The Cost of Federal Regulation to the U.S. Economy, Manufacturing and Small Business

A Study Conducted for the National Association of Manufacturers

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NATIONAL ASSOCIATION OF Manufacturers

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*The views expressed in this study are those of the authors and do not reflect the official policy or position of the National Defense University, the Department of Defense or the U.S. government.

Purpose and Highlights

Most public policy in the United States in 2023 is implemented through the regulatory process. Despite legislative debates, changes in administrations and partisan divides, regulatory bodies at all levels of government issue thousands of pages of rules every day. This is easily seen in the expanse of the Federal Register and in the equivalent state and local government searchable databases. Less transparent is the aggregate, economy-wide cost of complying with regulations on American business. This study seeks to shed some light on this question and provides an estimate of the total costs of federal regulations, the incidence of these costs across major sectors and the distribution among small, medium and large firms.

Although they are not laws, regulations have the force of law because they are adopted under authority granted by statutes and often include penalties for violations. Complying with regulations becomes a cost of doing business and, like any operating cost, affects business decisions of all types: hiring; salaries, wages and benefits; capital spending; and dividends.

This study estimates the costs of U.S. federal government regulations as of 2022. It relies on two different approaches to gauge the robustness of the findings: a survey of manufacturers in the United States and an aggregation of government agency estimates coupled with the impact on aggregate economic output of the U.S. economy. In addition to a top-line estimate, the study provides a snapshot of how the regulatory cost burden is distributed across major sectors of the U.S. economy and among three categories of firm sizes.

The study adopts approaches used in a previous study (Crain and Crain, 2014) to facilitate comparisons over the past decade.[1] The 2014 study was a continuation of a legacy of studies first initiated by the U.S. Small Business Administration's Office of Advocacy. While this series of studies has evolved over time, the motivation behind them remains unchanged.

1 For more information on the previous cost of regulation study, which was also completed for the National Association of Manufacturers, see **https://nam.org/competing-to-win/cost-of-regulations**.

Efforts to assess individual regulatory proposals have improved with the efforts of the Office of Information and Regulatory Affairs within the Office of Management and Budget, which oversees the impact analyses performed at the agency level. These impact analyses are also more readily accessible online through the Federal Register. Despite these improvements, knowledge about the size and distribution of the regulatory burden is scant.

The purpose of this study is to fill in some of that information gap by quantifying the costs of regulatory compliance on firms, particularly manufacturers in the United States, and to extend some of the previous efforts to measure the aggregate regulatory costs. As in past studies, the goal is to provide relevant information about regulatory costs analogous to information about the extent and incidence of federal taxes and does not address regulatory benefits.

Key Findings: The Cost of Federal Regulations

U.S. federal government regulations cost an estimated $3.079 trillion in 2022 (in 2023 dollars), an amount equal to 12% of U.S. GDP. These costs fall unevenly on the major sectors of the economy and on firms of different sizes; the findings indicate that compliance costs fall disproportionately on small businesses. Table 1 summarizes the incidence of costs by firm size based on aggregate data for all sectors of the U.S. economy.

Considering all federal regulations, all sectors of the U.S. economy and all firm sizes, federal regulations cost an estimated $12,800 per employee per year in 2022 (in 2023 dollars). Small firms with fewer than 50 employees incur regulatory costs of $14,700 per employee per year – 20% greater than the cost per employee in large firms ($12,200). These estimates are consistent with prior studies, which indicate that the cost of regulatory compliance disproportionately affects small firms.[2]

Table 1. Distribution of Regulatory Compliance Costs by Firm Size in 2022

(In 2023 Dollars and Rounded to the Nearest 100)

Type of Regulation	Cost per Employee for All Business Types			
	All Firms	< 50 Employees	50 — 99 Employees	100 or More Employees
All Federal Regulations	$12,800	$14,700	$13,800	$12,200
Economic	$7,700	$5,600	$8,300	$8,500
Environmental	$2,800	$6,000	$2,300	$1,800
Tax Compliance	$1,300	$1,900	$2,200	$1,000
OSHHS Regulations	$900	$1,200	$1,000	$800

Notes to Table 1: Economic regulations are rules that govern decision-making in market transactions. These include markets for final goods and services, markets for physical and human resources, credit markets, and markets for the transport and delivery of products and factors of production. Environmental regulations would primarily be those regarding environmental protections. OSHHS stands for occupational safety and health and homeland security, and the costs expressed here are for the regulations in that space. Due to rounding, individual regulations in each column may not equal the total displayed.

2 Studies on the incidence of regulatory costs among firms of different sizes include Cole and Sommers (1980), Gaston and Carroll (1984), Hopkins (1995a), Beale and Lin (1998), Crain and Hopkins (2001), Crain (2005), Crain and Crain (2010) and Crain and Crain (2014).

Table 2 summarizes the cost of federal regulations that fall on the manufacturing sector. The regulatory cost disadvantage confronting small firms is amplified greatly in the manufacturing sector, with small manufacturing firms bearing more than double the cost of large manufacturing firms, or $50,100 versus $24,800 per employee. Overall, small manufacturers incur regulatory costs that are more than three times the costs borne by the average U.S. company. Medium and large manufacturers in the United States face regulatory costs that are double the costs borne by the average U.S. firm.

Table 2. Distribution of Regulatory Compliance Costs in the Manufacturing Sector by Firm Size in 2022*

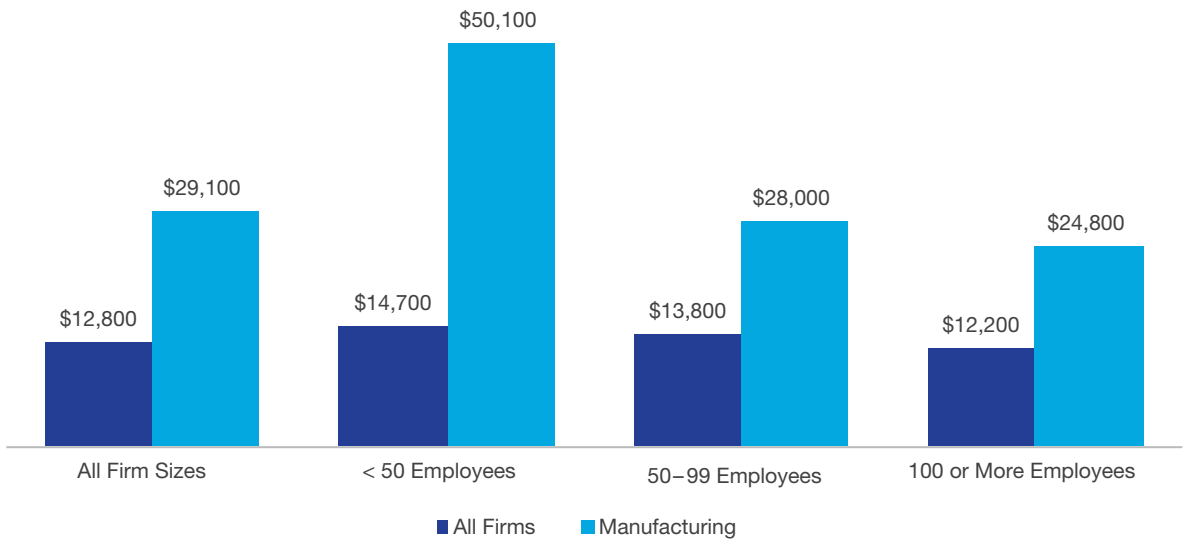
(In 2023 Dollars and Rounded to the Nearest 100)

Type of Regulation	Cost per Employee for Manufacturing			
	All Firms	< 50 Employees	50–99 Employees	100 or More Employees
All Federal Regulations	$29,100	$50,100	$28,000	$24,800
Economic	$10,400	$7,600	$10,900	$11,000
Environmental	$17,200	$40,700	$15,200	$12,500
TaxCompliance	$500	$500	$800	$400
OSHHS**	$1,000	$1,300	$1,100	$900

Notes to Table 2: * The cost per employee for each firm-size category uses employment shares for the respective business sectors to compute the weighted averages. ** OSHHS stands for occupational safety and health and homeland security regulations.

Chart 1 illustrates the distribution of regulatory costs on firms in the manufacturing sector relative to all U.S. firms and firms of different sizes. Manufacturing firms overall incurred an average cost of $29,100 per employee in 2022, more than double the cost incurred by businesses economy-wide. Small manufacturing firms incurred an average cost of $50,100 per employee—more than three times the cost incurred by small businesses economy-wide.

Chart 1. Regulatory Compliance Costs per Employee Per Year, 2022 (in 2023 Dollars)



The underlying force driving this differential cost burden is easy to understand. Some of the costs associated with regulatory compliance are fixed costs, which means a firm with 25 employees engages in some of the same compliance-related activities that are required of a firm with 250 employees. Large firms spread these fixed costs over larger revenues, or output, and a larger employee base, resulting in lower costs per unit of output as the firm size increases. This familiar empirical phenomenon known as economies of scale provides a competitive cost advantage to large firms over small firms.[3]

Relation to Prior Estimates of the Cost and Distribution of Federal Regulations

This study seeks to update previous estimates of the comprehensive cost of regulations and its distribution. Between 1992 and 2010, the U.S. Small Business Administration's Office of Advocacy commissioned four studies to examine the impact of federal regulations on small firms.[4] These analyses started with an overall cost estimate, which were then allocated across sectors and firm sizes. In 2014, the National Association of Manufacturers commissioned a study to update and extend the estimates following the SBA series.[5] That study put the total regulatory costs in 2012 at $2.6 trillion in 2023 inflation-adjusted dollars. Using this as a baseline, the cost of federal regulation increased by $465 billion between 2012 and 2022, an 18% inflation-adjusted growth, or 1.8% per year.

Since 1997, the OMB has authored the Report to Congress on the Benefits and Costs of Federal Regulations and Unfunded Mandates on State, Local and Tribal Entities (Annual Report to Congress). However, the constraints under which OMB operates yield cost estimates for only a small proportion of regulations. The OMB reports and this study provide information about the effects of regulations; however, both estimates are subject to limitations. For example, OMB provides information for fewer regulations. This study is more all-encompassing, but it is not designed to capture benefits.

In part, the sheer volume and complexity of federal regulations and the rate at which they proliferate make estimation daunting. Comprehensive cost accounting to analyze regulations one by one would require vast resources. Even the relatively few major rules often elude the analytical capacity of agency specialists who monetize costs and benefits. For the most part, the volume of regulations and their complexity have discouraged attempts by government agencies and private researchers to generate a comprehensive estimate of regulatory costs.

These measurement challenges lead us to adopt techniques in this study that facilitate reasonable approximations of regulatory costs that have been omitted in estimates that OMB reported in its Annual Report to Congress. The cost data included in the OMB report were a compilation of the estimates provided by federal agencies in their Regulatory Impact Analyses. We rely on the estimates contained in the OMB reports when possible. We used the latest available OMB 2018, 2019 and 2020 reports to Congress, after which we turned to the Federal Register, linking to the agencies' RIAs. As a guide to the types of regulations, for example, environmental, OSHA and so forth, we also relied on classifications by the American Action Forum database.

As discussed in Section III, for other regulations we rely on techniques from the expanding volume of literature on institutional quality and economic performance to gather evidence on the macroeconomic consequences of

3 For a theoretical discussion, see Brock and Evans (1986), particularly chapters four and five. A survey and extension of this literature is provided by Bradford (2004).

4 The SBA commissioned four studies to examine the distribution federal regulatory costs in small versus larger firms: Hopkins (1995b), Crain and Hopkins (2001), Crain (2005) and Crain and Crain (2010). Following the initial Hopkins (1995a) methodology, the subsequent reports approached this task by first estimating a total cost and then allocating the cost among small, medium and large firms and across major business sectors. Direct comparisons between this estimate for 2022 and prior studies should be made cautiously because new estimation methodologies used in this study were not possible previously, and some of the data sources vary over time.

5 Crain and Crain (2014)

economic regulations. The results from an extensive new survey of manufacturing firms' regulatory compliance activities supplement and complement these estimation approaches.

As a final introductory perspective, we stress that the study is unconcerned about a benefit–cost calculus for any specific regulation or the benefit–cost calculus for regulations as a whole. We make no claims about whether regulations are good or bad, desirable or undesirable. Rather, we attempt to produce an aggregate cost estimate and apportion these costs across sectors and firm sizes.

The remainder of the study proceeds as follows. Section II presents the findings from an extensive survey of manufacturing firms in the United States on regulatory compliance activities and costs. Section III describes our procedures for estimating the total cost of federal regulations. Section IV provides a snapshot of the distribution of these costs. Section V offers concluding comments.

Survey of Manufacturers

A survey of National Association of Manufacturers members was conducted between July 20, 2023, and Sept. 1, 2023, with the purpose of evaluating the effect of regulations on manufacturing in the United States. According to the U.S. Census Bureau, manufacturing accounts for 10% of all U.S. industry payroll expenses and 9% of employment (see Table 7).

Cost estimates calculated from survey data include only the direct cost of federal government regulations. Based on responses to open-ended questions, we can infer other real costs that are inestimable based on the survey data. For example, responses indicate that if the costs of federal regulation were reduced, funds presently allocated toward compliance would become expenditures for employee compensation and hiring, investment, research and development, sales and marketing, enhancing price competitiveness and improving return on investment. The apparent motivation for reallocation to these areas is primarily to enhance competitiveness relative to other domestic and international producers.

Businesses bear other indirect costs as well. Respondents noted that regulations introduce uncertainty into planning and affect business operations, the consequences of which include modifying employment and investment decisions and reductions in international competitiveness. While a repeated theme of respondents was that regulations are too numerous, complicated and/or should be streamlined, a few respondents noted that certain specific regulations are necessary or that regulations had no significant implications for their business.

The OMB 2018, 2019 and 2020 Report to Congress on the Benefits and Costs of Federal Regulations and Agency Compliance with the Unfunded Mandates Reform Act discusses the consequences of regulation on the labor market. Previous OMB reports discussed how regulations may cause businesses to shut down or stifle their plans for growth, although other sectors of the economy may benefit. In the long run, the employment effect of a single regulation may not cause great concern in terms of the unemployment rate because employment may shift between sectors. This shifting is likely to slow down during recessions and may produce negative employment outcomes.[6]

6 See, for example, OMB, Office of Information and Regulatory Affairs (2014), 2014 Draft Report to Congress on the Benefits and Costs of Federal Regulations and Unfunded Mandates on State, Local and Tribal Entities, pp. 40–43. The literature suggests that there can be some negative labor market outcomes, including implications for wages and employment, particularly in the short run.

"Existing Executive Orders generally do not require historically independent agencies to submit their regulations for review or to engage in analysis of costs and benefits. We emphasize, however, that for the purposes of informing the public and obtaining a full accounting, it would be highly desirable to obtain better information on the benefits and costs of the rules issued by independent agencies. The absence of such information continues to be an obstacle to transparency, and it might also have adverse effects on public policy. Consideration of costs and benefits is a pragmatic instrument for ensuring that regulations will improve social welfare; an absence of information on costs and benefits can lead to inferior decisions." OMB, Office of Information and Regulatory Affairs (2021), 2018, 2019 and 2020 Report to Congress on the Benefits and Costs of Federal Regulations and Agency Compliance with the Unfunded Mandates Reform Act, pp. 19–20.

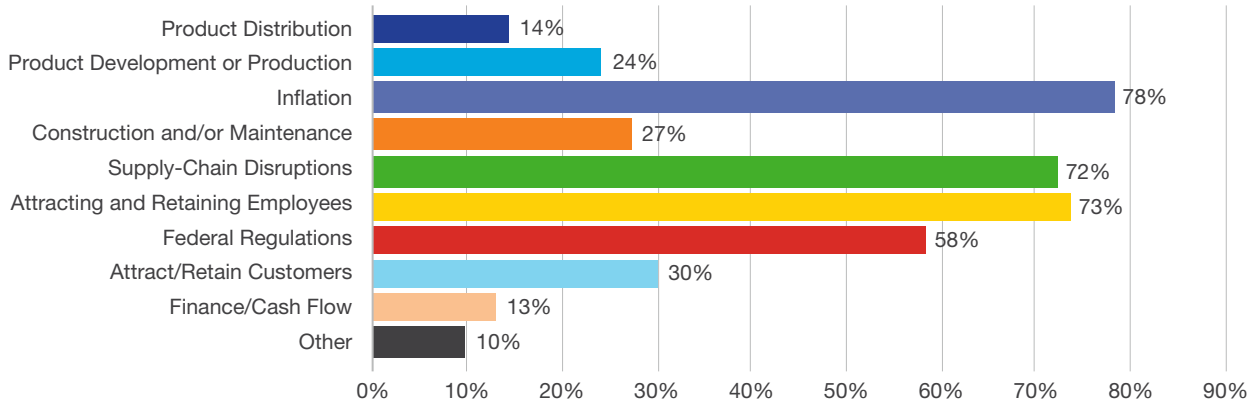
The OMB 2018, 2019 and 2020 Report to Congress on the Benefits and Costs of Federal Regulations and Agency Compliance with the Unfunded Mandates Reform Act reviews the recent literature on the consequence of regulatory entry restrictions on markets. Entry restrictions can impose an indirect cost to producers and consumers. For example, a market composed of few large firms can make organizing and unionization easier, so unions may have "substantial bargaining power," leading to higher wages and potentially higher consumer costs as producers pass at least some of the costs to consumers.[7]

In addition, the report notes that "measuring the effects of regulation on economic growth is a complex task." If a regulation corrects market failure, that may be positive for growth. However, "excessive and burdensome regulations can place undue burdens on companies, consumers, and workers, and may cause growth and overall productivity to slow. While by no means a settled issue, some evidence suggests that domestic environmental regulation has led some U.S. firms to invest in other countries." That is, regulations can impose costs on businesses that reduce competition and investment.[8] To preview the findings of the survey, that is precisely what some manufacturers reported.

Business Challenges

Respondents were asked to identify the challenges affecting their businesses; they could choose more than one option. Chart 2 shows the results of this question. Nearly 60% of respondents identified federal government regulations as a challenge that affected their business in the prior year, and it was one of the top four challenges. Inflation was the most frequently selected concern (78%), followed by attracting and retaining productive employees (73%) and supply chain disruptions (72%). Only 30% of respondents selected attracting and retaining customers as a challenge. Challenges in the "other" category include federal and states taxes, state and local regulations, competition and the state of the economy.

Chart 2. Survey Respondents: Recent and Future Challenges Affecting Business



7 See, for example, OMB, Office of Information and Regulatory Affairs (2021), 2017 Report to Congress on the Benefits and Costs of Federal Regulations and Agency Compliance with the Unfunded Mandates Reform Act, pp. 43–44.

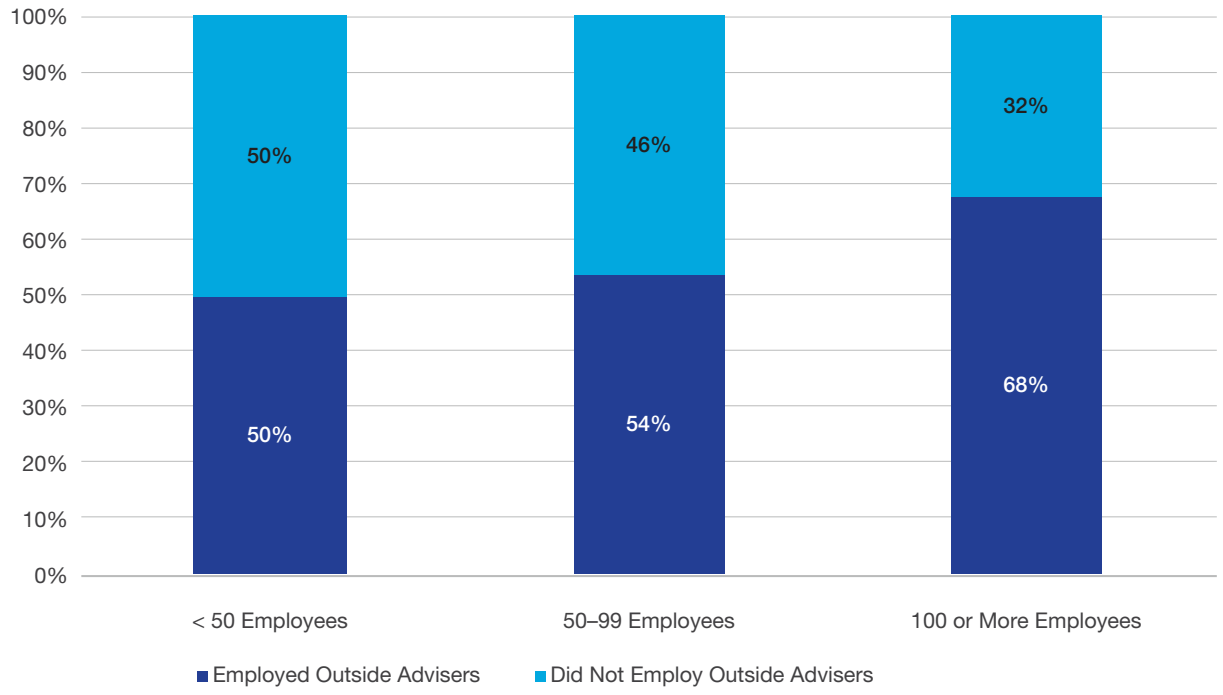
8 Ibid., p. 44.

Federal Government Requirements

Use of Outside Advisers

Respondents were asked whether they hired outside advisers to help their business comply with federal regulations. A large majority of respondents (62%) indicated that their organization employed outside advisers to ensure that operations complied with federal rules. Larger firms are more likely to seek outside assistance than small or medium-sized firms. In addition, respondents indicated that large and medium-sized firms are more likely than not to incur compliance-related costs for outside assistance.[9] See Chart 3 for the breakdown by firm size.

Chart 3. Survey Respondents: Percentage of Manufacturers That Employed Outside Advisers to Comply with Federal Regulations

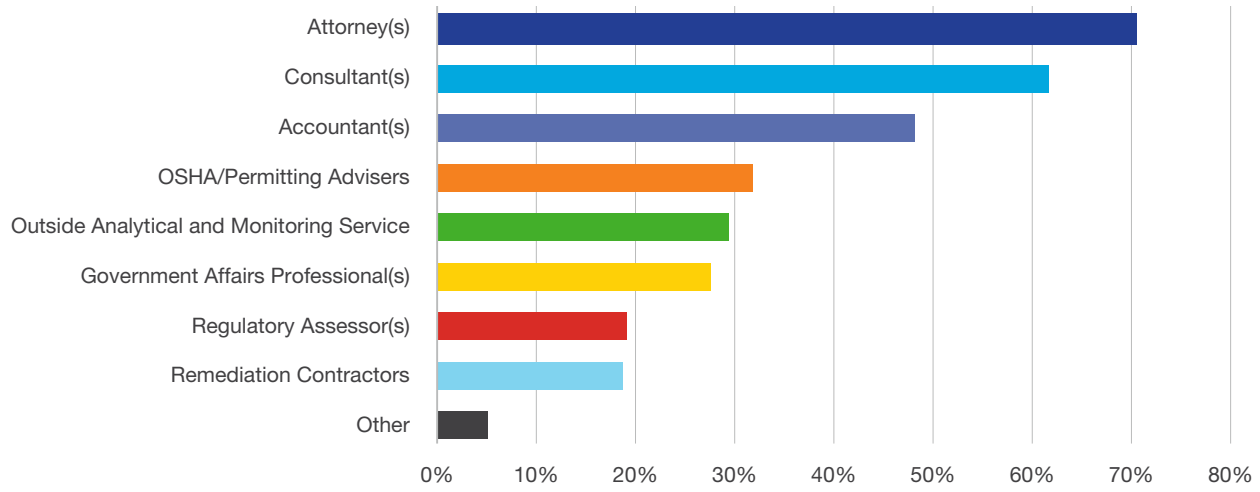


If a respondent indicated that his or her business employed an outside adviser, follow-up questions were asked to identify the type of outside expertise required. Chart 4 shows the types of outside assistance employed by firms. The most frequently consulted advisers were attorneys (70%), consultants (61%), accountants (47%), OSHA/permitting assistance and development advisers (31%) and outside analytical and monitoring services (29%).[10]

9 Some firms did not seek outside assistance.

10 Extrapolating costs provided by survey respondents (n = 283) to the population of manufacturers in the United States provides estimates that are significant for a 95% confidence interval (α = 0.06); the margin of error is +/- 6%. Responses came from all parts of the country, in a wide variety of manufacturing sectors and in varying size classifications; therefore, as such, they likely are fairly representative of the overall manufacturing population.

Chart 4. Type of Outside Adviser Employed to Comply with Federal Law



Subject of Federal Government Enforcement or Compliance Activities

Respondents were asked whether their company had been the subject of federal government compliance activity during the 12 months preceding the survey. Note that just because a firm was the subject of government activity does not mean that the firm was found to be noncompliant. If a respondent answered affirmatively, follow-up questions were asked to determine whether their company paid an administrative or judicial penalty, fines or restitution or undertook activities to return to compliance.

The vast majority of respondents indicated that their organization was not the subject of federal government enforcement or compliance activity in the previous 12 months. Overall, 20% of respondents incurred a cost as the result of federal government compliance activity. The average cost for these firms was $669,100. However, there was a large variation between firm sizes: small firms averaged $78,318; medium-sized firms averaged $110,250; and large firms averaged $1,105,800. Because so few firms incurred a cost, it may be that a few large firms disproportionally affected the average.

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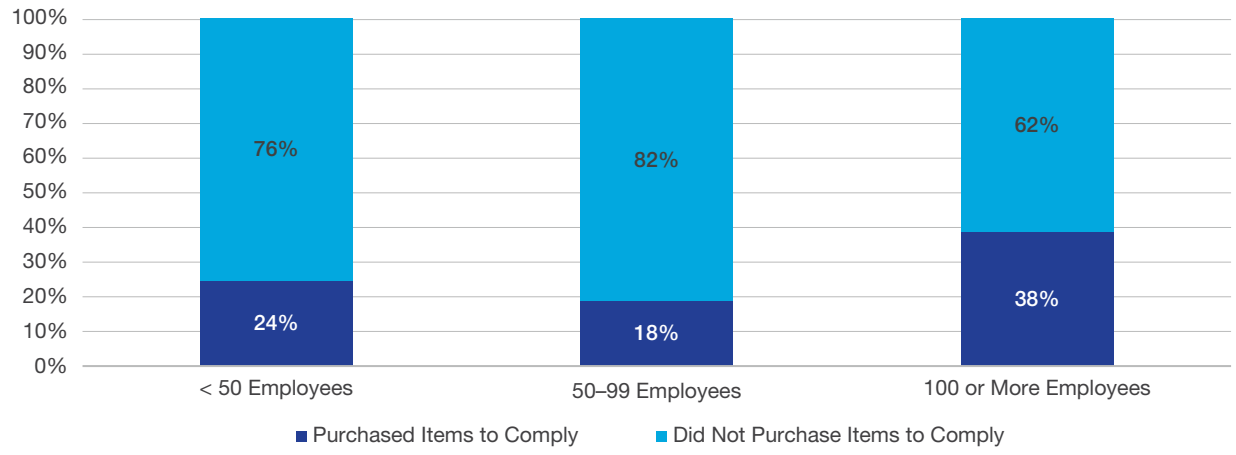
These results do not include the cost of Supplemental Environmentally Beneficial Projects, which impose costs on participating firms. Relatively few survey respondents indicated that their firm negotiated and was approved to complete an SEP—just 10%.

Capital Equipment or Tangible Item Purchases and Emission Offsets

Respondents were asked whether their company purchased new capital equipment or other items to comply with federal government data, reporting requirements, regulatory constraints or mandates. Thirty percent of respondents indicated that their organization purchased new capital equipment or other items to comply with federal government requirements. Thirty-eight percent of respondents representing large firms reported investing in tangible items to satisfy federal government requirements. Eighteen percent of medium-sized firms and 24% of small firms incurred these costs. Large firms were more likely to incur costs for capital equipment or other items to comply with federal government requirements.

Chart 5. Survey Respondents: Firms That Purchased Tangible Items to Comply with Federal Government Requirements

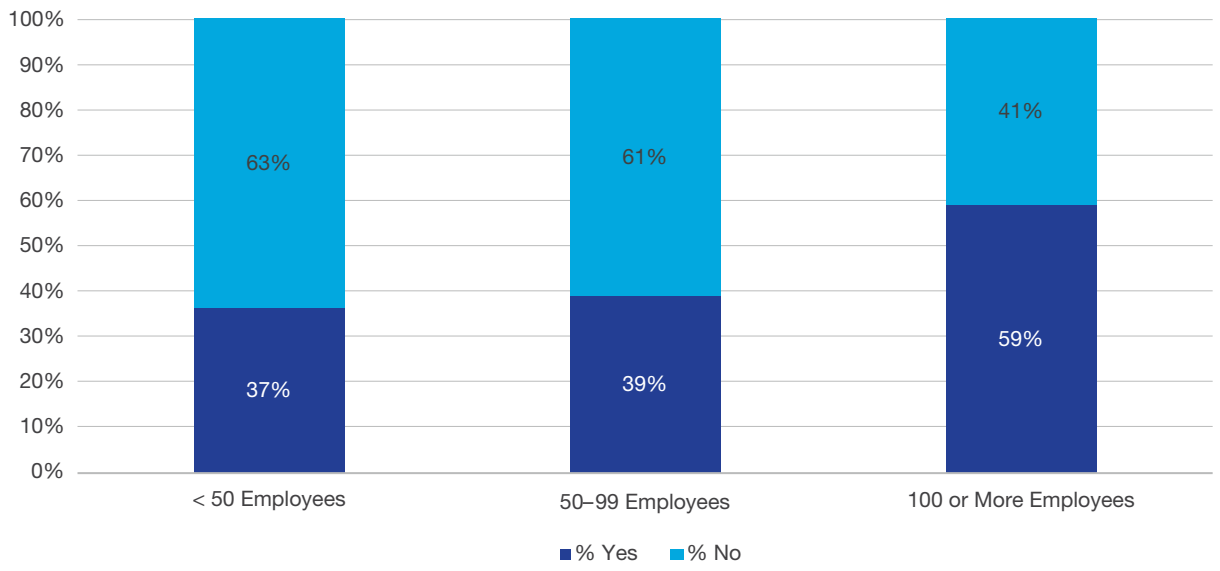


Operations and Maintenance for Capital Equipment or Other Tangible Items

Respondents were asked whether their company had operations and maintenance expenses for capital equipment and other tangible items purchased to comply with federal government requirements during the previous 12 months. If a respondent answered affirmatively, the respondent was asked to provide that cost. The survey revealed that half of manufacturing firms incurred O&M expenses for tangible compliance-related purchases.

O&M expenses for compliance-related purchases vary by firm size. Fifty percent of overall respondents reported having these expenditures. Large firms are more likely to have O&M expenses than medium-sized firms, and their expenses are on average higher. Medium-sized firms are more likely to have O&M expenses for tangible compliance-related purchases than small firms.

Chart 7. Survey Respondents: Firms That Incurred O&M Expenses to Comply with Federal Regulations



Full-Time Equivalents Devoted to Regulatory Compliance

Respondents were asked how many in-house full-time equivalents by occupation were devoted to federal regulatory compliance activities in their firm. On average, respondents estimated 14.2 FTEs. As Chart 8 shows, respondents indicated that semi-skilled labor made up the bulk of FTE time spent on compliance activities at 75%, followed by skilled labor at 12%. Administrative staff was third at 7%. Accounting FTEs were 2%, and 1% each of the total compliance-allocated FTEs devoting time to regulatory compliance are executives and attorneys.

The cost of in-house FTEs devoted to compliance varies depending on the occupation of the employee. The categories of FTEs, in descending order of annual cost per employee, included attorneys, executives, accounting, administrative personnel, other, skilled labor and semi-skilled labor (see Appendix A for details and sources). Depending on firm size, there is variation in the number of FTEs. Average FTEs allocated to compliance as reported by respondents from small and medium-sized firms was 2.6 and 2.0, respectively. Large firms were significantly different, reporting 23.0 FTEs. Small and medium-sized firms have, on average, fewer FTEs devoted to compliance relative to large firms, and they have lower total compliance-related employee costs. However, they also have fewer employees (and typically lower output) over which to spread the costs relative to large firms.

Chart 8. Survey Respondents: FTEs Devoted to Compliance by Occupation

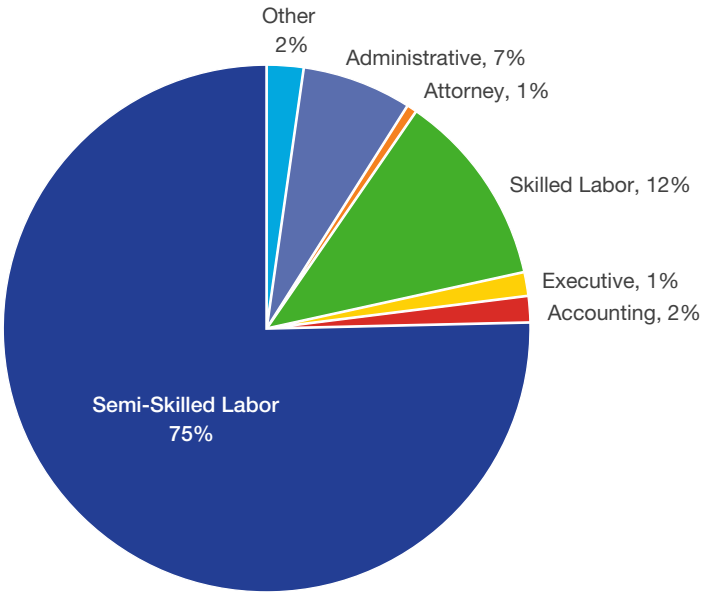
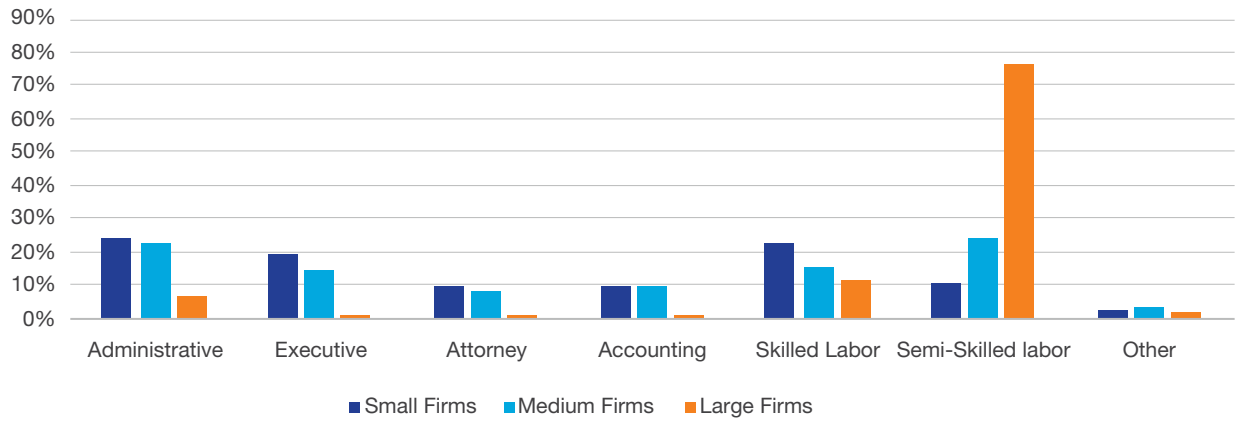


Chart 9 shows the distribution of in-house employees devoted to regulatory compliance by firm size. The single largest category of compliance FTEs for large firms is semi-skilled labor at 76%. For small and medium-sized firms, the largest FTE categories are administration and all labor (skilled plus semi-skilled) followed by executive compliance costs. In terms of labor type, small firms use more skilled labor, while medium and large firm compliance FTEs are more often semi-skilled labor. Small firms also rely more heavily on in-house administrative personnel for compliance than medium or large firms, at 25%, 23% and 6%, respectively. Large firms use fewer executives (1%) than small and medium firms (19% and 15%). The percentage of in-house FTE attorney and accounting professionals remains about the same in small and medium firms, in the 8% to 10% range, while for large firms it is in the 1% range. Some of the variation across firm sizes may be explained by the relatively large number of semi-skilled workers devoted to compliance in large firms. In other words, large firms have higher numbers in every category of compliance FTE, on average, than small or medium-sized firms. The relative distribution of those FTEs, however, differs in large firms compared to small or medium firms. In addition, there likely are economies of scale in compliance. This means that executives tasked with compliance, for example, do not increase at the same rate that employees or output does.

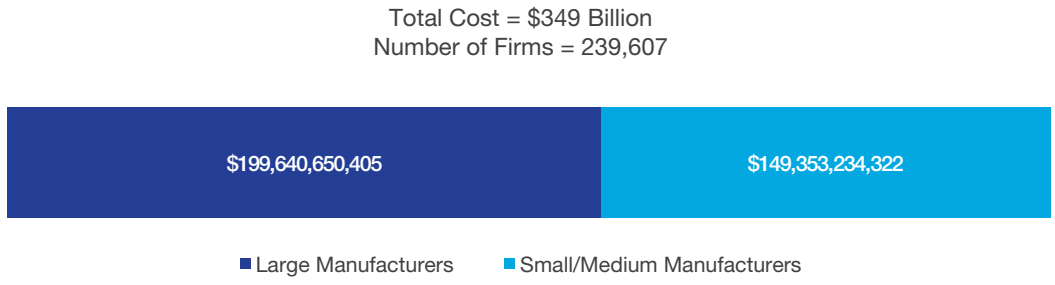
Chart 9. Survey Respondents: Compliance FTEs by Employee Category Across Firm Size



Estimated costs of FTEs devoted to federal regulatory compliance are the survey cost estimate driver. To estimate the cost, responses regarding FTEs devoted to compliance were initially sorted by firm size. In each case, the costs of reported FTEs by employment category were calculated and then summed to create a total FTEs' cost by firm-size grouping. This figure was then converted to a per-firm figure. (Appendix A provides a discussion.)

Using total compensation by firm size and Census Bureau data for the number of firms by firm-size group, we estimated the total cost of FTEs devoted to federal regulatory compliance activities in the manufacturing sector for small, medium and large firms. Finally, we added up the results from small, medium and large firms. Chart 10 shows the distribution of these costs between smaller and larger firms. The resulting estimated cost for the 12 months preceding the survey is $349 billion. This is nearly double the inflation-adjusted cost of roughly $180 billion reported in this section of the 2012 report.

Chart 10. Survey Respondents: Estimated Total Cost of FTEs Devoted to Federal Regulatory Compliance (Billions of Dollars) in Prior 12 Months



Small firms bear a disproportionate burden of the in-house costs of FTEs devoted to compliance on a per-employee basis and relative to medium-sized and large firms. Chart 11 illustrates the difference in costs by firm size. The costs borne by small firms, on a per-employee basis, are about 3.4 times that of large firms.

Chart 11. Survey Respondents: Per-Employee Cost of FTEs Devoted to Federal Regulatory Compliance

Total Direct Cost of Federal Government Regulations

Using the responses of FTE time and cost by category to estimate regulation-related outlays provides an overall estimate of much of the direct costs of regulations for the manufacturing sector. However, it does not indicate the relative costs of different categories of federal regulations.

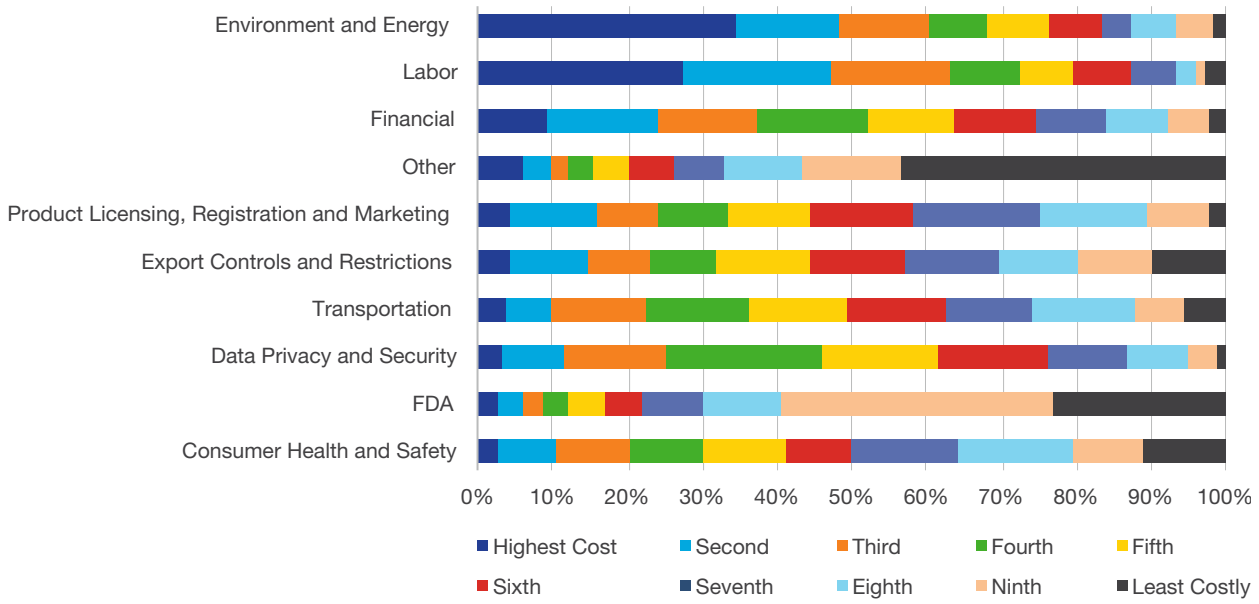
Chart 12 shows respondents' perspectives on various types of regulations based on their ranking of categories of federal government regulations in terms of costs of compliance. In their ranking, they were asked to consider staff time, the employment of outside advisers and changes to operating procedures or plans.[11] Not all companies incurred costs in each category. For example, if a firm did not incur any FDA regulatory costs, then they may have indicated that FDA compliance was the "least costly" category.

Respondents ranked environment and energy regulations as the highest cost regulations at 35%. Labor was second at 28%. Further, roughly half of the respondents ranked environment and energy in the top two most costly regulations, and the same is true for labor regulations.[12] Charts 13 and 14 show the breakdown of environmental and energy and labor regulations cost by firm size.

11 There are 10 categories: Consumer Health and Safety; Data Privacy and Security; Environment and Energy; Export Controls and Restrictions; FDA; Financial; Labor; Product Licensing, Registration and Marketing; Transportation; and Other (e.g., Tax Compliance). Each category (e.g., Labor) was ranked by each respondent, so each category sums to 100%. Also, since each respondent ranked all 10 categories, each ranking (e.g., Fifth Most Costly) sums to 100%.

12 Cost data are not available from OMB for the vast majority of regulations.

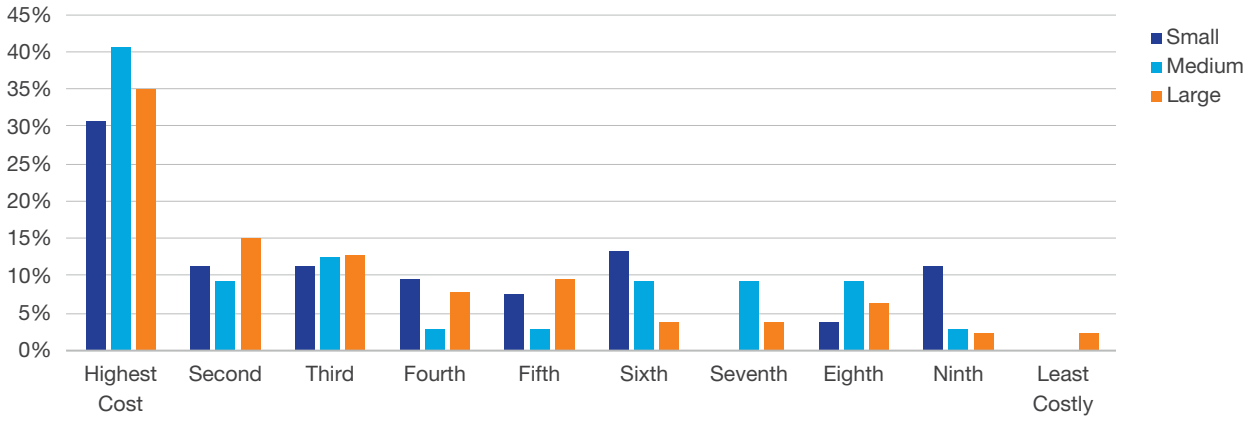
Chart 12. Survey Respondents: Regulatory Compliance by Category and Cost



Environment and energy and labor regulations, therefore, likely contribute the most to the total direct cost of regulation.

Chart 13. Survey Respondents: Environment and Energy Regulations—Ranking by Firm Size

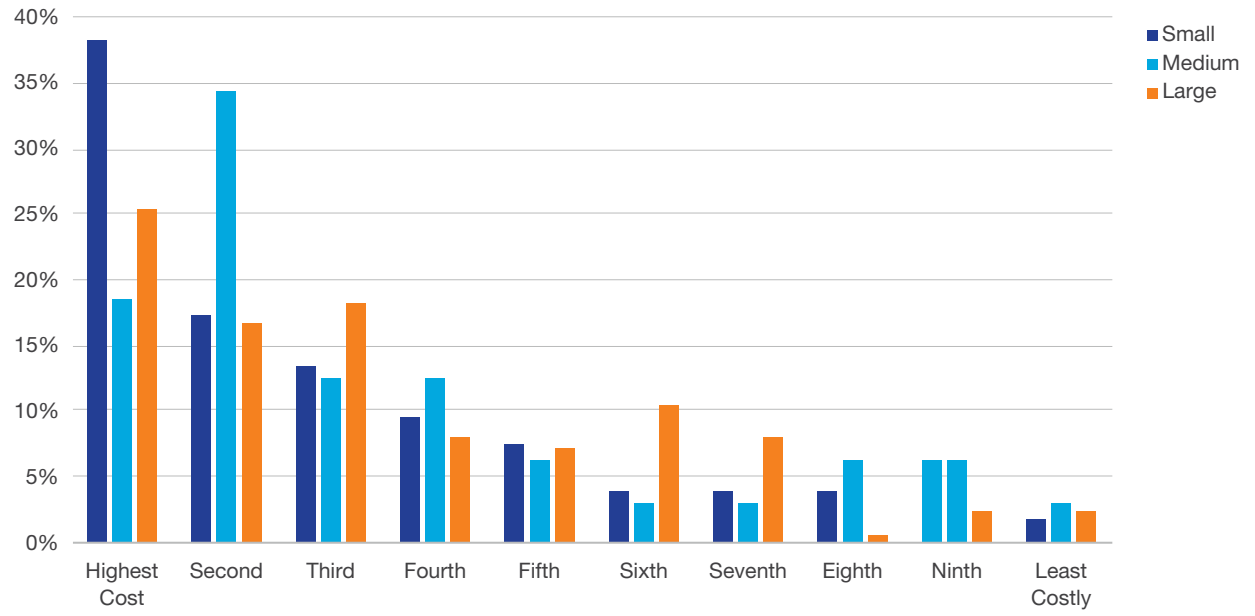
(Highest Cost = Most Costly; Second = Second Most Costly)



Environment and energy regulations are the highest cost regulation category for large and medium-sized firms; for small firms, it is labor regulations.

Chart 14. Survey Respondents: Labor Regulations—Ranking by Firm Size

(Highest Cost = Most Costly; Second = Second Most Costly)



As mentioned earlier, the survey results suggest that in the year prior to the survey, outlays required by federal government regulation for the manufacturing sector as a whole were $349 billion. These outlays should not be assumed to equal the total cost of regulation for manufacturing because firms bear additional costs not included in this estimate. The following section discusses the additional costs in more detail.

Open-Ended Questions

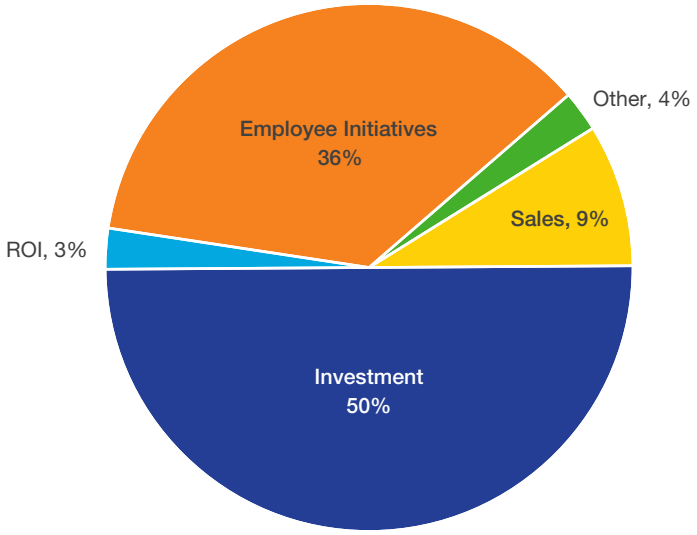
The previous discussion centered on information about outlays, or accounting costs, by firms in the manufacturing sector and identified those regulations that are perceived as most costly. Respondents were also asked two open-ended questions, and their comments provide some insights into regulatory costs not reported as direct expenditures (see Appendix B for more detailed responses). These costs can be borne by firms, passed on to consumers and/or absorbed by society at large.

Additional regulatory costs may include supply chain disruptions, increasing unemployment, contracting or relocating production and altering behavior. Respondents identified all of these in their open responses. They also reported that regulation impeded their ability to run their businesses efficiently. According to survey respondents, regulation increases uncertainty, stifles hiring and expansion, reduces global competitiveness and takes funds away from capital expenditures and R&D.

Alternative Use of Funds Presently Allocated to Regulatory Compliance

Respondents were asked how their company might reallocate funds if the cost of regulatory compliance were reduced. The reported most likely alternative use of funds fell within one or more of five general categories: investment, employee initiatives, sales, ROI or other. Chart 15 shows the distribution of responses across possible expenditure categories, with investment as the largest alternative use of funds at 50%.

Chart 15. Survey Respondents: Alternative Use of Funds Allocated to Federal Regulatory Compliance



Note to Chart 15: Due to rounding, percentages may not equal 100%.

Looking Forward to Possible Scope 3 Greenhouse Gas Emissions Reporting

The survey asked one forward-looking question: Does your company calculate greenhouse gas emissions throughout your supply chain (i.e., Scope 3 emissions)? Discussions regarding rules requiring Scope 3 greenhouse gas emissions reporting are underway. One topic of discussion involves the costs that this rule would impose on manufacturers who may be required to estimate the cost of greenhouse gas emissions throughout their supply chain. Nineteen percent of respondents indicated that their company already makes this calculation, while 81% do not.

Chart 16. Survey Respondents: Calculates Scope 3 Emissions

This study does not attempt to estimate future costs of regulation, but a Scope 3 reporting requirement undoubtedly would impose incremental compliance costs on some of the 81% of companies not calculating their Scope 3 emissions.

Estimating the Total Cost of Regulations

This section turns to the alternative approach to estimating the costs of regulation on businesses and individuals in the United States. We divide federal regulations into four categories: economic, environmental, occupational safety and health and homeland security, and tax compliance. A description of these categories follows, along with an explanation of the sources and methods used to derive the cost estimates.

Methodological Perspectives and the Scope of Regulatory Costs

As a broad perspective, the estimate of the total costs of regulation takes into account both direct and indirect costs. These are examples of direct compliance costs: investments in capital equipment, expenditures on O&M, payments to outside consultants, in-house employees devoted to compliance activities and so forth. Direct compliance costs require outlays by firms; generally, federal agencies include direct costs in the cost estimates included in OMB's Annual Report to Congress. However, even if all the direct costs for every federal regulation were measured and included in the OMB report, direct costs would understate the costs of regulations.

Direct compliance costs add to the cost of doing business, which means that economic output is curtailed. The reduction in economic output caused by regulation is an indirect cost of compliance, and we include this cost within the scope of our analysis. Our methodology that includes indirect costs is perhaps the main reason that the total costs of federal regulations in this study are much larger than those suggested in OMB's past reports to Congress.

A second methodological comment relates to our approach to the distribution of regulatory costs between businesses and individuals, among sectors of the U.S. economy and among businesses of different sizes. The approach to cost incidence tends to reflect the initial incidence; that is, an allocation based on who bears the initial compliance costs. We acknowledge that this initial compliance burden can be shifted, and the final incidence of regulations may differ from this initial cost allocation. The difference between the initial incidence and how costs are ultimately divided depends on the demand and supply elasticities in the respective product markets and supply chains. The final incidence of the federal regulatory burden is likely to differ from the initial incidence. Of course, the forward and backward shifting of regulatory costs is exactly analogous to the distinction between how a government collects a tax versus who ultimately pays for the tax. Collecting 100% of the retail sales tax from a business owner does not necessarily mean that the owner bears the full burden of the sales tax. Rather, the tax is passed on, at least in part, to consumers willing to pay a higher price at the store. This methodological consideration is raised again in Section IV.

While acknowledging that shifts in the cost burdens will occur, this study does not attempt to model these changes beyond some assumptions about the initial burden. We turn to a discussion of the four categories of regulations and the estimation procedures.

Major Categories of Federal Regulations: Sources and Methods

Economic Regulations

Economic regulations are rules that govern decision-making in market transactions. These include markets for final goods and services, markets for physical and human resources, credit markets and markets for the transport and delivery of products and factors of production. Economic regulations affect who can produce, what can (or cannot) be produced, how to produce, where to produce, where to sell, input and product pricing and what product information must be or cannot be provided. Obviously, the reach of economic regulations is vast. This means that an encompassing methodology is required to derive an estimate of these costs.

The methodology and scope we employ to capture the cost of economic regulations is why our estimate of the total costs of regulations is substantially higher than the total costs reported in the most recent issue of OMB's Annual Report to Congress. While OMB ceased to provide this annual report after 2020, it stands as a reference point for the costs of federal regulations. We emphasize three reasons for this difference. First, OMB's tally of the total costs includes only a tiny fraction of the universe of economic regulations. In part, this is because regulations issued by independent (non-executive branch) agencies are not subject to OMB review under Executive Orders 12866 and 13563. Independent agencies such as the Federal Trade Commission, the Federal Communications Commission, the Commodity Futures Trading Commission, the Consumer Financial Protection Bureau and the SEC promulgate a vast number of economic regulations that are omitted in the OMB annual cost figures.

Second, the OMB aggregate estimate includes only major rules,[13] meaning that the costs of thousands of nonmajor regulations—even those promulgated by executive branch agencies—are not included. While the costs of any single nonmajor rule may be small in relation to the U.S. economy, nonmajor rules in the aggregate may add substantially to compliance costs. The Code of Federal Regulations in 2021 contained 188,321 pages;[14] it is easy to imagine the large cumulative impact that nonmajor rules would have.

A third reason that an alternative estimate of the cost of economic regulations is required is that most of the government agency estimates include direct costs, but not the costs tied to the impact of regulations on the U.S. economy. We consider indirect costs—the impact on aggregate economic output—to be relevant and real costs of economic regulation. Finally, in compiling its annual accounting statement, OMB includes only those regulations that went into effect during the previous 10 years. This 10-year lookback limitation means that OMB's total cost estimate excludes the compliance costs associated with major regulations, such as several Clean Water Act rules, ignoring the costs that companies still face today from older regulations.[15] For these reasons, relying on the OMB Reports for Congress would understate the costs of economic regulations dramatically.

In view of these limitations, we derive an estimate of the cost of economic regulations using a top-down approach, a methodology designed to capture the complex and cumulative consequences of tens of thousands of federal rules that affect market transactions. The basic approach is to examine systematically the aggregate impact of economic regulations on the U.S. economy. This involves specifying a model that estimates the impact of regulations on country-level economic performance, using panel data (that is, observations across countries and over time) for a large sample of countries including the United States.[16]

13 The OMB Report to Congress defines a major rule as one promulgated by an executive branch agency that meets any of the following three conditions: (1) rules designated as major under the Congressional Review Act (5 U.S.C. § 804(2)); (2) rules designated as meeting the analysis threshold under the Unfunded Mandates Reform Act of 1995; or (3) rules designated as "economically significant" under section 3(f)(1) of Executive Order 12866.

14 See Reg Stats, Regulatory Studies Center, George Washington University, **https://regulatorystudies.columbian.gwu.edu/reg-stats**.

15 As an example, see the Code of Federal Regulations, Title 40, Vol. 15, Section 413-24 regarding a rule issued in 1996 under the authority of the 1972 Clean Water Act.

16 See Appendix C for a list of the countries included in the analysis. The sample consists of OECD countries, which tend to have similar political regimes, legal protections, monetary regimes, operative credit markets and so forth.

This methodology is straightforward and builds on an extensive academic literature finding that macroeconomic performance and living standards are systematically linked to regulatory policies. This literature informs practical policy applications. For example, empirical research sponsored by the Organisation for Economic Co-operation and Development leads them to conclude the following:

> **"Pro-competition regulation in product markets can help boost living standards. Many empirical studies have shown that competition can overall raise output per capita by increasing investment and employment as well as by encouraging companies to be more innovative and efficient, thereby lifting productivity. …[C]ountries have, step by step, removed obsolete or badly-designed regulations in product markets over the past decades, reducing state involvement in business sectors, making it easier for entrepreneurs to create firms and to expand them, and facilitating the entry of foreign products and firms.[17]**

Estimating the impact of economic regulations on living standards requires a reliable measure of regulation that is updated through 2022. For this purpose, we rely on an index created by the International Institute for Management Development and reported in its annual IMD World Competitiveness ranking. IMD creates this metric to reflect the degree to which a country's "legal and regulatory framework encourages the competitiveness of enterprises."[18]

The regression model used to examine the impact of economic regulations on GDP is specified in Equation (1):

Equation 1

$$\text{GDP per Capita}_{i,t} = \beta\,(\text{IMD Regulatory Index})_{i,t-1} + \phi\,(X)_{i,t-1} + \alpha_i + \varepsilon_{i,t-1}$$

The sample used to estimate Equation (1) consists of 36 OECD countries for which data on all of the relevant variables are available. The variable subscript *i* in Equation (1) denotes an observation in a particular country *i*. The variable subscript *t* denotes an observation in a particular year, where *t* = 2000 through 2022.

The dependent variable GDP per capita in Equation (1) is denominated in constant U.S. dollars.[19] The main explanatory variable of interest in Equation (1) is the IMD Regulatory Index, where higher values correspond to improvements in regulatory quality—that is, reductions in the regulatory burden on the economy.

The model includes a number of economic and demographic variables to control for other factors that may affect economic performance, represented by the vector *X* in Equation (1). These control variables are drawn

17 OECD, Going for Growth (2014), p. 66. The OECD championed regulatory reform in a strategic initiative called "Going for Growth" following nearly two decades of study and applied research. OECD-sponsored research on the impact regulations have on economic performance includes Bouis and Duval (2011); Bourlès, et al. (2010); Conway, et al. (2006); and Nicoletti and Scarpetta (2005).

18 See IMD, World Competitiveness Ranking, **https://www.imd.org/centers/wcc/world-competitiveness-center/rankings/world-competitiveness-ranking/2023/**. Alternative measures of economic regulations across nations are available from other sources, and Appendix C describes the relationship of the IMD index to others. The empirical relationship between economic regulations and macroeconomic performance remains robust and statistically significant using measures from alternative sources.

19 The data sources for all variables in the analysis are shown in Appendix C.

from the empirical literature that examines differences in economic levels across countries and over time.[20] The control variables in the model are foreign trade as a share of GDP (exports plus imports divided by GDP), the dependency ratio (the population under 15 and over 64 years old divided by population aged 15 to 64 years), employment in the service sector as a share of the total employment, total employment (in millions), investment as a share of GDP and a time trend variable. All of the variables are included in the model as natural logarithmic transformations. Appendix C provides summary statistics for the variables used in the analysis.

The results are shown in Table 3. The coefficient on the IMD Regulatory Index is positive and statistically significant at the 1% confidence level. A positive sign on the coefficient indicates that a reduction in the burden of economic regulations has a positive impact on a nation's real GDP per capita. We use this estimated coefficient (0.062) to calibrate the cost of economic regulations.

The next step is to estimate the reduction in U.S. GDP that is tied to costs of complying with economic regulations. As a benchmark, the maximum value for the IMD Regulatory Index in the past two decades is 8.19 (Finland), and the next top-ranking countries are Switzerland, New Zealand, Denmark and Iceland. The U.S. ranks 16th, with a value of 6.905 in 2022. These five high-ranking countries provide a reference point to gauge how much the U.S. economy is hampered by its current regulatory framework. Note that the analysis does not make a comparison to "zero" regulatory state. Rather, the high-ranking benchmark countries provide a realistic baseline comparison. An improvement of 17% (an increase in the IMD Regulatory Index equal from 6.095 to 8.11) would place the U.S. in this group.

Using the parameter value in Table 3, this 17% change difference in the IMD Regulatory Index yields a change in GDP per capita equal to $1.982 trillion. In other words, if the burden of economic regulations in the United States almost matched the benchmark countries, U.S. GDP would be $1.982 trillion higher than it was in 2022 (denominated in 2023 dollars). We apply the $1.982 trillion estimated cost of economic regulations in Section IV.[21]

20 Early surveys of this literature are Hall and Jones (1997), Barro and Sala-i-Martin (1995) and Barro (1997). Later contributions to the literature with specific reference to the impact of regulation on country-level economic performance are surveyed in Loayza, et al. (2004), Gwartney, et al. (2004), Sala-i-Martin, et al. (2004), Schiantarelli (2008), Rode, et al. (2013) and Crain and Crain (2014).

21 In the 2014 study for the NAM, we made an additional calculation for the cost of economic regulations. This was an estimate of the cost of import restrictions from the U.S. International Trade Commission. The costs of trade restrictions are likely captured by the IMD Regulatory Index.

Table 3. The Impact of Economic Regulation on Real GDP per Capita

IMD Regulatory Index	0.0622
	0.011**
Trade Share of GDP	0.0008
	0.0004**
Dependency Ratio	-0.7985
	0.1380**
Employment in Services Share of Employment	4.4725
	0.1380**
Total Employment	-0.0447
	0.0120**
Investment Share of GDP	-0.0020
	0.0020
Trend	-0.0146
	0.0030**
Constant	23.5773
	5.1580**
Number of Obs.	784
F-stat	261**
Adjusted R square	0.70

Notes to Table 3: The independent variables (except for Trend) are lagged one year. These variables are entered into the regression as natural logarithmic transformations: Real GDP per Capita; Dependency Ratio; Employment in Services Share of Employment; and Total Employment. Standard errors are shown in parentheses, where ** indicates significance at the 1% level.

Environmental Regulations

The estimated cost of environmental regulations is derived by updating the estimates in Crain and Crain (2014) for changes since 2012. Between 2012 and 2019, we use the values reported in OMB's Annual Report to Congress. For the years 2020, 2021 and 2022, we use a two-step process. We use the Regulation Rodeo dataset to identify environmental regulations adopted in those years, and then refer to the RIAs produced by the agency that promulgated the rule.[22]

Combining these sources, almost all of which are estimates by the government agencies that promulgated the regulations, puts the annual compliance cost of environmental regulations at $588 billion.

Occupational Safety and Health and Homeland Security Regulations

Under this category, we include regulations reviewed by OMB and promulgated by the Department of Homeland Security and the Occupational Safety and Health Administration. We define this category somewhat narrowly in an effort not to duplicate costs that might fall under the costs estimate for economic regulations.

22 The Regulation Rodeo dataset is produced by the American Action Forum (online at **https://regrodeo.com**). Beginning in its 2003 report, OMB began the practice of limiting its cost summaries to regulations promulgated over the preceding 10 years, which in that report included 1992 through mid-2002. For this reason, the estimates in Crain and Crain (2014) began with the OMB report for 2001. That report includes its earliest cost accounting and includes the Hahn and Hird (1991) estimates for the costs prior to 1988. It is worth reiterating that OMB only includes the costs of economically significant regulations subject to Executive Order 12866 review. These are less than 1% of the EPA's rulemaking. Moreover, as noted earlier, the OMB annual reports now only encompass regulations issued in the prior 10 years. This was not always the case, and data on the earlier environmental regulations are summarized in the OMB's past annual reports. This means that the OMB-provided estimates are likely to be understated. Crain and Crain (2014) discusses these limitations and caveats.

The costs of occupational safety and health and homeland security regulations are derived by updating the estimates in Crain and Crain (2014) for changes since 2012. Between 2012 and 2019, we use the values reported in OMB's Annual Report to Congress. As in the case of environmental regulations, we use the Regulation Rodeo dataset and government agency RIAs for the years 2020, 2021 and 2022.[23] All of the estimates in this category are generated by government agencies. The cost of homeland security regulations includes OMB-reviewed estimates of rules concerned with transportation facilities security; chemical plant security; electronic availability of passenger manifest lists; cargo security; notice of imported food and registration of food facilities that might be vulnerable to bioterrorism; and air cargo security. It also includes the cost of airline passenger screening.

The estimated cost is $26 billion for DHS and $98 billion for OSHA, for a total cost of $124 billion. The sources are summarized in Table 4.

Table 4. Sources and Estimated Costs of Occupational Safety and Health and Homeland Security Regulations

Category	Cost Estimate (Millions of 2023 Dollars)	Source
Occupational Safety and Health Administration	$ 97,953	Crain and Crain (2014) OMB Reports to Congress (2014–2020) Reg Rodeo and Agency RIAs (2019–2022)
Homeland Security (Including Airline Passenger Screening)	$ 25,562	Crain and Crain (2014) OMB Reports to Congress (2014–2020) Reg Rodeo and Agency RIAs (2019–2022) GBTA Outlook Annual Global Report & Forecast (2021) Bureau of Transportation Statistics
Total	**$ 123,515**	

Cost of Compliance with the Federal Tax Code

Another cost of regulation is the time and resources required for monitoring, recordkeeping, reporting and complying with regulations. Of this "paperwork" burden, the time 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 recordkeeping and reporting burdens. However, the nontax-related reporting and compliance requirements are tied largely to the types of regulation examined in the other three categories: economic, environmental or occupational safety and health and homeland security regulations. This means that the cost estimates for the other regulations should account for most of the nontax-related compliance and reporting burden. In that sense, a separate estimate would be double-counting recordkeeping and form-filing costs. However, the cost of federal tax compliance would not be included in the three regulatory categories considered above. While tax compliance differs in some respects, it has much in common with other forms of regulation, and for that reason we examine it as a separate category and include the costs in this study. We estimate these costs using data reported by the U.S. Internal Revenue Service. Data for 2021 are the most recently available.

23 Ibid.

Table 5. Estimated Costs of Compliance with the Federal Tax Code

	Businesses	Individuals and Tax Exempt	Total
Number of Hours Required to Comply	3,101,711,323	2,057,687,812	5,159,399,135
Total Compliance Cost (In 2023 Dollars)	$108,357,769,839	$119,769,485,303	$300,307,255,142
Share of Total Compliance Cost	60%	40%	

Note to Table 5: The hours data are for 2022, and the cost assumes an hourly wage rate (including benefits) of $58.21 in 2023 dollars.

The estimate of tax compliance costs in 2023 follows the methodology in past studies of tax code compliance. The first step compiles data from the IRS on the amount of time required to complete each type of tax form and the number of filings for each type of form. The number of compliance hours is shown in the first row of Table 5 broken down by businesses, individuals and nonprofits and a total for these two categories. The total number of hours required for compliance is about 5.2 billion in 2022, with businesses devoting 3.1 billion hours and individuals and tax-exempt organizations devoting 2.1 billion hours.

The second step is to multiply the hours spent on compliance by an hourly wage rate that reflects the value of the preparer's time. We apply the average hourly wage rate for accountants and auditors (source: Bureau of Labor Statistics, online database). This procedure yields an estimated cost of $300 billion for federal tax compliance (in 2023 dollars). This estimate includes the combined costs on individual filers, tax exempt organizations and business filers. The estimated cost of compliance for businesses is $108 billion, which accounts for 60% of the total cost.

Summary of Total Regulatory Costs

Table 6 summarizes the cost estimates described in this section by category and highlights the basic sources and procedures behind the estimates. The four categories are ordered by size of the cost estimate.

Table 6. The Cost of Federal Regulations in 2022

(Billions of 2023 Dollars)

Type of Regulation	Cost Estimate	Sources
All Federal Regulations	$3,079	Summation of costs by type
Economic	$2,067	Authors' empirical analysis using index of regulatory burden; IMD and World Bank
Environmental	$ 588	Crain and Crain (2014) OMB (2014–2020) Reg Rodeo and Agency RIAs (2020–2022)
Tax Compliance	$300	IRS and Bureau of Labor Statistics
OSHHS	$124	Crain and Crain (2014) OMB (2014–2020) Reg Rodeo and Agency RIAs (2020–2022) Bureau of Transportation Statistics (2022)

Incidence of Regulatory Costs

This section examines the incidence of federal regulatory costs, among major business sectors of the American economy, and, within sectors, the incidence across firms of different sizes. The underlying composition of economic activity in America provides the basis for this cost allocation.

A Snapshot of American Enterprise

Our analysis uses a three-part firm size classification, relying on data available from the U.S. Census Bureau. For purposes of this study, we define small firms as those with fewer than 50 employees, medium-sized firms as those with 50 to 99 employees and large firms as those with 100 or more employees. Small, medium and large firms are sometimes defined differently for different business sectors. To make the analysis and main findings tractable, we use a common firm size classification scheme in the allocations that follow.

The North American Industry Classification System devised by the U.S. Census Bureau divides American businesses into 2,000 distinct industry types. We aggregate these classifications down to five broad business categories:

- Manufacturing
- Trade (wholesale and retail trade)
- Services
- Health care
- Other (a residual containing almost all other nonfarm employers)[24]

The “other” category includes forestry, fishing, hunting and agriculture; mining; utilities; construction; and transportation and warehousing.

24 The firm-level data are provided in the Statistics of U.S. Businesses and 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 or more employees) and nonincorporated firms with no paid employees. According to the Census Bureau, nonemployers account for roughly 3% of all business activity (see U.S. Census Bureau, “Nonemployer Statistics,” **https://www.census.gov/programs-surveys/nonemployer-statistics.html**).

Table 7. Size Distribution of American Business in 2021*

Size Measure	All Firms**	Firm Size		
		< 50 Employees	50–99 Employees	100 or More Employees
All Sectors**				
Firms	$6,204,834	$5,906,642	$139,032	$159,160
Employment	$134,163,283	$33,922,356	$9,026,408	$91,214,519
Payroll (In Thousands)	$8,918,057,827	$1,719,439,790	$510,872,674	$6,687,745,364
Manufacturing				
Firms	**$239,607**	**$210,019**	**$13,123**	**$16,465**
Employment	**$11,999,822**	**$1,930,554**	**$872,741**	**$9,196,527**
Payroll (In Thousands)	**$870,284,312**	**$106,095,331**	**$ 53,993,751**	**$ 710,195,230**
Trade				
Firms	$914,431	$873,009	$20,063	$21,359
Employment	$21,953,843	$5,112,330	$1,269,870	$15,571,643
Payroll (In Thousands)	$1,119,296,081	$250,820,750	$77,642,642	$790,832,689
Services				
Firms	$3,376,707	$3,227,547	$68,495	$80,665
Employment	$64,699,781	$17,724,434	$4,359,632	$42,615,715
Payroll (In Thousands)	$4,571,530,734	$829,766,064	$227,610,353	$3,514,154,316
Health Care				
Firms	$671,098	$628,408	$19,219	$23,471
Employment	$21,216,569	$4,271,146	$1,325,040	$5,620,383
Payroll (In Thousands)	$1,316,222,789	$226,442,493	$64,192,825	$1,025,587,471
Other				
Firms	$1,002,991	$967,659	$18,132	$17,200
Employment	$14,293,268	$4,883,892	$1,199,125	$8,210,251
Payroll (In Thousands)	$1,040,723,911	$306,315,151	$87,433,102	$646,975,658

Notes to Table 7: * Source: All Sectors: U.S. Census Bureau, "County Business Patterns, including ZIP Code Business Patterns, by Legal Form of Organization and Employment Size Class for the U.S.", States and Selected Geographies: 2021, released on April 27, 2023. These data for 2021 are the most recently available. The payroll data are converted into 2023 dollars. ** These data cover almost all nonfarm employer businesses. Omitted are farms, railroads, most government-owned establishments, the U.S. Postal Service, large pension, health and welfare funds (more than 100 employees) and unincorporated firms with no paid employees. Due to rounding, individual regulations in each column may not equal the total displayed.

Table 7 shows the distribution of American industry by sector and firm size using the most recently available data (for 2021).[25] Table 7 presents three relevant size indicators: the number of firms, the number of employees and payroll expenditures. Overall, roughly 6.2 million firms operate in the United States, of which 5.9 million are in the small size category (fewer than 50 employees).

25 American industry is obviously not static, and these 2021 data on the distribution of business activity do not match up exactly with the regulatory cost estimates for 2022. However, changes in the basic structure of American industry generally occur only incrementally. These data provide a close approximation for the relevant years of the proportions of firms, employees and payroll across the three firm-size categories and the five sector classifications. The percent of firms in these five sectors shows only minor changes since 2011 (see Crain and Crain, 2014).

Tables 8a, 8b and 8c report these business-size indicators in a slightly different format, as shares of all U.S. industry, which are used to allocate compliance costs. It converts the raw data shown in Table 7 into percentage terms. For example, consider the data in Tables 8a, 8b and 8c that describe the manufacturing sector. Manufacturing accounts for 4% of all U.S. firms, 9% of all U.S. employment and 10% of all U.S. business payroll expenditures. Within the manufacturing sector, 88% of the firms are classified as small businesses (fewer than 50 employees), 5% have between 50 and 99 employees and 7% have 100 or more employees. Sixteen percent of manufacturing employees work in small firms, 7% work in medium-sized firms and 77% in large firms. Finally, regarding the overall distribution of payroll expenditures, small firms account for 19%, medium-sized firms account for 6% and large firms account for 75%.

Table 8a. Distribution of American Businesses by Firm Size and Sector

Size Measure	All Sectors	Manufacturing	Trade	Services	Health Care	Other
All Firms		4%	15%	54%	11%	16%
By Firm Size						
< 50 Employees	95%	88%	95%	96%	94%	96%
50–99 Employees	2%	5%	2%	2%	3%	2%
100 or More Employees	3%	7%	2%	2%	3%	2%

Table 8b. Distribution of Employees at American Businesses by Firm Size and Sector

Size Measure	All Sectors	Manufacturing	Trade	Services	Health Care	Other
All Firms		9%	16%	48%	16%	11%
By Firm Size						
< 50 Employees	25%	16%	23%	27%	20%	34%
50–99 Employees	7%	7%	6%	8%	6%	8%
100 or More Employees	68%	77%	71%	66%	74%	57%

Table 8c. Distribution of Payroll at American Businesses by Firm Size and Sector

Size Measure	All Sectors	Manufacturing	Trade	Services	Health Care	Other
All Firms		10%	13%	51%	15%	12%
By Firm Size						
< 50 Employees	19%	12%	22%	18%	17%	29%
50–99 Employees	6%	6%	7%	5%	5%	8%
100 or More Employees	75%	82%	71%	77%	78%	62%

Notes to Tables 8a, 8b and 8c: Source: See Table 7. Due to rounding, individual columns may not equal 100%.

The percentages displayed in Tables 8a, 8b and 8c provide a snapshot of the distribution of productive activity and resources among broad sectors of American industry. The incidence of regulatory compliance costs is understandably connected to the workforce and business activity that are reflected in these tables. These costs are allocated across the sectors and firm sizes shown in Tables 7 and 8 using the procedures described in the remainder of this section.

Assumptions and Procedures Underlying the Cost Allocations: Business Portion of the Regulatory Burden

Before costs can be allocated across these five business sectors, a more general cost allocation is necessary, specifically to determine how much of the regulatory burden falls on the aggregate on businesses. This task requires a delineation of the regulatory burden that falls initially on business from the burden that falls initially on individuals, state and local governments and tribal entities. As discussed in Section I, the study does not attempt to map out the subsequent shifting of this burden from businesses to individuals (e.g., in the form of higher retail prices) or from one business sector to another (e.g., in the form of higher energy prices or health insurance premiums).[26] In other words, the distinction between "business" and "individuals" focuses on the compliance responsibility, fully recognizing that ultimately all costs must fall on individuals. Moreover, the degree to which businesses are able to shift compliance costs forward onto consumers can only be determined with specific information about elasticities of supply and demand in specific sectors. We note that some of the costs of federal regulations fall on state and local governments and tribal entities, and these are bundled with those borne by individuals to keep a relatively tractable division in business versus nonbusiness costs.

The cost allocations for each type of regulation are shown in Chart 17. The allocations shown in Chart 17 generally employ the same methodology used in prior studies: Hopkins (1995a) and (1995b), Crain and Hopkins (2001), Crain (2005), Crain and Crain (2010) and Crain and Crain (2014). The allocation of environmental regulations is based on the compliance data reported by the EPA.[27] In the absence of allocation data for economic regulation, we assume that 50% falls on business and 50% falls on individuals and other entities. The allocation of tax compliance costs is based on the distribution of tax forms filed by individuals, businesses and exempt organizations. For example, the IRS provides filing data broken down by C or other corporation income taxes, S corporations, partnerships, form 1098, form 1099, W-2 forms and so forth (IRS, Statistics of Income Division). We use these data to allocate compliance hours between business and individual and tax-exempt filers, including pass-through filers. The occupational safety and health and homeland security regulations are allocated 99% to businesses. This assumption is consistent with the empirical evidence that the labor supply function is relatively inelastic, and therefore safety and health costs are not immediately shifted onto consumers.[28] The assumption is that a small share of estimated homeland security costs is borne by state and local governments and individuals.

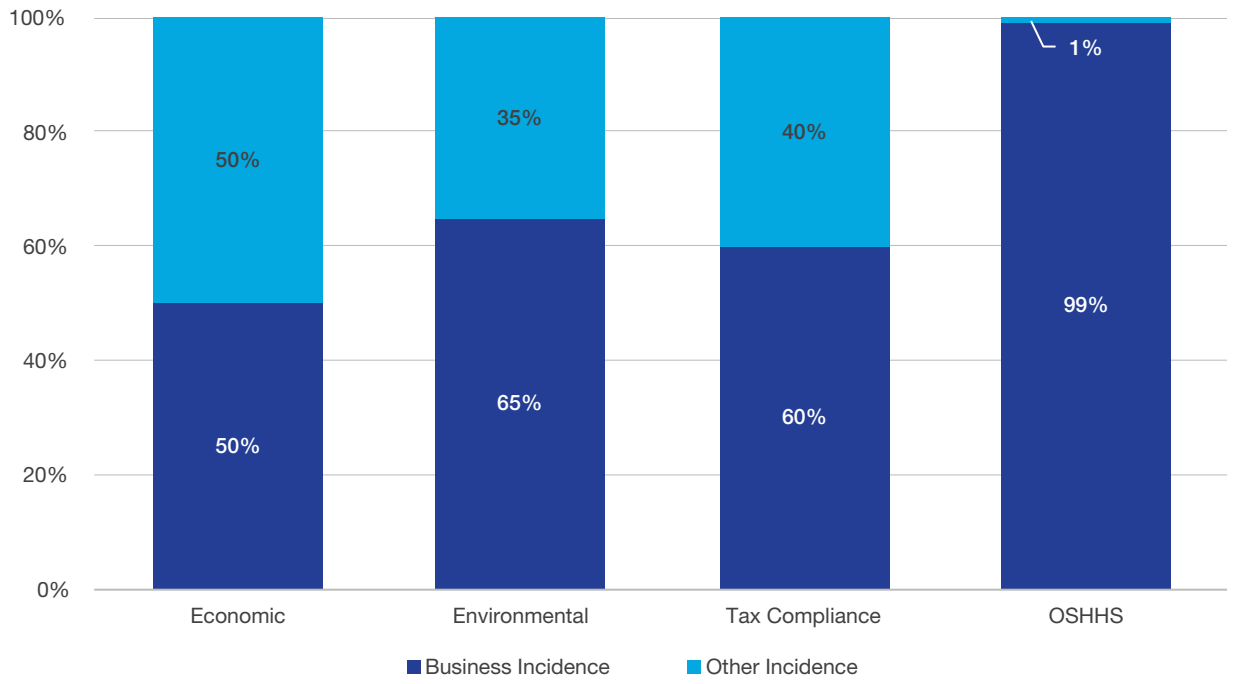
26 The responses to the open-ended questions presented in Section II provide an intuitive sense of the distribution of these costs on manufacturers.

27 EPA, "Environmental Investments: The Cost of a Clean Environment," EPA 230-11-90-083, November 1990, pp. 2–5.

28 Moreover, this assumption is similar to that used by the Congressional Budget Office that payroll taxes are borne fully by workers (and therefore not shifted forward onto consumers through price increases). See the discussion in Jonathon Gruber, Public Finance and Public Policy (New York: Worth Publishers, 2004), pp. 539–540.

Chart 17. Allocation of Compliance Cost Incidence to Business

(Percentage of Category Costs)



Allocation of Regulatory Costs Across Business Sectors

The second task is to allocate the business portion of regulatory costs among the five major sectors. The sectors are based on the Census Bureau's NAICS, in some cases aggregating categories.[29] For example, the NAICS separates wholesale trade and retail trade, and we combine these as the "Trade" sector. Table 9 lists these allocations by sector and sources. We note that these cost allocations among the five sectors are a bottom–up calculation. That is, we allocate each of four regulatory cost categories separately and then total the costs per sector. A more complete description of the allocation basis for each type of regulation is described in turn.

29 The NAICS data are from the U.S. Census Bureau.

Table 9. Allocation of Business Regulatory Costs to Sectors

(Percentages)

Type of Regulation	Sectoral Allocations					Sources and Summary of Methods
	Manufacturing	Trade	Services	Health Care	Other	
Economic	12%	14%	52%	7%	13%	Bureau of Economic Analysis (value-added share of private GDP); U.S. Census Bureau (employment share of private workforce)
Environmental	54%	0.0%	0.3%	1%	45%	Crain and Crain, 2014 (compliance costs by sector)
Tax Compliance	3%	12%	59%	7%	19%	IRS (the number of returns and type of form by industry category)
OSHHS	10%	16%	49%	14%	11%	Census (employment share of private workforce); BEA (value-added share of private GDP)

Notes to Table 9: Due to rounding, individual regulations in each column may not equal 100%.

Economic Regulations

Regarding economic regulations, the cost allocations are based on a weighted average of two components: (1) the sector's value added to GDP divided by total private sector GDP and (2) the number of employees in the sector divided by total private-sector employment.[30] The average for each sector is weighted by the share of non-OSHA workplace regulations on the sector. That is, a sector's employment share gets a slightly higher weight where regulations such as labor standards or labor management relations are likely to have a larger impact.

Environmental Regulations

The sector allocations for environmental regulations are taken from Crain and Crain (2014). Almost all of these costs fall on the manufacturing sector (54%) and the "other" sector (45%). 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 environmental regulations.[31] The remaining costs of environmental regulation fall mostly on the health care sector.

Allocation of Regulatory Costs by Firm Size

We allocate the costs across three categories of firm sizes: those with fewer than 50 employees (small), firms with 50–99 employees (medium) and firms with 100 or more employees (large). The specific allocation procedure differs for each type of regulation, and the procedures are described below.

Starting with economic regulations, the cost allocation among the three firm size groups is a two-step procedure. We take into consideration the fact that some regulations explicitly exempt small firms.[32] This share is multiplied by the estimated cost of economic regulations to estimate exempted costs. In other words, the aggregate costs of economic regulations include some that exempt small firms. These exempted costs are then reapportioned

30 The source for the value added to GDP by sector is the Industry Economics Division, BEA online database. The source for the employment data is the U.S. Census Bureau, "County Business Patterns."

31 The NAICS used for the five sector divisions distinguishes between "manufacturing" and "extraction" subcategories. So, for example, our allocation divides the oil and gas sector between its manufacturing and extraction activities.

32 The portion of economic regulations from which small firms are exempt is approximated using the share of costs that were exempt in the Johnson (2005) study. This proportion is consistent with the proportion of cost exemptions observed in the RIAs examined for regulations adopted in 2020, 2021 and 2022.

to medium-sized and large firms. The reapportioned costs are sector-specific and based on the relative employment shares by firm size in each sector.

The methodology used to allocate the cost of environmental regulations by firm size is easily summarized. The procedure uses multiple regression analysis to estimate the relationship between pollution abatement costs per employee and firm size, measured by the number of employees per firm. The model estimates the relationship of firm compliance costs per employee to the number of employees, controlling for other factors. The regression results indicate that a 1% increase in firm size (measured in terms of the number of employees) corresponds to a 0.43% decrease in pollution abatement costs per employee. In essence, this parameter estimates the degree of economies of scale in compliance costs.

This estimated economies of scale factor is used to solve for the median cost per employee within each firm-size category for each business sector. Other studies are consistent with this finding of economies of scale in environmental regulatory compliance.[33]

Distribution of Federal Regulatory Costs: Businesses and Others

Table 10 shows the estimated costs of all federal regulations, broken down by type, and the distribution of the burden between business and others (that is, individuals and state and local governments).

Table 10. Total Cost of Federal Regulations in 2022 by Type and Business Share

(Billions of 2023 Dollars)

	Total Costs (Billions of Dollars)	Business Portion		Others	
		Share (Percentage)	Amount (Billions of Dollars)	Share (Percentage)	Amount (Billions of Dollars)
All Federal Regulations	$3,079	56%	$1,718	44%	$1,360
Economic	$2,067	50%	$1,033	50%	$1,033
Environmental	$588	65%	$382	35%	$206
Tax Compliance	$300	60%	$181	40%	$120
OSHHS	$124	99%	$122	1%	$1

The estimates in Table 10 indicate that the annual total cost of all federal regulations in 2022 was $3.079 trillion (in 2023 dollars). We estimate the portion falling on business to be $1.718 trillion. The most costly are economic regulations at an estimated cost of $2.067 trillion, with $1.033 trillion falling initially on business. Environmental regulations represent the second-most costly category, at $588 billion, with $382 billion apportioned to business. The estimated cost of tax compliance is $300 billion, and the estimated cost of occupational safety and health and homeland security regulations is $124 billion.

33 See, for example, Dean (1994) and Dean, et al. (2000). These two studies suggest that regulatory costs lower the start-up 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 Staley, et al. (2001). Becker (2005) finds that relative costs of pollution abatement by firm size vary depending on the type of regulated pollutant.

Distribution of the Regulatory Burden Across Business Sectors: Three Metrics

Table 11 presents the allocation of the business portion of regulatory costs by sector and for the four categories of regulations.

Table 11. Average Sectoral Regulatory Costs, 2022

(In 2023 Dollars)

Type of Regulation	Total Costs (Billions of Dollars)	Cost per Firm (Dollars)*	Cost per Employee (Dollars)**	Cost as a Share of Payroll (Percentage)
Manufacturing				
Total	**$349**	**$1,458,000**	**$29,100**	**40%**
Economic	**$125**	**$523,000**	**$10,400**	**14%**
Environmental	**$206**	**$861,000**	**$17,200**	**24%**
Tax Compliance	**$6**	**$24,000**	**$500**	**1%**
OSHHS	**$12**	**$49,000**	**$1,000**	**1%**
Trade				
Total	$186	$203,000	$8,500	17%
Economic	$144	$157,000	$6,600	135%
Environmental	$-	$-	$-	0%
Tax Compliance	$22	$25,000	$1,000	2%
OSHHS***	$19	$21,000	$900	2%
Services				
Total	$704	$208,000	$10,900	15%
Economic	$536	$159,000	$8,300	12%
Environmental	$1	$300	$18	0%
Tax Compliance	$107	$32,000	$1,600	2%
OSHHS	$60	$18,000	$900	1%
Health Care				
Total	$124	$184,000	$5,800	9%
Economic	$91	$136,000	$4,300	7%
Environmental	$3	$4,000	$100	0%
Tax Compliance	$12	$18,000	$600	1%
OSHHS	$17	$26,000	$800	1%
Other				
Total	$356	$355,000	$24,900	34%
Economic	$137	$137,000	$9,600	13%
Environmental	$172	$171,000	$12,000	17%
Tax Compliance	$33	$33,000	$2,300	3%
OSHHS	$14	$14,000	$1,000	1%

Type of Regulation	Total Costs (Billions of Dollars)	Cost per Firm (Dollars)*	Cost per Employee (Dollars)**	Cost as a Share of Payroll (Percentage)
U.S. Totals (All U.S. Businesses)				
Total	$1,718	$277,000	$12,800	19%
Economic	$1,033	$167,000	$7,700	12%
Environmental	$382	$62,000	$2,800	4%
Tax Compliance	$181	$29,000	$1,300	2%
OSHHS	$122	$20,000	$900	1%

Notes to Table 11: * Rounded to nearest 1,000. ** Rounded to the nearest 100. Due to rounding, individual regulations in each column may not equal the total displayed.

As shown in Table 11, considering all U.S. businesses and all federal regulations, the annual cost burden on the typical U.S. firm is about $277,000. The cost per employee for the typical U.S. firm is almost $13,000. This cost of federal regulation in the typical U.S. firm equals 19% of payroll expenditures.

These allocations indicate that the manufacturing sector and the “other” sector bear the largest regulatory shares of total regulatory costs. For example, using the cost per firm metric as a gauge, the manufacturing sector in particular bears the highest total regulatory burden in terms of the average cost per firm, approaching $1.5 million annually per firm and more than four times the cost per firm in the “other” category.

The cost estimate for manufacturing in Table 11 is almost identical to the findings using the survey approach described in Section II. When the survey results are extrapolated to the manufacturing sector as a whole, the estimate for the total cost is $350 billion. Using the bottom–up approach reported in Table 11, the estimated regulatory cost on the manufacturing sector is $349 billion.

The top-down and bottom-up approaches are very different in terms of methodology and data sources. That they yield consistent estimates of the direct cost of regulations for the manufacturing sector supports the strength of each approach individually.

The Distribution of Regulatory Costs by Firm Size

The distribution of regulatory costs among different firm size categories is presented in Table 12.

Table 12. Regulatory Costs per Employee in Small, Medium and Large Firms, 2022

(In 2023 dollars and Rounded to the Nearest 100)

Type of Regulation	All Firms	Firm Size		
		< 50 Employees	50–99 Employees	100 or More Employees
Manufacturing				
Total	**$29,100**	**$50,100**	**$28,000**	**$24,800**
Economic	**$10,400**	**$7,600**	**$10,900**	**$11,000**
Environmental	**$17,200**	**$40,700**	**$15,200**	**$12,500**
Tax Compliance	**$500**	**$500**	**$800**	**$400**
OSHHS*	**$1,000**	**$1,300**	**$1,100**	**$900**
Trade				
Total	$8,500	$9,200	$13,000	$7,900
Economic	$6,600	$6,100	$9,600	$6,500
Environmental	$-	$-	$-	$-
Tax Compliance	$1,000	$2,000	$2,500	$600
OSHHS*	$900	$1,100	$900	$800
Services				
Total	$10,900	$8,600	$11,500	$11,800
Economic	$8,300	$5,300	$8,000	$9,600
Environmental	$18	$40	$10	$10
Tax Compliance	$1,600	$2,100	$2,500	$1,400
OSHHS*	$900	$1,200	$1,000	$800
Health Care				
Total	$5,800	$6,400	$6,500	$5,600
Economic	$4,300	$3,500	$4,400	$4,500
Environmental	$100	$300	$100	$100
Tax Compliance	$600	$1,500	$1,100	$300
OSHHS*	$800	$1,100	$900	$800
Other				
Total	$24,900	$34,000	$24,200	$19,600
Economic	$9,600	$8,000	$11,400	$10,300
Environmental	$12,000	$21,900	$8,200	$6,700
Tax Compliance	$2,300	$3,000	$3,600	$1,800
OSHHS*	$1,000	$1,200	$1,000	$800

Type of Regulation	All Firms	Firm Size		
		< 50 Employees	50–99 Employees	100 or More Employees
Total, All U.S. Businesses**				
Total	$12,800	$14,700	$13,800	$12,200
Economic	$7,700	$5,600	$8,300	$8,500
Environmental	$2,800	$6,000	$2,300	$1,800
Tax Compliance	$1,300	$1,900	$2,200	$1,000
OSHHS*	$900	$1,200	$1,000	$800

Notes for Table 12: * OSHHS stands for occupational safety and health and homeland security regulations. ** The costs per employee for all U.S. businesses are computed using the employment shares to weight the costs in each of the five respective sectors. Due to rounding, individual regulations in each column may not equal the total displayed.

Considering first the aggregate costs for all federal regulations and all business sectors (displayed as the last category in Table 12), the estimated cost for small firms is $14,700 per employee.[34] Regulations cost medium-sized firms $13,800 per employee and large firms $12,200 per employee. The disproportionate cost burden on small firms is quite dramatic for the manufacturing sector. In the manufacturing sector, the estimated cost per employee for small firms ($50,100) is twice the cost for large firms ($24,800).

Summary Comments

Fifty-eight percent of survey respondents indicated that federal government regulation was a challenge that had recently affected their firm or that they expected their business to face in the future. Using data provided by respondents, the estimated cost of outlays for manufacturing as a whole indicates that expenditures related to regulation in the past year were approximately $350 billion. To put this figure in perspective, it is larger than the individual economies of 29 U.S. states.

The survey specifically asked for information regarding federal regulation and how it related to the distribution of employees' time, the use of outside advisers, purchasing and maintaining tangible items, emissions credits or offsets and requirements resulting from federal government compliance-related activities. Respondents discussed other implications of regulation in their open-ended responses, including inefficient planning as a consequence of uncertainty, including federal regulation in the production location calculus, R&D and capital investment consequences and reductions in employment and in competitiveness.

Our economy-wide analysis buttresses and extends the cost estimate based on the survey responses. The combined direct and indirect costs of federal regulations borne by the manufacturing sector are estimated to be $349 billion based on this economy-wide analysis.

This study provides new estimates of the total costs of federal regulation and the incidence of these costs across business sectors and firm sizes. The findings suggest that the costs of regulations continued to rise to an estimated $3.079 trillion in 2022. Both the survey and the broader empirical work indicate that small manufacturing firms bear a higher share of this cost than larger firms.

34 The U.S. total figures are based on a weighted average of the costs in the five business categories. The weights for each average use the share for the respective category. For example, for the "cost per firm" value, the cost per firm in each sector is weighted by the share of all U.S. firms in that sector. For the "cost as a percent of payroll" value, the sector values are weighted by the share of all U.S. payroll expenditures in that sector and so on.

References

Ahmad, Eatzaz, Muhammad Aman Ullah and Muhammad Irfanullah Arfeen (2012), "Does Corruption Affect Economic Growth?" Latin American Journal of Economics, Vol. 49, No. 2, pp. 277–305.

Barro, Robert J. (1997), Determinants of Economic Growth: A Cross-Country Empirical Study. Cambridge, MA: MIT Press.

Barro, Robert J. and X. Sala-i-Martin (1995), Economic Growth. New York: McGraw-Hill.

Beale, Henry B. R. and King Lin (1998), 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.

Becker, Randy A. (2005), "Air Pollution Abatement Costs under the Clean Air Act: Evidence from the PACE Survey," Journal of Environmental Economics and Management, Vol. 5, pp. 144–169.

Bouis, R. and R. Duval (2011), "Raising Potential Growth After the Crisis: A Quantitative Assessment of the Potential Gains from Various Structural Reforms in the OECD Area and Beyond," OECD Economics Department Working Papers, No. 835, OECD Publishing, Paris.

Bourlès, R., G. Cette, J. Lopez, J. Mairesse and G. Nicoletti (2010), "Do Product Market Regulations in Upstream Sectors Curb Productivity Growth: Panel Data Evidence for OECD Countries," OECD Economics Department Working Papers, No. 791, OECD Publishing, Paris.

Bradford, Steven C. (2004), "Does Size Matter? An Economic Analysis of Small Business Exemptions from Regulation," The Journal of Small and Emerging Business Law, Vol. 8, No. 1, pp. 1–37.

Brock, William A. and David S. Evans (1986), The Economics of Small Businesses: Their Role and Regulation in the U.S. Economy. New York, NY: Holmes & Meier.

Cole, Roland J. and Paul Sommers (1980), Costs of Compliance in Small and Moderate-sized Businesses, SBA-79-2668, Battelle Human Affairs Research Centers, Seattle, WA, February.

Conway, P., D. de Rosa, G. Nicoletti and F. Steiner (2006), "Regulation, Competition and Productivity Convergence," OECD Economics Department Working Papers, No. 509, OECD Publishing, Paris.

Crain, W. Mark (2005), The Impact of Regulatory Costs on Small Firms, Washington, D.C.: Office of Advocacy, U.S. Small Business Administration. Available online at **https://www.govinfo.gov/content/pkg/GOVPUB-SBA-PURL-LPS95767/pdf/GOVPUB-SBA-PURL-LPS95767.pdf**.

Crain, W. Mark and Thomas D. Hopkins (2001), The Impact of Regulatory Costs on Small Firms, U.S. Small Business Administration. Available online at **https://www.govinfo.gov/content/pkg/GOVPUB-SBA-PURL-LPS95322/pdf/GOVPUB-SBA-PURL-LPS95322.pdf**.

Crain, W. Mark and Nicole V. Crain (2010), The Impact of Regulatory Costs on Small Firms, Washington, D.C.: Office of Advocacy, U.S. Small Business Administration. Available at **https://dair.nps.edu/handle/123456789/3664**.

Crain W. Mark and Nicole V. Crain (2014), The Cost of Federal Regulation to the U.S. Economy, Manufacturing and Small Business, National Association of Manufacturers, Washington, D.C. **https://www.nam.org/the-cost-of-federal-regulation/.**

Crews, Clyde Wayne Jr., annual editions, 1993 through 2022, Ten Thousand Commandments, Washington, D.C.: Competitive Enterprise Institute. Available online at **https://cei.org/studies/ten-thousand-commandments-2022/**.

Dean, Thomas J. (1994), "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.

Dean, Thomas J., et al. (2000), "Environmental Regulation as a Barrier to the Formation of Small Manufacturing Establishments: A Longitudinal Analysis," Journal of Environmental Economics and Management, Vol. 40, pp. 56–75.

Farrow, Scott and W. Kip Viscusi (2011), "Towards Principles and Standards for the Benefit-Cost Analysis of Safety," Journal of Benefit-Cost Analysis, Vol. 2, Issue 3, Article 5.

Gaston, Robert J. and Sidney L. Carroll (1984), State and Local Regulatory Restrictions as Fixed Cost Barriers to Small Business Enterprise, SBA-7167-AER-83, Applied Economics Group, Inc., Knoxville, TN.

Gayer, Ted and W. Kip Viscusi (2014), "Determining the Proper Scope of Climate Change Benefits," Washington, D.C.: GWU Center for Regulatory Studies.

Global Competitiveness Report, 2013–2014 (2013), Klaus Schwab, editor, Geneva: World Economic Forum.

Gwartney, James, Robert Lawson and Joshua Hall (2013), Economic Freedom of the World: 2013 Annual Report, Fraser Institute. Available online at **https://www.fraserinstitute.org/sites/default/files/economic-freedom-of-the-world-2013.pdf**.

Gwartney, James D., Randall G. Holcombe and Robert A. Lawson (2004), Economic Freedom, Institutional Quality, and Cross-Country Differences in Income and Growth, Cato Journal, Vol. 24, pp. 205–233.

Hahn, Robert W. (1996), "Regulatory Reform: What Do the Government's Numbers Tell Us?," pp. 208–253, in Robert W. Hahn (ed.), Risks, Costs, and Lives Saved: Getting Better Results from Regulation. New York: Oxford University Press and AEI Press.

Hahn, Robert W. and John A. Hird (1991), "The Costs and Benefits of Regulation: Review and Synthesis," Yale Journal of Regulation, Vol. 8, No. 1, pp. 233–278.

Hall, Joshua, and Robert Lawson (2013), Economic Freedom of the World: An Accounting of the Literature. Available at **onlinelibrary.wiley.com/doi/10.1111/coep.12010/abstract**.

Hall, Robert E. and Charles I. Jones (1999), "Why Do Some Countries Produce So Much More Output Per Worker Than Others?" Quarterly Journal of Economics, Vol. 114, pp. 83–116.

Harrington, Winston, Richard D. Morgenstern and Peter Nelson (2000), "On the Accuracy of Regulatory Costs Estimates," Journal of Policy Analysis and Management, Vol. 19, No. 2, pp. 297–322.

Hawley, Kip (2008), Testimony before the U.S. House of Representatives, Committee on Transportation and Infrastructure Subcommittee on Aviation, July 24, 2008.

Hazilla, Michael and Raymond J. Kopp (1990), "The Social Cost of Environmental Quality Regulations: A General Equilibrium Analysis," Journal of Political Economy, Vol. 98, No. 4, p. 858.

Hobijn, Bart (2002), "What Will Homeland Security Cost?", FRBNY Economic Policy Review.

Hopkins, Thomas D. (1992), Costs of Regulation: Filling the Gaps, Report prepared for the Regulatory Information Service Center, Washington, D.C., August 1992. Available at **www.thecre.com/pdf/COST%20OF%20REGULATION%20FILLING%20THE%20GAPS.pdf.**

Hopkins, Thomas D. (1995a), "A Survey of Regulatory Burdens," U.S. Small Business Administration, Report Number SBA-8029-OA-93. Available at **https://ideasarchive.org/www/Survey%20of%20Regulatory%20Burdens,%20A%20-%201995%20-%20Thomas%20Hopkins.pdf**.

Hopkins, Thomas (1995b), 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. Also available online at **https://ideasarchive.org/www/Profiles%20of%20Regulatory%20Costs%20-%201995%20-%20Thomas%20Hopkins.pdf**.

International Institute for Management Development, World Competitiveness Center. Database available at **https://www.imd.org/centers/wcc/world-competitiveness-center/**.

IRS, Statistics of Income Division, **https://www.irs.gov/statistics/soi-tax-stats-statistics-of-income**.

Jack Faucett Associates (1984), 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.

Jaffe, Adam B., Steven R. Peterson, Paul R. Portney and Robert Stavins (1995), "Environmental Regulation and the Competitiveness of U.S. Manufacturing," Journal of Economic Literature, Vol. 33, No. 1, pp. 132–163.

Johnson, Joseph M. (2004), The Cost of Regulations Implementing the Clean Water Act, Arlington, VA: Mercatus Center Regulatory Studies Program Working Paper.

Johnson, Joseph M. (2005), "A Review and Synthesis of the Cost of Workplace Regulations," pp. 433–467, in Cross-Border Human Resources, Labor and Employment Issues, Andrew P. Morriss and Samuel Estreicher (eds.). Netherlands: Kluwer Law International.

Koske, I., I. Wanner, R. Bitetti and O. Barbiero (2014), "The 2013 Update of the OECD Product Market Regulation Indicators: Policy Insights for OECD and Non-OECD Countries," OECD Economics Department Working Papers, forthcoming.

Laband, David and John P. Sophocleus (1988), "The Social Cost of Rent-Seeking: First Estimates," Public Choice, Vol. 58, pp. 269–275.

Loayza, Norman V., Ana María Oviedo and Luis Servén (2004), "Regulation and Macroeconomic Performance," September, World Bank. Available at **www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2005/02/07/000090341_20050207082757/Rendered/PDF/wps3469.pdf.**

Lopez, Rigoberto A. and Emilio Pagoulatos (1994), "Rent Seeking and the Welfare Cost of Trade Barriers." Public Choice, Vol. 79, No. 1/2 (1994), pp. 149–160.

Mitchell, Mathew (2012), "The Pathology of Privilege: Economic Consequences of Government Favoritism," Arlington, VA: Mercatus Center at George Mason University.

Murphy, Kevin M., Andrei Shleifer and Robert W. Vishny (1991), "The Allocation of Talent: Implications for Growth," The Quarterly Journal of Economics, Vol. 106, No. 2 (May 1991), pp. 503–530.

Nicoletti, G. and S. Scarpetta (2005), "Product Market Reforms and Employment in OECD Countries," OECD Economics Department Working Papers, No. 472, OECD Publishing, Paris.

Organisation for Economic Co-operation and Development (2013), Product Market Regulation Database, **https://stats.oecd.org/index.aspx?DataSetCode=PMR#:~:text=The%20OECD%20Indicators%20of%20Product,market%20where%20competition%20is%20viable**.

Pande, Rohini, Deanna Ford, Nick Ryan and Anant Sudarshan (2012), "Industrial Pollution, Regulation and Growth: Governance Challenges and Innovations," The 2012 San Servolo Workshop on Grand Challenges of Sustainability. Sustainability Science Program Working Paper No. 2012–02. Cambridge, MA: Sustainability Science Program, Harvard University. Available at **https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=0e38d716365533c09d6f7d6065334bbb0e0360fa**

Rode, Martin, Bodo Knoll and Hans Pitlik (2013), in James Gwartney, Robert Lawson and Joshua Hall, Economic Freedom of the World: 2013 Annual Report, Fraser Institute. Available at **https://www.fraserinstitute.org/sites/default/files/economic-freedom-of-the-world-2013.pdf**

Sala-i-Martín, X., G. Doppelhoffer and R. Miller (2004), "Cross-Sectional Growth Regressions: Robustness and Bayesian Model Averaging." American Economic Review, Vol. 94, No. 4, September.

Schiantarelli, Fabio (2008), "Product Market Regulation and Macroeconomic Performance: A Review of Cross-Country Evidence," Boston College. Available at **fmwww.bc.edu/ec-p/wp623.pdf**.

Staley, Samuel R., Howard Husock, David J. Bobb, Sterling Burnett, Laura Crasy and Wade Hudson (2001), Giving a Leg Up to Bootstrap Entrepreneurship: Expanding Economic Opportunity in America's Urban Centers, Los Angeles, California: Reason Public Policy Institute.

U.S. Environmental Protection Agency (2013), Fiscal Year 2013 EPA Enforcement and Compliance Annual Results, prepared by the Office of Enforcement and Compliance Assurance.

U.S. General Accounting Office, (1995), "Briefing Report to the Ranking Minority Member, Committee on Governmental Affairs, U.S. Senate, Regulatory Reform: Information on Costs, Cost Effectiveness, and Mandated Deadlines for Regulations" (GAO/PEMD 95 18BR). Available at **archive.gao.gov/t2pbat1/153774.pdf.**

U.S. International Trade Commission (2013), The Economic Effects of Significant U.S. Import Restraints, Eighth Update, Investigation No. 332-325, Publication 4440.

Xing, Yuqing and Charles D. Kolstad (2002), "Do Lax Environmental Regulations Attract Foreign Investment?" Environment and Resource Economics, Vol. 21, pp. 1–22.

Appendix A. Estimating In-House FTE Costs

Cost data reported by respondents were applied to the FTEs in each occupation category and then extrapolated to each manufacturing firm size and summed.

Table A-1. Cost Data Combined with Snapshot of American Business Data

Small Firms	**140,476,791,794**
#Firms	210,019
$/Firm	668,877
#Employees	1,930,554
Cost/Employee	72,765
Medium Firms	**8,876,442,528**
#Firms	13,123
$/Firm	676,403
#Employees	872,741
Cost/Employee	10,171
Large	**199,640,650,405**
#Firms	16,465
$/Firm	12,125,153
#Employees	9,196,527
Cost/Employee	21,708
TOTAL	**348,993,884,727**
Cost/Employee	29,083
Total # Firms	239,607
$/Firm	1,456,526

Appendix B. Open-Ended Question on Federal Rules and Regulation

In summer 2023, NAM members were surveyed (discussed in Section II, Survey of Manufacturers) for the purpose of evaluating the effect of regulations on manufacturing in the United States. In one open-ended question, respondents were asked to list any comments they wished to make on federal rules and regulations and how they affect their business operations. A sample of responses are provided below:

- "The more compliance and restrictions placed on running a business the higher the end user's cost becomes."
- "The problem is that both state and federal regulations apply (as well as international)."
- "There is a lot of duplication."
- "There has to be a justified reason around the regulation and the effect of that regulation in terms of cost and effort in order for it to be universally applied via law and regulation."
- "They are pervasive and overwhelming."
- "They drag the business down, and we'll probably be forced to sell eventually."
- "The lack of action on PFAS additives has resulted in significant product development costs to comply with state regulations."
- "They take away profits that could be used for employee benefits."
- "Too many and overly complicated."
- "Too many fees that are 'cross-related' and could be consolidated into one agency and/or person. I feel we are being 'nickeled and dimed' with more fees for every little thing."
- "USDA unequal enforcement forced us out of one line of our business; 8–9% of all sales, gone."
- "We are subject to the DFARS, and the idiosyncratic interpretation and implementation by government employees (DCMA, MDA) result in significant non-value-added costs to the government and in turn each U.S. taxpayer."
- "There are no real direct implications of regulations that have a significant impact on our business."
- "Reduce requirements to reduce costs so we can compete in the global market."
- "Regulation is costing more and more each year, and fewer people are able to afford/purchase and enjoy our products than otherwise would be the case. Also, we are not able to invest in our future to the level we would otherwise be able to invest. We are not able to hire as many people as we otherwise would like to hire."
- "Regulations are excessive."
- "Regulatory uncertainty in the U.S. market can inhibit or discourage domestic development and deployment of technologies. Companies rely on legislative and regulatory certainty to achieve steady progress toward sustainable objectives. Policies must be in place for the U.S. to continue leading in the race to develop and manufacture these innovations domestically or our nation's manufacturing and employment bases will ultimately suffer."
- "I have been running companies for over 40 years. The amount of federal regulation from then to now is overwhelming. If I was starting out now, I wouldn't."
- "A constitutional amendment is needed to require that all regulations that business is required to follow also must be followed by the federal government and anyone involved in same."

Investment

Respondents identified how funds would be reallocated if regulatory compliance costs decreased, and by far the most often mentioned reallocation was to capital investment and expenditures. Other areas include growth, R&D and other investment.

Capital Investment/Expenditures; Growth and Acquisition

- "Invest in capital equipment/facilities to expand U.S.-based manufacturing."
- "Increase investment in drilling and re-completion activity."
- "Capital investments."
- "Capital improvements."
- "Updates for the facility."

R&D and Other Investment

- "New technologies."
- "This funding would be utilized to develop innovative features for our consumers as well as accelerating advanced technology development in support of breakthrough technologies in key consumer areas."
- "Investment in growth initiatives, R&D and innovation."
- "All to grow business and personal development."

Employee Initiatives

Respondents identified three areas related to employment that likely would increase if regulatory compliance costs decreased: creating jobs, employee training and wages and/or benefits.

- "Employee benefits."
- "Increase salary or wages."
- "Hire more people."
- "Additional compensation to employees via profit-sharing bonuses."
- "Educate my workers."

Sales

Respondents identified three areas related to sales that likely would increase if there were a reduction in regulatory compliance costs: marketing and sales efforts, expansion and competitiveness and customer satisfaction. Examples include the following:

- "Sales and marketing expansion."
- "Expansion into new regions of the U.S."
- "We would most likely reduce the cost to the end customer and redeploy some of the spending toward product innovation."

Return on Investment

A few respondents explicitly identified areas related to return on investment that likely would be affected if regulatory compliance costs decreased:

- "Would likely go to bottom-line profit."
- "Savings would go into reducing costs."

Comments on Federal Regulation and Business Operations

Respondents were asked whether they had any additional comments on federal government regulation. Several themes came through from the comments submitted. In general, respondents expressed concerns over the complexity and administrative requirements of regulation and its effect on global competitiveness, and they highlighted specific agencies and commissions that created challenges for them. Respondents also noted that proposed regulatory initiatives may impose onerous requirements and reduce the competitiveness of manufacturers in the United States. The reported effects of regulations are reducing payroll, discouraging growth and adding to consumer costs.

Respondents' Comments

This section includes selected comments from respondents to provide an understanding of their perspective on regulation. Several respondents were concerned about the effect of regulation on competition and growth. One commenter stated the following:

"[Large] companies can afford to hire many employees and advisors to achieve compliance and can spread that cost over significantly more units of product. For the small and mid-sized companies in our industry, like us, the complexity and cost is becoming difficult to manage and stay competitive in pricing, and that just continues to lead to increased consolidation and the biggest companies becoming bigger. For new players who might want to join the industry, the barrier to entry is nearly impossible."

Several respondents specifically identified rules of concern promulgated by specific agencies and commissions. These include the Environmental Protection Agency, the Food and Drug Administration, the Occupational Safety and Health Administration and the Nuclear Regulatory Commission. For example, one respondent wrote the following:

> "NRC regulations are the biggest burden in nuclear medicine; increasing requirements will make it more difficult/less likely that patients in the U.S. will get affordable treatment or this specific treatment at all."

Another respondent noted the following:

> "The EPA has limited our production rate unless we put in a $2,000,000 scrubber which we are not able to afford. The MACT rule that we must comply with is arbitrary."

A number of respondents made comments reflecting a commitment to responsible corporate behavior and had specific recommendations regarding new regulations. One commenter stated the following:

"[Company name] Corporation is in favor of continuing to collaborate with key agencies as we have in the past to ensure the industry continues to move forward with respect to water and energy-efficiency improvements in our products, building on the success of the efforts of the last 30 years. However, given the significant progress we have already made across the industry, future regulations should not compromise consumer performance, limit consumer choice or drive significant cost increases at the expense of low-income consumers, especially

if there is no payback in the form of lower water or energy bills. There also needs to be a reasonable timeframe for implementation of the standards, and the standards need to be phased in across the product categories to minimize the impact on the full value change."

Respondents expressed concern regarding the negative effects of regulatory uncertainty on business operations and planning. Scope 3 Greenhouse Gas Emissions regulations that may be promulgated by the U.S. Securities and Exchange Commission were mentioned by respondents. In short, potential overlap in Scope 3 requirements and cost were discussed. For example:

> "Proposed greenhouse gas emission rules impose a significant burden on corporations that have enormous compliance obligations already, including other important environmental reporting requirements. The GHG initiatives are coming at manufacturers from all sides—federal, state and foreign—and they presuppose a consensus that industry must be 'brought in line' and bear all costs. If there are going to be federal rules in this area, they need to be administratively vetted and they need to preempt the patchwork of state requirements so that business can comply with one reasonable set of requirements."

Finally, some respondents advocated for cost/benefit analysis of regulations and stated that a streamlined, faster regulatory process would be an improvement.

Appendix C. Estimating the Cost of Economic Regulations

The cost of economic regulations is measured in terms of the impact on U.S. GDP in 2022; that is, the market value of final goods and services produced in the United States in that year. To accomplish this, we estimate the relationship between GDP and the IMD Regulatory Index produced by the International Institute for Management Development's World Competitiveness Center (at **https://www.imd.org/centers/wcc/world-competitiveness-center/**). The IMD Regulatory Index metric measures the oxtent to which "the legal and regulatory framework encourages the competitiveness of enterprises" in each economy.

Sample of Countries Used in the Estimation and Summary Statistics

Table C-1 lists the 36 countries used to estimate the parameters in Equation (1).

Table C-1. Countries Included in the Data Sample to Estimate the Impact of Economic Regulations

(N=36)

Australia	Austria	Belgium	Canada
Chile	Colombia	Czech Republic	Denmark
Estonia	Finland	France	Germany
Greece	Hungary	Iceland	Ireland
Israel	Italy	Japan	Korea
Latvia	Luxembourg	Mexico	Netherlands
New Zealand	Norway	Poland	Portugal
Slovak Republic	Slovenia	Spain	Sweden
Switzerland	Turkey	United Kingdom	United States

The following table provides summary statistics for the variables used in the analysis.

Table C-2. Summary Statistics for Variables Used to Estimate the Impact of Economic Regulations

Variable	Mean	Standard Deviation	Minimum	Maximum
GDP per Capita (in U.S. $)	$34,831	$21,542	$3,953	$112,417
IMD Regulatory Index	5.10	1.54	1.81	8.53
Trade/GDP (x100)	77.2	58.9	10.2	352.8
Dependency Ratio (x100)	50.6	5.7	36.2	69.0
Service Sector Share (x100)	69.2	8.3	42.1	83.8
Capital Investment/GDP	5.5	9.7	.001	108
Labor Force (Millions)	16.0	25.2	0.14	157.5

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