to allocate the cost of environmental regulations by firm size. The general methodology is simply summarized here. We use multiple regression analysis to estimate the relationship between pollution abatement costs (PAC) per employee and firm size, measured by the number of employees per firm. That is, the model regresses firm compliance costs per employee against the number of employees, controlling for other factors. The regression results indicate that a one percent increase in firm size (measured in terms of the number of employees) corresponds to a 0.43 percent decrease in pollution abatement costs per employee. In essence, this parameter estimates the degree of economies of scale in compliance costs.

For each business sector we use: (i) this economies of scale parameter value, (ii) the share of employees within each size category, and (iii) the sector’s overall average cost per employee to solve for the median cost per employee within each firm size category. To restate the problem differently, given the economies of scale parameter and the share of employees within each size class, what per employee cost for the three firm size classes would yield the overall sector average cost?

For workplace regulations, the cost allocation among the three firm size groups for each sector uses a two-step procedure. Step one separates the total regulatory costs for the sector into two components, those that apply to all firms and those that explicitly exempt small firms (those with fewer than 20 employees). Appendix 1 denotes the exempt and non-exempt workplace regulations. In step two, for the non-exempt regulations we follow the assumption in Hopkins (1995) and allocate the costs such that the cost per employee in small firms is 20 percent higher than in medium-sized firms, and the cost per employee in large firms is 20 percent lower than in medium-sized firms. For the regulations that exempt small firms, we allocate the costs solely between the medium and large firms using the same ratio as above (20 percent lower per employee in large firms than in medium-sized firms). The final allocation then sums the non-exempt and exempt cost components for each firm size category.²⁴

The firm size allocation formula for economic regulations is based on the share of receipts generated within each firm size category. These receipt shares are shown in Table 3 above. For example, in the manufacturing sector, small firms generate 4 percent of receipts within the sector, medium firms generate 21 percent, and large firms generate 75 percent. As described above for the “sectoral allocations,” we apportion the costs of economic regulation based on receipts because the extent of efficiency losses and transfer costs should be correlated closely with product market prices and output.

Finally, we allocate the costs of tax compliance across firm size classifications based on the compliance hours data from the Tax Foundation study.²⁵ Appendix 3

²⁴ The category of “non-exempt workplace regulations” is the one area to which we apply this judgmental cost allocation used in Hopkins (1995). That is, in this report we only apply the 20 percent assumption to a relatively small segment of all regulations, and therefore the overall results are not very sensitive to this assumption.

²⁵ See Footnote 11.

provides the details of cost allocation methodology, and Table 6 summarizes the allocation shares used in the analysis.

**Table 6: Basis for Allocating Tax Compliance Costs Across Firm Sizes
(Hours in Millions)**

Firm Size Category	Manufacturing		Trade		Service		Other	
	Share	Hours	Share	Hours	Share	Hours	Share	Hours
<20 employees	25%	109	30%	167	31%	87	29%	198
20 to 499 employees	28%	119	34%	193	33%	93	27%	184
500+ employees	47%	200	36%	200	37%	104	44%	300

IV. Principal Findings

The analysis adopts two alternative profiles of regulatory costs, one that includes a combined estimate of the efficiency and transfer costs, and a second that includes only the estimate of efficiency costs. This section outlines the principal findings, which are detailed in tabular form. We reiterate the distinction between the two alternative cost estimates reported: Method A includes efficiency costs and transfer costs; Method B includes only efficiency costs.

The Federal Burden Per Household

Table 7 benchmarks the cost of federal regulations in relation to the number of households in the US, showing how the cost per household has changed since the Hopkins study in 1995. Table 7 further shows the total federal burden, that is, when federal tax receipts are added, and how this total burden per household changed between 1995 and 2000. We adjust these indicators for inflation (expressed in 2000 dollars), which means that the changes reflect growth in excess of the increases in population and the general cost of living.

Table 7. Federal Receipts and Regulatory Costs Per Household: Levels and Growth, 2000 and 1995^a

Method A: Efficiency and Transfer Costs				
Year	Households (thousands)	Federal Receipts per HH^b	Total Regulatory Costs per HH	Combined Federal Burden per HH
2000	103,246	\$19,613	\$8,164	\$27,778
1995 ^c	98,180	\$15,501	\$7,691	\$23,192
Total Growth: 1995 to 2000	5%	24%	6%	18%
Annualized Compound Growth Rate: 1995 to 2000	1%	4.7%	1.2%	3.6%
Method B: Efficiency Costs Only				
2000	103,246	\$19,613	\$4,797	\$24,411
1995 ^c	98,180	\$15,501	\$4,789	\$20,291
Total Growth: 1995 to 2000	5%	24%	0.2%	18.5%
Annualized Compound Growth Rate: 1995 to 2000	1%	4.7%	0.03%	3.7%

Notes to Table 7.

^a All dollar amounts expressed in 2000 dollars.

^b Federal Receipts include Social Security. Source: CBO Web Site:

<http://www.cbo.gov/showdoc.cfm?index=2727&sequence=0&from=0#anchor>

^c Source: Hopkins, 1995

Based on Method A, over this five-year period the real regulatory cost per household grew by 1.2 percent (compounded annually), to \$8,164 from \$7,691. Based on Method B, the regulatory cost per household grew by 0.03 percent annually, to \$4,797 from \$4,789. By either method, the real total federal burden per household (federal revenues plus regulatory costs) increased at an annualized rate of nearly four percent in inflation-adjusted dollars.

The Business Portion of the Regulatory Burden

Table 8 shows the estimated costs of all federal regulations, broken down by type and the distribution of the burden between business and others, *i.e.*, individuals and state and local government.

Table 8. Total Cost of Federal Regulations: By Type and Allocation Between Business and Others (in billions of 2000 dollars)

Method A: Efficiency and Transfer Costs					
		Business Portion		Others	
	Total Costs	Share	Amount	Share	Amount
All Federal Regulations	\$ 843	59%	\$ 497	41%	\$ 346
Environmental	\$ 197	65%	\$ 128	35%	\$ 69
Economic	\$ 435	50%	\$ 217	50%	\$ 217
Workplace	\$ 82	100%	\$ 82	0%	\$ -
Tax Compliance	\$ 129	54%	\$ 70	46%	\$ 59
Method B: Efficiency Costs Only					
		Business Portion		Others	
	Total Costs	Share	Amount	Share	Amount
All Federal Regulations	\$ 495	59%	\$ 295	41%	\$ 201
Environmental	\$ 197	65%	\$ 128	35%	\$ 69
Economic	\$ 145	50%	\$ 72	50%	\$ 72
Workplace	\$ 24	100%	\$ 24	0%	\$ -
Tax Compliance	\$ 129	54%	\$ 70	46%	\$ 59

These estimates in Table 8 indicate that the annual total cost of all federal regulations ranges between \$495 billion (excluding transfer costs) and \$843 billion (including transfer costs). Of this amount, the annual direct burden on business ranges between \$295 billion and \$497 billion.²⁶

The most costly type of regulation depends on the cost accounting method. When transfer costs are counted (Method A), economic regulations represent the most costly category (\$435 billion); when transfer costs are excluded (Method B), environmental regulations represent the most costly category (\$197 billion). Compliance with the federal tax code costs an estimated \$129 billion, and the costs of workplace regulations range from \$24 billion (Method B) to \$82 billion (Method A).

The Distribution of the Regulatory Burden Across Business Sectors: Three Metrics

Tables 9A and 9B further deconstruct the business portion of regulation costs by sector and for the four types of regulations. We employ three measures of the regulatory burden to assess the cost distribution across business sectors: cost per firm, cost per employee, and cost as a share of receipts.

²⁶ In the 1995 study, Hopkins used regulatory trends to project the costs out through 2000. That projection for the total cost of regulation in 2000 was \$815 billion (converted to 2000 dollars), which falls \$28 billion shy of our total cost estimate of \$843 billion. In other words, the Hopkins five-year forecast falls 3.3 percent below our updated 2000 cost estimate.

Table 9A. Average Sectoral Regulatory Costs, Method A

(Efficiency and Transfer Costs, in 2000 Dollars. Total Costs in Billions)

Manufacturing					
	Total Costs	Cost per Firm	Cost per Employee	Cost as a Percent of Receipts	
Environmental	\$ 69	\$ 206,089	\$ 3,691	1.6%	
Economic	\$ 48	\$ 142,579	\$ 2,553	1.1%	
Workplace	\$ 16	\$ 46,812	\$ 838	0.4%	
Tax Compliance	\$ 15	\$ 45,925	\$ 822	0.4%	
Total	\$ 147	\$ 441,406	\$ 7,904	3.4%	

Trade					
	Total Costs	Cost per Firm	Cost per Employee	Cost as a Percent of Receipts	
Environmental	\$ -	\$ -	\$ -	0.0%	
Economic	\$ 62	\$ 41,291	\$ 2,166	1.1%	
Workplace	\$ 21	\$ 14,003	\$ 734	0.4%	
Tax Compliance	\$ 20	\$ 13,300	\$ 698	0.4%	
Total	\$ 104	\$ 68,594	\$ 3,598	1.8%	

Services					
	Total Costs	Cost per Firm	Cost per Employee	Cost as a Percent of Receipts	
Environmental	\$ 1	\$ 557	\$ 33	0.0%	
Economic	\$ 32	\$ 14,239	\$ 847	1.1%	
Workplace	\$ 28	\$ 12,547	\$ 747	1.0%	
Tax Compliance	\$ 10	\$ 4,587	\$ 273	0.4%	
Total	\$ 71	\$ 31,930	\$ 1,900	2.5%	

Other					
	Total Costs	Cost per Firm	Cost per Employee	Cost as a Percent of Receipts	
Environmental	\$ 58	\$ 39,233	\$ 2,823	0.8%	
Economic	\$ 76	\$ 51,480	\$ 3,704	1.1%	
Workplace	\$ 17	\$ 11,745	\$ 845	0.3%	
Tax Compliance	\$ 24	\$ 16,582	\$ 1,193	0.4%	
Total	\$ 175	\$ 119,039	\$ 8,564	2.6%	

US Totals (Averages use weights for the respective sectors)					
	Total Costs	Cost per Firm	Cost per Employee	Cost as a Percent of Receipts	
Environmental	\$ 128	\$ 23,056	\$ 1,213	0.7%	
Economic	\$ 217	\$ 39,239	\$ 2,065	1.1%	
Workplace	\$ 82	\$ 14,794	\$ 779	0.4%	
Tax Compliance	\$ 70	\$ 12,639	\$ 665	0.4%	
Total	\$ 497	\$ 89,729	\$ 4,722	2.5%	

Table 9B. Average Sectoral Regulatory Costs, Method B
(Efficiency Costs Only, in 2000 Dollars. Total Costs in Billions)

Manufacturing					
	Total Costs	Cost per Firm	Cost per Employee	Cost as a Percent of Receipts	
Environmental	\$ 69	\$ 206,089	\$ 3,691	1.6%	
Economic	\$ 16	\$ 47,526	\$ 851	0.4%	
Workplace	\$ 5	\$ 14,830	\$ 266	0.1%	
Tax Compliance	\$ 15	\$ 45,925	\$ 822	0.4%	
Total	\$ 105	\$ 314,371	\$ 5,630	2.4%	

Trade					
	Total Costs	Cost per Firm	Cost per Employee	Cost as a Percent of Receipts	
Environmental	\$ -	\$ -	\$ -	0.0%	
Economic	\$ 21	\$ 13,764	\$ 722	0.4%	
Workplace	\$ 6	\$ 3,910	\$ 205	0.1%	
Tax Compliance	\$ 20	\$ 13,300	\$ 698	0.4%	
Total	\$ 47	\$ 30,974	\$ 1,625	0.8%	

Services					
	Total Costs	Cost per Firm	Cost per Employee	Cost as a Percent of Receipts	
Environmental	\$ 1	\$ 557	\$ 33	0.0%	
Economic	\$ 11	\$ 4,746	\$ 282	0.4%	
Workplace	\$ 8	\$ 3,565	\$ 212	0.3%	
Tax Compliance	\$ 10	\$ 4,587	\$ 273	0.4%	
Total	\$ 30	\$ 13,455	\$ 801	1.0%	

Other					
	Total Costs	Cost per Firm	Cost per Employee	Cost as a Percent of Receipts	
Environmental	\$ 58	\$ 39,233	\$ 2,823	0.8%	
Economic	\$ 25	\$ 17,160	\$ 1,235	0.4%	
Workplace	\$ 6	\$ 3,746	\$ 269	0.1%	
Tax Compliance	\$ 24	\$ 16,582	\$ 1,193	0.4%	
Total	\$ 113	\$ 76,720	\$ 5,520	1.7%	

US Totals (Averages use weights for the respective sectors)					
	Total Costs	Cost per Firm	Cost per Employee	Cost as a Percent of Receipts	
Environmental	\$ 128	\$ 23,056	\$ 1,213	0.7%	
Economic	\$ 72	\$ 13,080	\$ 688	0.4%	
Workplace	\$ 24	\$ 4,385	\$ 231	0.1%	
Tax Compliance	\$ 70	\$ 12,639	\$ 665	0.4%	
Total	\$ 295	\$ 53,160	\$ 2,798	1.5%	

The bottom rows of Tables 9A and 9B put the overall cost to the “typical” U.S. firm at roughly \$90,000 using Method A and \$53,000 using Method B.²⁷ As a percent of firm receipts, the cost of all regulations typically equals 2.5 percent in Method A and 1.5 percent in Method B.²⁸ The cost per employee for the typical U.S. firm is \$4,722 in Method A and \$2,798 in Method B.

The three cost metrics shown in Tables 9A and 9B point to two conclusions. First, the manufacturing sector bears the highest total regulatory burden. (The sole exception to this conclusion: the manufacturing sector ranks a close second to the “other” sector in terms of the cost per employee in Table 9A.) In terms of the cost per firm, the burden on the manufacturing sector (more than \$440,000) exceeds the burden on the second most costly sector (the “other” category which equals about \$119,000 per firm) by a factor of about four. When the regulatory burden is measured as a share of industry receipts, the manufacturing sector exceeds the second most costly sector (“other”) by 34 to 48 percent.

The second conclusion from the metrics in Tables 9A and 9B is that the service sector bears the lowest total regulatory burden. In term of the cost per firm, the burden on the service sector is less than half the burden on the second least costly sector (the trade sector), and amounts to only 4 percent to 7 percent of the cost burden on the manufacturing sector. We note, however, that when the burden is gauged by costs as a percent of receipts, the trade sector fares slightly better than the service sector. Thus some conclusions about relative regulatory burden depend on which metric one favors.

²⁷ The U.S. total figures are based on a weighted average of the costs in the four business sectors. The weights for each average use the share for the respective category. For example, for the “cost per firm” value we weight the cost per firm in each sector by the share of all U.S. firms in that sector. For the “cost as a percent of receipts” value we weight the sector values by the share of all U.S. receipts in that sector, and so on.

²⁸ One could interpret these percentages as equivalent to an excise tax on firms’ sales.

As a final observation about the results in Tables 9A and 9B, we find a quite large variation in the distribution of the regulatory burden across major sectors of the economy. Even the two sectors in the middle of the cost distribution, the trade sector and the “other” category, exhibit a large cost difference. Looking across the three alternative burden metrics, costs in the trade sector are some 30 percent to 70 percent lower than the costs in the “other” category.

The Distribution of Regulatory Costs by Firm Size

The distribution of regulatory costs across different firm size categories is presented in Table 10A (for Method A) and Table 10B (for Method B).

**Table 10A. Business Regulatory Costs in Small, Medium and Large Firms, 2000
(Transfer and Efficiency Cost per Employee in 2000 Dollars) Method A**

Manufacturing					
Firm Size					
	All Firms	<20	20-499	500+	
Environmental	\$ 3,691	\$ 11,671	\$ 4,115	\$ 2,515	
Economic	\$ 2,553	\$ 1,433	\$ 1,664	\$ 3,151	
Workplace	\$ 838	\$ 953	\$ 954	\$ 763	
Tax Compliance	\$ 822	\$ 2,863	\$ 722	\$ 631	
Total	\$ 7,904	\$ 16,920	\$ 7,454	\$ 7,059	

Trade					
Firm Size					
	All Firms	<20	20-499	500+	
Environmental	\$ -	\$ -	\$ -	\$ -	
Economic	\$ 2,166	\$ 2,252	\$ 2,055	\$ 2,206	
Workplace	\$ 734	\$ 766	\$ 823	\$ 658	
Tax Compliance	\$ 698	\$ 990	\$ 729	\$ 542	
Total	\$ 3,598	\$ 4,008	\$ 3,607	\$ 3,406	

Services					
Firm Size					
	All Firms	<20	20-499	500+	
Environmental	\$ 33	\$ 77	\$ 27	\$ 17	
Economic	\$ 847	\$ 992	\$ 725	\$ 873	
Workplace	\$ 747	\$ 779	\$ 833	\$ 666	
Tax Compliance	\$ 273	\$ 399	\$ 263	\$ 222	
Total	\$ 1,900	\$ 2,246	\$ 1,848	\$ 1,777	

Other					
Firm Size					
	All Firms	<20	20-499	500+	
Environmental	\$ 2,823	\$ 6,358	\$ 2,242	\$ 1,370	
Economic	\$ 3,704	\$ 2,025	\$ 2,748	\$ 5,219	
Workplace	\$ 845	\$ 899	\$ 941	\$ 753	
Tax Compliance	\$ 1,193	\$ 1,454	\$ 1,052	\$ 1,151	
Total	\$ 8,564	\$ 10,735	\$ 6,982	\$ 8,493	

U.S. Totals (averages use employment shares to weight the respective sectors)

Firm Size					
	All Firms	<20	20-499	500+	
Environmental	\$ 1,213	\$ 3,328	\$ 1,173	\$ 717	
Economic	\$ 2,065	\$ 1,616	\$ 1,648	\$ 2,485	
Workplace	\$ 779	\$ 829	\$ 873	\$ 698	
Tax Compliance	\$ 665	\$ 1,202	\$ 625	\$ 562	
Total	\$ 4,722	\$ 6,975	\$ 4,319	\$ 4,463	

**Table 10B. Business Regulatory Costs in Small, Medium and Large Firms, 2000
(Efficiency Cost per Employee in 2000 Dollars) Method B**

Manufacturing					
Firm Size					
	All Firms	<20	20-499	500+	
Environmental	\$ 3,691	\$ 11,671	\$ 4,115	\$ 2,515	
Economic	\$ 851	\$ 478	\$ 555	\$ 1,050	
Workplace	\$ 266	\$ 313	\$ 301	\$ 241	
Tax Compliance	\$ 822	\$ 2,863	\$ 722	\$ 631	
Total	\$ 5,630	\$ 15,325	\$ 5,692	\$ 4,436	

Trade					
Firm Size					
	All Firms	<20	20-499	500+	
Environmental	\$ -	\$ -	\$ -	\$ -	
Economic	\$ 722	\$ 751	\$ 685	\$ 735	
Workplace	\$ 205	\$ 218	\$ 228	\$ 182	
Tax Compliance	\$ 698	\$ 990	\$ 729	\$ 542	
Total	\$ 1,625	\$ 1,959	\$ 1,642	\$ 1,459	

Services					
Firm Size					
	All Firms	<20	20-499	500+	
Environmental	\$ 33	\$ 77	\$ 27	\$ 17	
Economic	\$ 282	\$ 331	\$ 242	\$ 291	
Workplace	\$ 212	\$ 227	\$ 235	\$ 188	
Tax Compliance	\$ 273	\$ 399	\$ 263	\$ 222	
Total	\$ 801	\$ 1,033	\$ 766	\$ 717	

Other					
Firm Size					
	All Firms	<20	20-499	500+	
Environmental	\$ 2,823	\$ 6,358	\$ 2,242	\$ 1,370	
Economic	\$ 1,235	\$ 675	\$ 916	\$ 1,740	
Workplace	\$ 269	\$ 298	\$ 296	\$ 237	
Tax Compliance	\$ 1,193	\$ 1,454	\$ 1,052	\$ 1,151	
Total	\$ 5,520	\$ 8,784	\$ 4,506	\$ 4,498	

U.S. Totals (averages use employment shares to weight the respective sectors)

Firm Size					
	All Firms	<20	20-499	500+	
Environmental	\$ 1,213	\$ 3,328	\$ 1,173	\$ 717	
Economic	\$ 688	\$ 539	\$ 549	\$ 828	
Workplace	\$ 231	\$ 254	\$ 257	\$ 205	
Tax Compliance	\$ 665	\$ 1,202	\$ 625	\$ 562	
Total	\$ 2,798	\$ 5,322	\$ 2,604	\$ 2,313	

Considering first the aggregate results for all federal regulations and all business sectors (the last row of Table 10A), regulations cost small firms an estimated \$6,975 per employee annually. Regulations cost medium-size firms \$4,319 per employee and large firms \$4,463 per employee. The cost per employee thus appears to be roughly 60 percent higher in small firms than in medium-sized and large firms. The estimates in Table 10B indicate an even larger cost differential, although the costs per employee in every size category are lower than the estimates in shown in Table 10A. Using Method B (Table 10B), the cost per employee is 104 percent higher in small firms (=\$5,322) than in medium-sized firms (=\$2,604), and 130 percent higher in small firms than in large firms (=\$2,313).

Appendix 5 provides highlights from the 1995 Hopkins study in order to facilitate comparisons with this report's findings for 2000. One of the major findings in the 1995 Hopkins study is that the average firm with fewer than 20 employees spent some \$5,500 per employee to comply with federal regulations in 1992. By contrast, firms with 500 or more employees spent a much smaller \$3,000 per employee.²⁹ In other words, the Hopkins estimates indicate economies of scale in regulatory compliance.³⁰ This result holds for Hopkins' aggregate estimates for all U.S. firms, as well as for three out of his four major industrial sub-sectors: Trade, Services, and Other. The important exception is the manufacturing sector. In that sector, Hopkins finds that small firms exhibit compliance costs per employee that are roughly 10 percent lower than compliance costs

²⁹ These cost estimates (in 1995 dollars) include the four main types of federal regulations: environmental, social (*e.g.*, OSHA), economic (controls on prices and entry conditions), and process (mainly tax compliance paperwork). These are only two of a range of estimates provided in Hopkins (1995). Compliance data for 1992 was the most recently available at the time of the Hopkins study.

³⁰ The absence of a quantitative estimate of economies of scale in regulatory compliance represents a weakness in the 1995 Hopkins study, as he readily acknowledged in the report. To redress this weakness, the present report incorporates an empirical estimation of the relationship between firm size and compliance costs for environmental regulations, as outlined above in Section III and detailed in Appendix 2.

in medium sized firms. Large manufacturing firms, those with 500 or more employees, exhibit compliance costs per employee that run about half the costs in small firms.

The data in the 1995 Hopkins report reflect regulatory compliance activities in 1992, which are converted in Appendix 5 into 2000 dollars, so that they are more comparable with this report's data. Referring to the total compliance costs across all sectors and including transfer costs, Hopkins found that regulations cost small firms an estimated \$6,253 per employee annually. Regulations cost medium-size firms \$5,989 per employee and large firms \$3,367 per employee.

These results indicate that the cost per employee in 1992 was only 4 percent higher in small firms than in medium-sized, as compared to the nearly 60 percent difference this study finds for 2000. The cost per employee in 1992 was about 80 percent higher in small firms than in large firms, as compared to the nearly 60 percent difference indicated for 2000. In other words, the estimates for 1992 suggest a minor cost differential between small and medium firms, and a large gap between the costs in small and medium firms versus the costs in large firms. The present study's estimates for 2000 suggest that the major gap in costs occurs between small firms and medium firms, with a relatively minor difference in the costs facing medium and large firms.

As this report's findings for 2000 in Table 10A and Table 10B indicate, the distribution of compliance costs with respect to firm size classes differs across the four major business sectors. The disproportionate cost burden on small firms is particularly large for the manufacturing sector. In that sector (using Table 10A) the estimated cost per employee for small firms (\$16,920) is 127 percent higher than in medium sized firms (\$7,454), and 140 percent higher than in large firms (\$7,059). Importantly, two types of regulations, environmental and tax compliance, drive the cost disadvantage facing small manufacturing firms. The cost of workplace regulations is virtually identical for small and

medium sized manufacturers, and about 25 percent higher in small and mid-sized firms compared to large manufacturing firms. With regard to economic regulations, we find that the burden falls disproportionately on large manufacturing firms. The burden of economic regulations on small firms is 55 percent lower than on large firms.³¹

The least cost differential with respect to firm size appears in the trade sector (wholesale and retail businesses). In that sector the total cost per employee for small firms (\$4,008) exceeds the cost in medium firms (\$3,607) by 11 percent and the cost in large firms (\$3,406) by 18 percent.³² The cost differential in the trade sector is driven almost completely by tax compliance; this cost for small firms exceeds the cost in medium firms by 36 percent, and the cost in large firms by 83 percent. Interestingly, we find a slight relative cost advantage for small trade firms compared to mid-sized firms regarding workplace regulations, although the cost per employee is lowest overall for the large firms in this sector. In other words, in the trade sector workplace regulations hit mid-sized firms particularly hard. The cost of economic regulations is 10 percent higher in small retail and wholesale firms compared to mid-size firms, and a mere 2 percent higher in small firms than in large firms.

In the service sector, the overall cost per employee in small firms (\$2,246) is 22 percent higher than the cost in mid-sized firms (\$1,848), and 26 percent higher than in large firms (\$1,777). While the burden of environmental regulations is low in the service sector compared to the manufacturing and other sectors, the cost differential with respect to firm size is quite large. Environmental regulations cost small service firms

³¹ This cost profile for the manufacturing sector differs substantially from the 1992 estimates in Hopkins (1995). As shown in Appendix 5, the total compliance cost for small manufacturing firms was 15 percent lower in small firms than in medium firms.

³² The cost profile for the trade sector in 2000 comes somewhat closer to the pattern estimated in Hopkins (1995) as illustrated in Appendix 5. In the trade sector Hopkins also estimated aggregate costs were 11 percent lower in small firms compared to medium firms. However, the aggregate cost difference between small and large firms was estimated to be nearly 90 percent.

three to four times more than the cost on medium and large firms in this sector. The distribution of tax compliance costs falls disproportionately on small service firms, as it does in the three other business sectors. As in the trade sector, the findings indicate that the cost of workplace regulations is highest for mid-size service firms. Unlike the trade sector, however, in the service sector economic regulations are 37 percent higher in small firms than in mid-size firms, and 14 percent higher than in large firms.

Regarding firms in the “other” category, the cost per employee is \$10,735 in small firms, \$6,982 in medium sized firms, and \$8,493 in large firms. In essence, in this sector the regulatory burden is disproportionately heavy on small firms, and mid-sized firms appear to enjoy a relative cost advantage. Here, environmental regulations and tax compliance drive the cost disadvantage for small firms, and economic regulations work against the large firms.

In summary, the cost disadvantage on small business in each sector is driven largely by compliance with environmental regulations and with the federal tax code. However, the particular drivers differ somewhat across the four business sectors. Moreover, not all regulations fall more heavily on small firms than on larger firms. The cost of economic regulations falls most heavily on large firms in two major sectors (manufacturing and “other”). The cost of workplace regulations falls most heavily on med-sized firms, which most likely reflects the fact that many workplace regulations explicitly exempt small firms. Finally, small manufacturing firms appear to bear a disproportionately large burden of regulations as measured by the cost per employee.

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Appendix 1. Statutes and Executive Orders Governing Workplace Regulations

Source: U.S. General Accounting Office, *Workplace Regulation*, June 1994

An asterisk indicates that firms with less than 20 employees are explicitly exempted.

Labor Standards:

- Fair Labor Standards Act (FLSA)
- Davis-Bacon Act
- Service Contract Act
- Walsh-Healey Act
- Contract Work Hours and Safety Standards Act
- Migrant and Seasonal Agricultural Worker Protection Act

Employee Benefits:

- * Consolidated Omnibus Budget Reconciliation Act of 1985 (COBRA)
- Family and Medical Leave Act (FMLA)
- Employee Retirement Income Security Act (ERISA)
- Unemployment Compensation Act

Labor-Management Relations:

- National Labor Relations Act (NLRA)
- Labor-Management Reporting and Disclosure Act (LMRDA)

Occupational Safety and Health

- Occupational Safety and Health Act (OSHA)
- Federal Mine Safety and Health Act (MSHA)
- * Drug Free Workplace Act
- Omnibus Transportation Employee Testing Act (OTETA)

Civil Rights:

- Equal Pay Act
- * Title VII of the Civil Rights Act of 1964
- * Age Discrimination in Employment Act (ADEA)
- * Americans with Disabilities Act (ADA)
- Executive Order 11246
- Rehabilitation Act of 1973

Employment Decision Laws:

- Polygraph Protection Act
- Immigration Reform and Control Act (IRCA)
- * Worker Adjustment and Retraining Notification Act (WARN)

Appendix 2. Economies of Scale in Environmental Compliance Costs

Introduction

This Appendix provides an empirical estimate of the relationship between firm size and compliance costs for environmental regulations. We estimate this relationship using pollution abatement expenditures by manufacturing firms. For reasons described below we use data for 1992; this means that the estimates of economies of scale are somewhat comparable to the last year used in Hopkins, 1995. Environmental regulations account for between 23 percent (Method A) and 40 percent (Method B) of the total cost of all federal regulations (see Table 8 in the text). Among environmental regulations, pollution abatement expenditures account for about one-fourth of the costs. Thus, a reliable estimate of scale economies in pollution abatement goes a long way toward understanding the general incidence of regulatory costs.

Estimation Procedure and Results

The general approach is to estimate the relationship between pollution abatement cost (PAC) per employee and firm size, here measured by the number of employees per firm. Equation (1) specifies the estimation equation, which is estimated in log form:

$$\text{(Eq. 1) } \ln(\text{PAC} / \text{employee})_{i,s} = \beta \ln(\text{Firm Size}_{i,s}) + \phi \ln(\text{Value of Sales}_{i,s}) + \gamma_i + \varepsilon_{i,s} ,$$

where subscript i stands for a specific industry type and subscript s stands for a specific American State. Industry types are defined by two-digit SIC codes covering all industries in the manufacturing sector; see the Table A-3 below for a description of the

20 industries included. Each continuous variable is entered into Equation 1 as a natural logarithmic transformation (\ln).

In Equation 1 the dependent variable, $(\text{PAC} / \text{employee})_{i,s}$, measures the average pollution abatement expenditure per employee in industry i in state s in 1992 (source: Bureau of the Census, 1996). These expenditure data include capital expenses and operating expenditures. The main independent variable of interest, Firm Size i,s , measures the average number of employees per firm in industry i in state s (source: Bureau of the Census, 1992 *Economic Census*). The estimated coefficient on Firm Size, β , thus provides the measure of economies of scale. Specifically, how does pollution abatement expenditure per employee respond to changes in firm size? Equation 1 also includes a control variable for the average value of sales, and a fixed-effects variable, γ_i , which seeks to control for other factors that cause pollution abatement costs to differ among the 20 industries. For example, the chemical industry may simply be subject to different environmental standards than, say, the leather products industry. Including the fixed-effects dummy variables in the model allows the cost function to shift for each specific industry. $\varepsilon_{i,s}$ is the regression error term, which we assume to be normally distributed.

We estimate Equation 1 across states using data for 1992. While the Census Bureau continued to survey pollution abatement expenditures through 1994, we use 1992 because the Census of Manufacturing (the source of the state-level data on firm sizes, employment, and sales) also occurred in that year (the Census of Manufacturing is conducted only every five years). Coincidentally, 1992 is the last year used in the Hopkins study, which facilitates a comparison of results.

Results

Table A-1 presents the results. Overall, the regression model demonstrates considerable explanatory power. The F-statistic is significant at the one-percent confidence level, and the model explains 83 percent of the variation in pollution abatement expenditures per employee. The estimate of β , -0.431 , is significant at the 0.07 confidence level. This parameter value indicates that a one percent increase in firm size (the number of employees) corresponds to a 0.431 percent decrease in abatement costs per employee. (Recall that the variables are entered as log transformations, so the estimated coefficient indicates the elasticity.) The control variable for the value of sales is significant at the 0.01 level. Finally, the F-statistic rejects the hypothesis that the coefficients on the industry-specific dummy variables are jointly equal to zero. In other words, not surprisingly, the fixed-effects variables pick up significant differences in costs among the various industries.

Table A-1. Regression Results: Economies of Scale in Compliance Costs: Environmental Regulations

Dependent variable: Pollution Abatement Expenditure per Employee

Independent Variable	Coefficient	Std. Err.	t-stat	P> t
ln (Number of Employees)	-0.431	0.243	-1.78	0.07
ln (Value of Shipments)	0.698	0.186	3.75	0.00
Constant	-2.494	2.28	-1.10	0.28

Number of observations = 208

Adjusted R-squared = 0.83

Regression F-stat (2, 188) = 10.84

Fixed Industry Effects, F-stat (17, 188) = 18.43

Figure A-1 presents the relationship between pollution abatement expenditures and firm size graphically, plotting the fitted values generated from the estimates in Table A-1. This figure vividly illustrates the presence of economies of scale in these compliance cost data.

Following the firm classification scheme used throughout this study (and the 1995 Hopkins study), we report the predicted costs per employee for three broad categories of firm sizes: firms with less than 20 employees (“small firms”), firms with 20 to 499 employees (“medium sized firms”), and firms with 500 or more employees (“large firms”). These costs are also shown in Table A-2, along with the most comparable values reported by Hopkins (1995), specifically, his estimates of the cost of complying with environmental regulations for the manufacturing sector. These compliance cost estimates are not completely comparable simply because Hopkins (1995) includes additional costs of complying with environmental regulations (*e.g.*, handling of hazardous materials, noise regulation, and nuclear power safety). Note also that Table A-2 transforms the cost estimates (those shown in Figure 1) into 1995 dollars, the same base year as the Hopkins figures. While the absolute levels of compliance costs are not exactly comparable between the two studies, the relative costs with respect to the different categories of firm sizes is revealing.

Economies of Scale in Pollution Abatement Costs
US Manufacturers

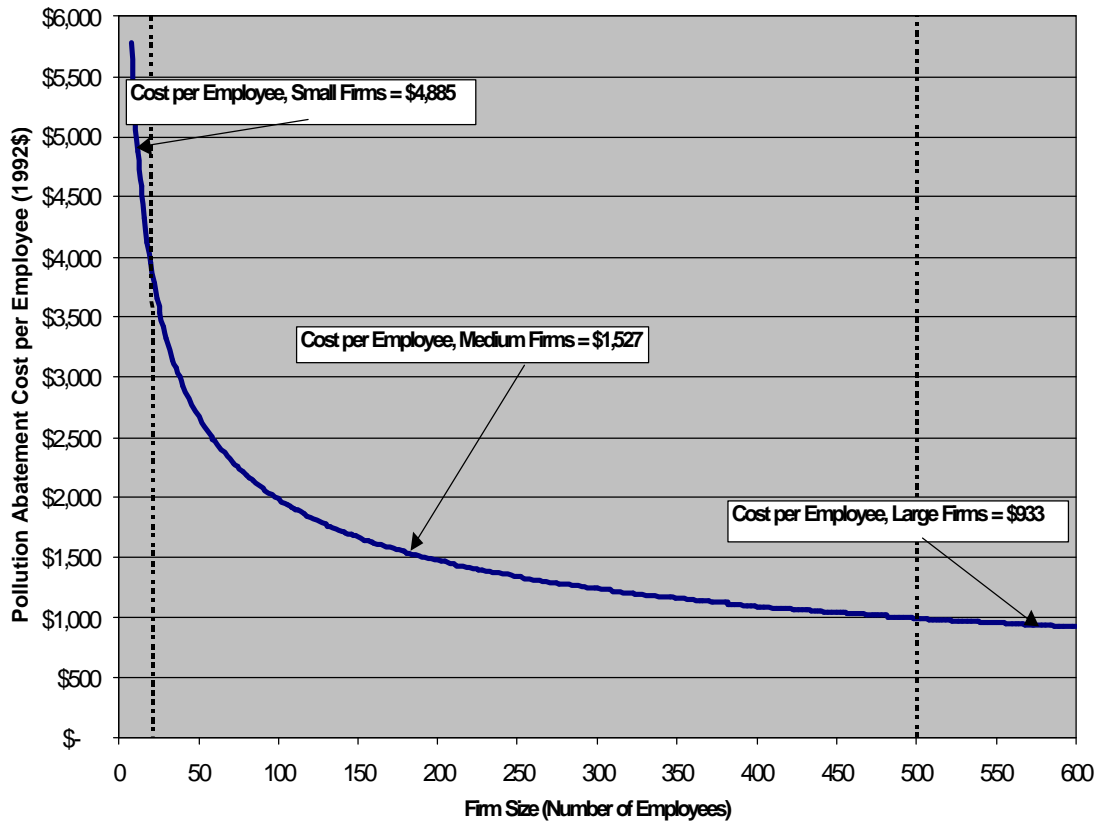


Figure A-1

Table A-2: Comparison to Hopkins Results on Compliance Costs (in 1995 dollars)

	Cost per Employee, Manufacturing Sector Firms with:		
	<20 Employees	20 to 499 Employees	500+ Employees
Values Using Eq. 1	\$5,306	\$1,659	\$1,013
Hopkins (including additional environmental compliance costs)	\$4,437	\$5,218	\$2,389

As shown in Table A-2, Hopkins (1995) finds that small manufacturing firms spend about 15 percent less per employee than medium-sized firms, and 86 percent more than large firms. In contrast, the new estimates indicate that small firms spend over three times more than medium-sized firms and almost five times more than large firms.

Concluding Comments

The 1995 study by Hopkins provides the most comprehensive assessment to date on the incidence of regulatory costs by sector and firm size. However, as he points out, he was forced to rely on a judgmental approach to the cost allocations across firm sizes in the absence of specific empirical estimates. This Appendix provides the basis used in this report to allocate the costs of environmental regulations among the different firm size classes.

Table A-3. Sectors Included in the Regression Analysis in Appendix 2

SIC Code	Industry Description
20	Food and Kindred products
21	Tobacco Products
22	Textile Mill Products
23	Apparel and other textile products
24	Lumber and Wood Products
25	Furniture and Fixtures
26	Paper and allied products
27	Printing and Publishing
28	Chemicals and Allied products
29	Petroleum and coal products
30	Rubber and miscellaneous plastic products
31	Leather and leather products
32	Stone, clay and glass products
33	Primary metal industries
34	Fabricated metal products
35	Industrial machinery and equipment
36	Electronic and other electric equipment
37	Transportation equipment
38	Instruments and related products
39	Miscellaneous manufacturing industries

Appendix 3. Allocation of Tax Compliance Costs Across Firm Size Classifications

Table A-4. Basic Data on Business Forms from the Tax Foundation Study

Category and Type of Business Form	Compliance Time (in Hours)	
Sole Proprietorships		
	1040	246,415,455
	Sch C	154,057,576
	Sch C-EZ	4,236,643
	Sch F	11,364,947
	Sch SE	22,353,611
	Sub-Total	438,428,232
Partnerships		
	Form 1065	199,731,500
Partnership Schedules		
	Sch D	20,070,580
	Sch K-1	86,940,037
	Sch L	31,177,600
	Sch M-1	7,437,157
	Sch M-2	6,073,137
	Sub-Total	151,698,511
	Total Sole Proprietorships	438,428,232
	Total Partnerships (Form 1065 + Part. Schedules)	351,430,011
	Total Corporations = (Total Business - Sole Prop. - Part.)	1,164,462,585
	Total Business Hours	1,954,320,828

Table A-4 details the number of hours required to comply with the various types of federal tax forms. The total number of hours required by all American business is 1,954,320,828. Using the three categories shown in Table A-4, we allocate all the hours for “Sole Proprietorships” to small firms. We allocate the compliance hours for “Partnerships” and “Partnership Schedules” between small firms and medium sized firms based on the share of receipts for these two classifications. For example, in the manufacturing sector small firms accounted for 17 percent and medium firms accounted for 83 percent of receipts for these two firm size categories. We thus allocate 17 percent of the partnership compliance time to small firms and 83 percent to medium-sized firms in the manufacturing sector.

This allocation rule based on receipts is imperfect because, as noted in the text, the SBA receipts data omit “non-employers,” and most sole proprietorships are non-employers. According to the Census Bureau, in terms of receipts, non-employers account for roughly 3 percent of all business activity. At the same time non-employers account for nearly three-fourths of all businesses. The resulting bias on the cost allocation is clear, if one chooses to define the non-employer proprietor as an “employee.” While the omitted receipts for non-employee small firms lowers the total allocation to that size class, the costs within the small firm class are higher than they would be if non-employee firms were included.

We allocate the compliance hours for “Corporations” (which are the remaining hours for the business sector after deducting proprietorships and partnerships) between medium and large firms based on the share of receipts for these two classifications. Again as an illustration, in the manufacturing sector medium firms accounted for 22 percent and large firms accounted for 78 percent of receipts for these two firm size categories. We thus allocate 22 percent of the corporation compliance time to medium-sized firms and 78 percent to large firms in the manufacturing sector.

The Tax Foundation study estimates that the hourly wage rate for professionals involved with tax compliance to be \$34.66 in 1999 dollars. We thus use this wage rate (adjusted into 2000 dollars) to compute the estimated cost of tax compliance by multiplying this wage rate by the number of hours allocated to each sector and each firm size class.

Appendix 4. Spending and Staffing by Federal Regulatory Agencies

**Table A-5. Total Spending by Federal Regulatory Agencies on Regulatory Activity
Fiscal Years, Millions of 2000 Dollars**

Fiscal Year	Social Regulations	Economic Regulations	Total
1970	\$ 4,951	\$ 1,296	\$ 6,247
1971	\$ 5,985	\$ 1,378	\$ 7,364
1972	\$ 7,347	\$ 1,483	\$ 8,829
1973	\$ 9,068	\$ 1,504	\$10,572
1974	\$ 8,493	\$ 1,534	\$10,027
1975	\$ 9,494	\$ 1,655	\$11,149
1976	\$ 9,224	\$ 1,783	\$11,007
1977	\$ 10,104	\$ 2,050	\$12,154
1978	\$ 10,600	\$ 2,144	\$12,744
1979	\$ 11,110	\$ 2,089	\$13,199
1980	\$ 11,087	\$ 2,082	\$13,170
1981	\$ 10,405	\$ 2,019	\$12,425
1982	\$ 9,845	\$ 1,963	\$11,809
1983	\$ 9,597	\$ 1,944	\$11,541
1984	\$ 10,101	\$ 2,324	\$12,425
1985	\$ 10,453	\$ 2,274	\$12,727
1986	\$ 9,889	\$ 2,652	\$12,542
1987	\$ 11,142	\$ 2,481	\$13,623
1988	\$ 11,551	\$ 2,919	\$14,469
1989	\$ 11,817	\$ 2,866	\$14,682
1990	\$ 12,425	\$ 2,825	\$15,251
1991	\$ 13,107	\$ 2,748	\$15,856
1992	\$ 13,936	\$ 2,928	\$16,864
1993	\$ 13,777	\$ 3,358	\$17,135
1994	\$ 13,977	\$ 3,335	\$17,313
1995	\$ 13,739	\$ 3,506	\$17,246
1996	\$ 12,885	\$ 3,534	\$16,419
1997	\$ 13,459	\$ 3,624	\$17,083
1998	\$ 13,872	\$ 3,625	\$17,496
1999	\$ 14,243	\$ 3,846	\$18,089
2000*	\$ 15,004	\$ 3,916	\$18,920

* indicates estimated value

Source: Center for the Study of American Business, Washington University. Derived from the *Budget of the United States Government* and related documents, various fiscal years.

<http://csab.wustl.edu/New%20WC%20Site/CSAB%20publications/CSAB%20pubs-pdf%20files/RBR/RBR%2023.pdf>

**Table A-6. Total Staffing in Federal Regulatory Agencies,
Fiscal Years, Full-Time Equivalent Employment**

Fiscal Year	Social Regulations	Economic Regulations	Total
1970	52,693	17,253	69,946
1971	61,788	17,940	79,728
1972	68,117	18,248	86,365
1973	75,305	18,877	94,182
1974	75,522	19,972	95,494
1975	80,523	21,720	102,243
1976	84,999	22,835	107,834
1977	85,454	23,334	108,788
1978	89,955	25,077	115,032
1979	94,322	25,478	119,800
1980	95,533	26,258	121,791
1981	91,909	25,300	117,209
1982	82,627	23,788	106,415
1983	78,396	22,907	101,303
1984	78,804	23,043	101,847
1985	79,293	22,899	102,192
1986	78,447	23,486	101,933
1987	78,660	23,144	101,804
1988	80,537	23,875	104,412
1989	83,019	23,998	107,017
1990	87,395	27,289	114,684
1991	91,176	27,349	118,525
1992	96,257	29,581	125,838
1993	98,322	31,338	129,660
1994	97,332	31,578	128,910
1995	98,179	31,864	130,043
1996	96,573	29,727	126,300
1997	95,120	28,928	124,048
1998	96,136	28,994	125,130
1999	96,409	29,318	125,727
2000*	99,080	30,735	129,815

* indicates estimated value

Source: Center for the Study of American Business, Washington University. Derived from the *Budget of the United States Government* and related documents, various fiscal years.

<http://csab.wustl.edu/New%20WC%20Site/CSAB%20publications/CSAB%20pubs-pdf%20files/RBR/RBR%2023.pdf>

**Appendix 5. Highlights from Hopkins' 1995 Study, *Profiles of Regulatory Costs*
[restated in 2000 dollars]**

**Table A-7. Business Regulatory Costs in Small, Medium and Large Firms, 1992
(Transfer and Efficiency Cost per Employee in 2000 Dollars)**

Manufacturing					
Firm Size					
	All Firms	<20	20-499	500+	
Environmental	\$ 3,858	\$ 5,015	\$ 5,898	\$ 2,700	
Other Social	\$ 1,182	\$ 1,537	\$ 1,807	\$ 827	
Economic	\$ 1,245	\$ 1,618	\$ 1,902	\$ 871	
Process	\$ 809	\$ 1,051	\$ 1,237	\$ 566	
Total	\$ 1,245	\$ 1,618	\$ 1,902	\$ 871	

Trade					
Firm Size					
	All Firms	<20	20-499	500+	
Environmental	\$ 394	\$ 513	\$ 465	\$ 276	
Other Social	\$ 394	\$ 513	\$ 465	\$ 276	
Economic	\$ 1,228	\$ 1,596	\$ 1,443	\$ 860	
Process	\$ 1,535	\$ 1,995	\$ 1,804	\$ 1,074	
Total	\$ 3,596	\$ 4,674	\$ 4,227	\$ 2,517	

Services					
Firm Size					
	All Firms	<20	20-499	500+	
Environmental	\$ 331	\$ 432	\$ 385	\$ 232	
Other Social	\$ 331	\$ 432	\$ 385	\$ 232	
Economic	\$ 1,252	\$ 1,630	\$ 1,455	\$ 877	
Process	\$ 1,549	\$ 2,012	\$ 1,797	\$ 1,084	
Total	\$ 3,464	\$ 4,504	\$ 4,022	\$ 2,426	

Other					
Firm Size					
	All Firms	<20	20-499	500+	
Environmental	\$ 558	\$ 726	\$ 687	\$ 391	
Other Social	\$ 558	\$ 726	\$ 687	\$ 391	
Economic	\$ 2,110	\$ 2,742	\$ 2,595	\$ 616	
Process	\$ 2,607	\$ 3,388	\$ 3,206	\$ 1,824	
Total	\$ 5,770	\$ 7,502	\$ 7,099	\$ 4,040	

U.S. Totals					
Firm Size					
	All Firms	<20	20-499	500+	
Environmental	\$ 1,084	\$ 1,408	\$ 1,350	\$ 758	
Other Social	\$ 572	\$ 744	\$ 712	\$ 400	
Economic	\$ 1,413	\$ 1,836	\$ 1,759	\$ 989	
Process	\$ 1,753	\$ 2,280	\$ 2,183	\$ 1,228	
Total	\$ 4,810	\$ 6,253	\$ 5,989	\$ 3,367	

**Table A-8. Business Regulatory Costs in Small, Medium and Large Firms, 1992
(Efficiency Cost per Employee in 2000 Dollars)**

Manufacturing					
Firm Size					
	All Firms	<20	20-499	500+	
Environmental	\$ 3,111	\$ 4,044	\$ 4,756	\$ 2,178	
Other Social	\$ 1,182	\$ 1,537	\$ 1,807	\$ 827	
Economic	\$ 435	\$ 566	\$ 666	\$ 305	
Process	\$ 1,182	\$ 1,537	\$ 1,807	\$ 827	
Total	\$ 5,848	\$ 7,603	\$ 8,943	\$ 4,094	

Trade					
Firm Size					
	All Firms	<20	20-499	500+	
Environmental	\$ 307	\$ 399	\$ 361	\$ 215	
Other Social	\$ 394	\$ 513	\$ 465	\$ 276	
Economic	\$ 439	\$ 570	\$ 515	\$ 307	
Process	\$ 1,182	\$ 1,537	\$ 1,807	\$ 827	
Total	\$ 5,848	\$ 7,603	\$ 8,943	\$ 4,094	

Services					
Firm Size					
	All Firms	<20	20-499	500+	
Environmental	\$ 258	\$ 336	\$ 300	\$ 181	
Other Social	\$ 331	\$ 432	\$ 385	\$ 232	
Economic	\$ 442	\$ 575	\$ 513	\$ 310	
Process	\$ 1,180	\$ 1,534	\$ 1,369	\$ 825	
Total	\$ 2,212	\$ 2,876	\$ 2,567	\$ 1,549	

Other					
Firm Size					
	All Firms	<20	20-499	500+	
Environmental	\$ 434	\$ 565	\$ 535	\$ 304	
Other Social	\$ 558	\$ 726	\$ 687	\$ 391	
Economic	\$ 745	\$ 968	\$ 916	\$ 521	
Process	\$ 1,924	\$ 2,500	\$ 2,366	\$ 1,346	
Total	\$ 3,661	\$ 4,759	\$ 4,503	\$ 2,562	

U.S. Totals					
Firm Size					
	All Firms	<20	20-499	500+	
Environmental	\$ 865	\$ 1,124	\$ 1,076	\$ 605	
Other Social	\$ 572	\$ 744	\$ 712	\$ 400	
Economic	\$ 500	\$ 649	\$ 622	\$ 349	
Process	\$ 1,315	\$ 1,710	\$ 1,638	\$ 920	
Total	\$ 3,251	\$ 4,226	\$ 4,048	\$ 2,275	