

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

A Report for the National Association of Manufacturers

By W. Mark Crain and Nicole V. Crain

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

A Report for the National Association of Manufacturers

By W. Mark Crain and Nicole V. Crain

Released September 10, 2014

Table of Contents

I. Purpose and Highlights	1
II. Survey of Manufacturers	7
III. Estimating the Total Cost of Regulations	27
IV. Incidence of Regulatory Costs.....	41
V. Summary Comments.....	54
References	57
Appendix A. Estimating In-House FTE Costs	62
Appendix B. Alternative Use of Funds Presently Allocated to Regulatory Compliance	65
Appendix C. Estimating the Cost of Economic Regulation.....	68
Appendix D. Regulatory Costs by Firm Size Using Alternative Firm-Size Categories.....	72

I. Purpose and Highlights

This study estimates the costs of U.S. federal government regulations as of 2012. The paltry amount of public information on regulatory costs may astonish entrepreneurs and job creators who navigate a complex web of regulations on a daily basis—including uncertainty about what the rules are and how they might change from one year to the next. 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. The goal is to provide an estimate of the total cost of federal regulations analogous to the taxes raised to finance the federal budget.

Some Key Findings: The Cost of Federal Regulation

U.S. federal government regulations cost an estimated \$2.028 trillion in 2012 (in 2014 dollars), an amount equal to 12 percent of GDP. Regulatory costs are distributed across major business types and among firms of different sizes; the findings of this report 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 just less than \$10,000 per employee per year in 2012 (in 2014 dollars). Small firms with fewer than 50 employees incur regulatory costs (\$11,724 per employee per year) that are 17 percent greater than the average firm. The cost per employee is \$10,664 for medium-sized firms and \$9,083 for large firms. These estimates are consistent with prior studies completed during the past 25 years,¹ which have shown that the cost of regulatory compliance disproportionately affects small firms.

¹ 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) and Crain and Crain (2010).

**Table 1. Regulatory Costs in Small, Medium-Sized and Large Firms, 2012*
(Cost per Employee per Year in 2014 Dollars)**

Type of Regulation	Cost per Employee for All Business Types			
	All Firms	< 50 Employees	50–99 Employees	100+ Employees
All Federal Regulations	\$ 9,991	\$ 11,724	\$ 10,664	\$ 9,083
Economic	\$ 6,381	\$ 5,662	\$ 7,464	\$ 6,728
Environmental	\$ 1,889	\$ 3,574	\$ 1,338	\$ 1,014
Tax Compliance	\$ 960	\$ 1,518	\$ 1,053	\$ 694
OSHHS**	\$ 761	\$ 970	\$ 809	\$ 647

Notes to Table 1:

* 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.

**Table 2. Regulatory Costs in the Manufacturing Sector by Firm Size, 2012*
(Cost per Employee per Year in 2014 Dollars)**

Type of Regulation	Cost per Employee for Manufacturing			
	All Firms	< 50 Employees	50–99 Employees	100+ Employees
All Federal Regulations	\$ 19,564	\$ 34,671	\$ 18,243	\$ 13,750
Economic	\$ 7,958	\$ 12,885	\$ 9,399	\$ 6,544
Environmental	\$ 10,497	\$ 20,361	\$ 7,625	\$ 6,239
Tax Compliance	\$ 295	\$ 378	\$ 346	\$ 269
OSHHS**	\$ 813	\$ 1,048	\$ 873	\$ 698

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.

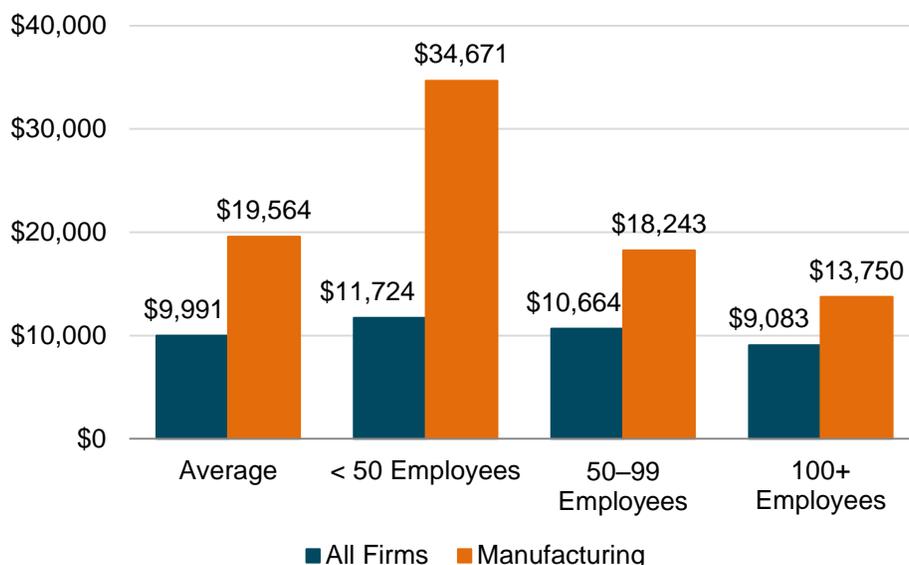
- Columns might not total due to rounding.

Table 2 summarizes the costs of federal regulations for the manufacturing sector. The regulatory cost disadvantage facing small firms is greatly amplified in the manufacturing sector, with small manufacturing firms bearing more than two-and-a-half times (152 percent) the cost per employee of large manufacturing firms. Overall, small manufacturers incur regulatory costs that are more than three times (247 percent) the cost borne by the average U.S. company. Medium-sized manufacturers in the United States face regulatory costs that are 33 percent greater than large manufacturers and 83 percent greater than the average U.S. firm.

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 \$19,564 per employee in 2012, roughly double the cost on businesses economy-wide. Small manufacturing firms incurred an average cost of almost \$35,000 per employee—about three times the cost incurred by small businesses economy-wide.

Chart 1. Regulatory Cost per Employee, 2012 (in 2014 Dollars)



The underlying force driving this differential cost burden is easy to understand. Some of the costs associated with regulatory compliance are fixed costs, so a firm with 20 employees incurs roughly the same expense as a firm with 500 employees. Large firms spread these fixed costs over larger revenues, or output, and 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 comparative cost advantage to large firms over small firms.²

Comparison to Prior Studies of the Aggregate Cost of Federal Regulation

Since 1997, the U.S. Office of Management and Budget (OMB) has authored the *Report to Congress on the Benefits and Costs of Federal Regulations and Unfunded Mandates on*

² 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).

State, Local and Tribal Entities (Report to Congress). The May 2014 *Draft Report to Congress* notes that during fiscal years (FY) 2004 to 2013, agencies published 37,022 rules, including 569 major rules,³ which include regulations that have an anticipated annual economic impact of at least \$100 million. The 2014 *Draft Report to Congress* includes cost estimates for only 116 of these rules, or 0.3 percent of the regulations published during the 10-year period.⁴

In its report, OMB only includes information on major, significant or economically significant rules, which make up a small fraction of the total number of rules in the pipeline or finalized. The number of regulations with cost-benefit analysis represents an even smaller proportion of total regulations. OMB estimates the total costs of the 116 rules to range between \$68.5 billion and \$101.8 billion in 2010 dollars, or \$74 billion to \$110 billion when converted to 2014 dollars.

In summary, the constraints under which OMB operates yield cost estimates for only a small proportion of regulations. For this subset of regulations, the highest estimate of regulatory costs is less than 1 percent of GDP. As OMB notes in the *Draft Report to Congress*:

[B]ecause these estimates exclude non-major rules and rules adopted more than ten years ago, the total benefits and costs of all federal rules now in effect are likely to be significantly larger than the sum of the benefits and costs reported More research would be necessary to produce comprehensive current estimates of total benefits and costs for all agencies and programs, though some agencies have developed valuable comprehensive assessments of the benefits and costs of their programs.⁵

³ The Congressional Review Act (5 U.S.C. § 804(2)) defines a “major rule” as any rule that would have an annual effect on the economy of \$100 million or more; result in a major increase in costs or prices for consumers, individual industries, federal, state or local government agencies, or geographic regions; or would result in significant adverse effects on competition, employment, investment, productivity, innovation or on the ability of U.S.-based enterprises to compete with foreign-based enterprises in domestic and export markets. The term does not include any rule promulgated under the Telecommunications Act of 1996 and the amendments made by that Act.

⁴ OMB openly describes the limited scope of its 2014 *Draft Report to Congress*, stating (p. 8): “From fiscal year 2004 (FY 2004) through FY 2013, federal agencies published 37,022 final rules in the *Federal Register*. OMB reviewed 3,040 of these final rules under Executive Orders 12866 and 13563. Of these OMB-reviewed rules, 569 are considered major rules, primarily as a result of their anticipated impact on the economy (i.e., an impact of \$100 million in at least one year). . . . The estimates are therefore not a complete accounting of all the benefits and costs of all regulations issued by the federal government during this period.” The 116 regulations included in the OMB’s report is thus a fraction of the 37,022 published over this 10-year period.

⁵ 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*, p. 18.

This study seeks to update previous estimates of the comprehensive cost of federal regulation. Since 1992, the U.S. Small Business Administration's (SBA) Office of Advocacy has commissioned four studies to examine the impact of federal regulations on small firms.⁶ As part of the analysis required to estimate this impact, total regulatory costs were estimated. The most recent study issued in 2010 estimated the total costs at \$1.91 trillion in 2008 (in 2014 dollars).⁷ In this updated study, the estimate for 2012 is 6 percent higher than the SBA-commissioned study figure for 2008, adjusted for inflation. To put this 6 percent increase in perspective, we note that the OMB estimate of the costs of regulations in FY 2012 increased 27 percent from its FY 2008 estimate for the regulations on which it reports.⁸

OMB emphasizes that deriving a cost estimate for regulations presents a host of challenges, stating in its 2014 *Draft Report to Congress*: "While the estimates in this report provide valuable information about the effects of regulations, they should not be taken to be either precise or complete."⁹ Such a caveat obviously applies to this study as well.

In part, the sheer volume and complexity of federal regulations and the rate at which they proliferate makes 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

⁶ The SBA commissioned four studies to examine the distribution of 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-sized and large firms and across major business sectors. Direct comparisons between this estimate for 2012 and other studies must be cautiously made because new estimation methodologies introduced in this study were not possible previously, and the data sources vary over time.

⁷ Crain and Crain (2010). The 2010 study estimated total regulatory costs to be \$1.75 trillion in 2008 (denominated in 2009 dollars). This number has been converted to 2014 dollars for comparative purposes.

⁸ Derived from the OMB 2009 *Report to Congress*, p. 2, and the OMB 2013 *Report to Congress*, pp. 2–3.

⁹ 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*, p. 3.

government agencies and private researchers to generate a comprehensive estimate of regulatory costs.

The measurement challenges lead us to adopt techniques in this study that facilitate reasonable approximations of regulatory costs that have been omitted in estimates by OMB and other studies. We rely on OMB-provided estimates for regulations when possible. 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 economic regulations. The results from an extensive new survey of manufacturing firms' regulatory compliance activities supplement and complement these estimating approaches.

As a final introductory perspective, we stress that the study is unconcerned about a benefit-cost calculus for any specific regulation or 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 report 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.

II. Survey of Manufacturers

A survey of National Association of Manufacturers (NAM) members was conducted between March 24, 2014, and April 7, 2014, with the purpose of evaluating the effect of regulations on manufacturing in the United States. According to the Census Bureau, manufacturing accounts for 11 percent of all U.S. industry payroll expenses (see Table 8c).

Cost estimates calculated from survey data only include 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 cost of federal regulation was reduced, funds presently allocated toward compliance would become expenditures for employee compensation and hiring, capital, research and development (R&D), sales and marketing, enhancing price competitiveness, debt reduction or improving return on investment (ROI). The motivation for reallocation to these areas is 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 delaying employment and investment decisions, moving operations off-shore and stifling growth opportunities to avoid regulations that apply to larger firm sizes.

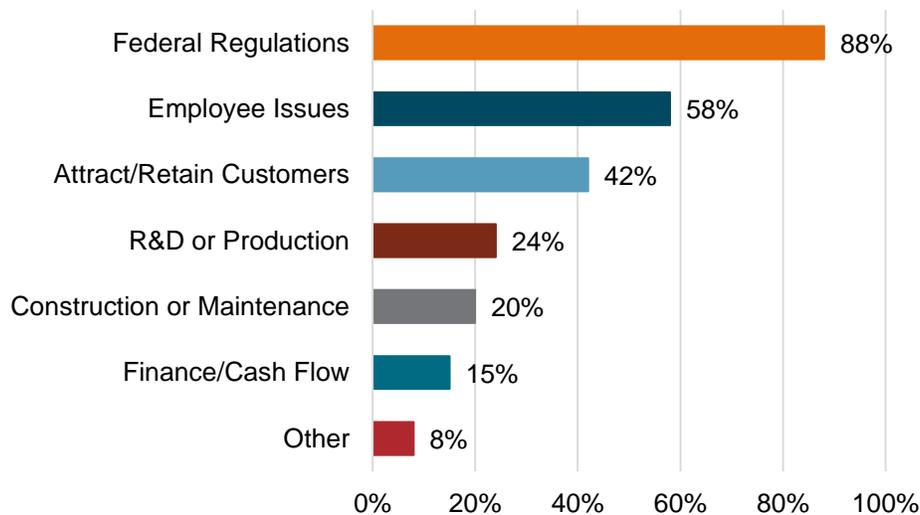
The OMB 2014 *Draft Report to Congress* discusses the consequences of regulation on the labor market. Regulations may cause businesses to shut down or stifle their plans for growth, although other sectors of the economy may benefit. In the long run, the employment effect of a single regulation may not 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 disproportionately harm less educated and younger workers who, for example, experienced a higher rate of unemployment (than the national average) during the

past recession.¹⁰ The cumulative cost of regulations over time may include sectoral distortions in employment and reducing innovation and competitiveness for the regulated firms.

Business Challenges

Respondents were asked to identify the challenges affecting their businesses and could choose more than one. Chart 2 shows the results of this question. Nearly 90 percent of respondents identified federal government regulations as a challenge that affected their business in the prior year or that their business will face in the future. Attracting and retaining productive employees (58 percent) and attracting and retaining customers (42 percent) were a distant second and third challenge. Only 15 percent of respondents selected access to finance and cash flow generation. Challenges in the “other” category included federal and state taxes, state and local regulations, health care costs, lawsuit management, competition and the state of the economy.

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



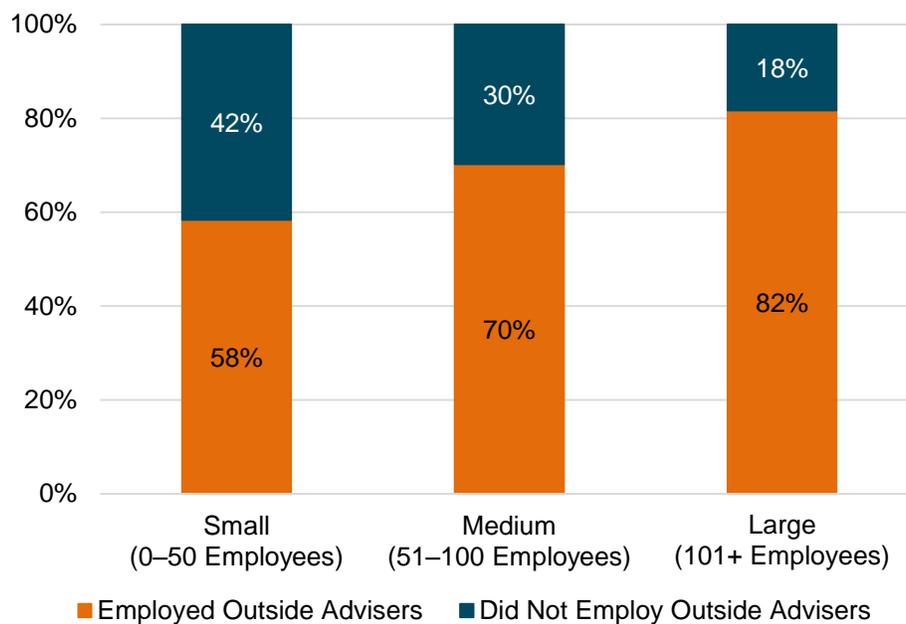
¹⁰ OMB, Office of Information and Regulatory Affairs (2014), *2014 Draft Report to Congress on the Benefits and Costs of Federal Regulations and Unfunded Mandates on State, Local and Tribal Entities*, pp. 40–43. The literature suggests that there can be some negative labor market outcomes, including implications for wages and employment, particularly in the short run.

Federal Government Requirements

Use of Outside Advisers

Respondents were asked whether they hired outside advisers to assist their business with complying with federal regulations. A large majority of respondents (72 percent) 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 firms of any size are more likely than not to incur compliance-related costs for outside assistance.¹¹ Chart 3 shows the breakdown by firm size.

Chart 3. Survey Respondents: Firms That Employed Outside Advisers to Comply with Federal Regulations

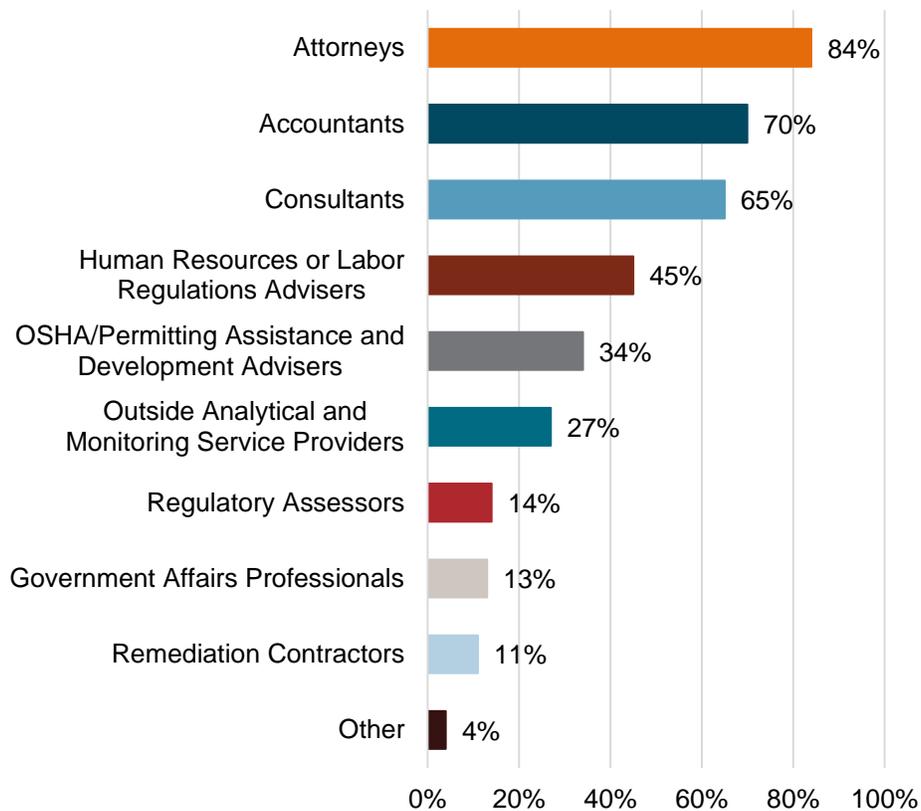


If a respondent indicated that his or her business employed an outside adviser, follow-up questions were asked to identify the type of outside expertise required and the cost of the

¹¹ Some firms did not seek outside assistance, and others sought outside assistance but did not report a cost. The average figures that follow represent those for firms that sought outside assistance. The actual spending reported was between zero dollars and \$25,000,000 (one firm).

assistance received. Chart 4 shows the types of outside assistance required by firms. The most frequently consulted advisers were attorneys (84 percent), accountants (70 percent), consultants (65 percent), human resources or labor regulations advisers (45 percent) and OSHA [the Occupational Safety and Health Administration]/permitting assistance and development advisers (34 percent).

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



For respondents who indicated that their organization used outside advisers in the 12 months preceding the survey, services cost on average \$43,641 for each small firm, \$80,681 for each medium-sized firm and \$447,245 for each large firm.

Using the data as the basis for estimating the cost for manufacturing in the United States as a whole indicates that outside assistance to fulfill federal government requirements cost \$12.1 billion during the 12 months preceding the survey.¹²

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 respondents 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. Respondents were asked to provide the cost associated with these actions.

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, 21 percent of respondents incurred a cost as the result of federal government compliance activity. The average cost for these firms was \$83,077.

Using these findings to estimate the cost to manufacturing in the United States as a whole indicates that federal government compliance activity imposed a total cost of approximately \$2.4 billion in the 12 months preceding the survey. This figure is likely a conservative estimate because it does not include the cost of Supplemental Environmentally Beneficial Projects (SEPs), which impose costs on participating firms. Relatively few survey respondents indicated that their firm negotiated and was approved to complete an SEP.¹³

¹² Extrapolating costs provided by survey respondents (n = 577) to the population of manufacturers in the United States provides estimates that are significant for a 95 percent confidence interval ($\alpha = 0.05$); the margin of error is +/- 5 percent. Responses came from all parts of the country, in a wide variety of manufacturing sectors and in varying size classifications, and, as such, they likely are fairly representative of the overall manufacturing population.

¹³ An ECHO search (echo.epa.gov) yielded about the same figure, although that search did not yield recent settlements.

Capital Equipment or Tangible Item Purchases and Emission Offsets

Respondents were asked whether their company purchased new capital equipment or other tangible items to comply with federal government data, reporting requirements, regulatory constraints or mandates. If a respondent answered affirmatively, he or she was asked the cost of the tangible item(s) purchased to comply with federal government requirements. The cost to firms whose respondents indicated that tangible items purchased in the 12 months preceding the survey averaged \$39,069 for small firms, \$75,528 for medium-sized firms and \$2,354,720 for large firms.

Thirty-eight percent of respondents indicated that their organization purchased new capital equipment or other tangible items to comply with federal government requirements. The majority of respondents representing large firms (58 percent) invested in tangible items to satisfy federal government requirements. Forty-four percent of medium-sized firms and 35 percent of small firms incurred these costs. Large firms were more likely to incur tangible costs, and their per-firm cost was higher than smaller firms.

Respondents also provided information on the cost of emission credit allowances or offsets in the 12 months preceding the survey. Only respondents from large firms reported incurring these costs. Relatively speaking, these costs were minor, although recent rulings may impose higher costs not included in the data.¹⁴ Relatively few respondents' firms purchased emission credit allowances or offsets; the median reported cost was \$24,217. There was no extrapolation to manufacturing as a whole for emission credit or offsets purchase data; only reported figures were included, so the figure may be low.

¹⁴ The data from this survey is for the 12-month period preceding the survey and does not include EPA rules issued after early April 2014, including rules concerning carbon dioxide emissions.

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

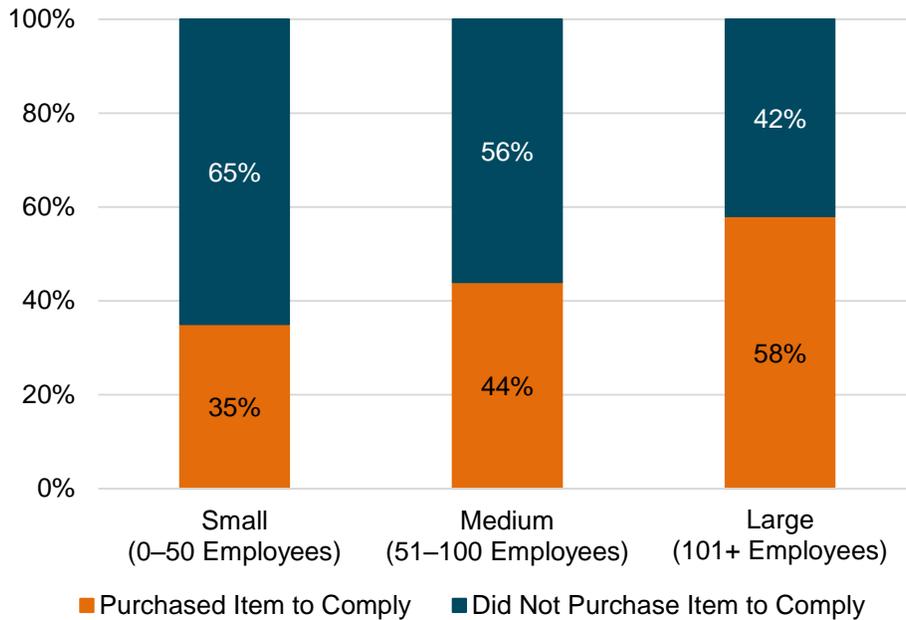
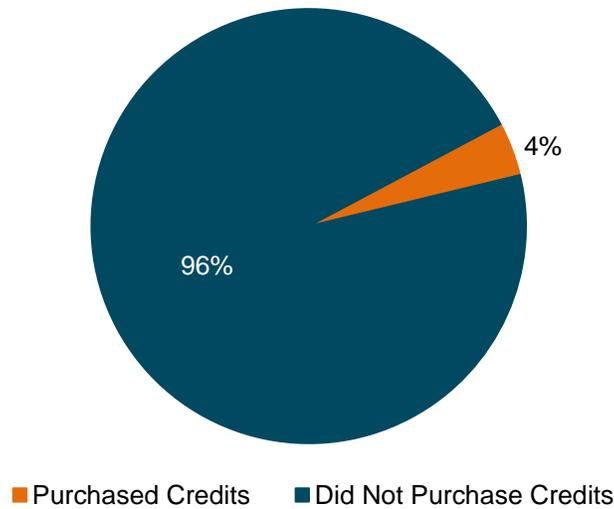


Chart 6. Survey Respondents: Firms That Purchased Emission Credit Allowances or Offsets During Preceding 12 Months



Using the data to estimate the cost to manufacturing as a whole indicates that purchases of capital equipment or other tangible items and emission credit allowances to comply with federal government data, reporting requirements, regulatory constraints or mandates required

expenditures of approximately \$18.6 billion by the manufacturing sector during the 12 months preceding the survey.

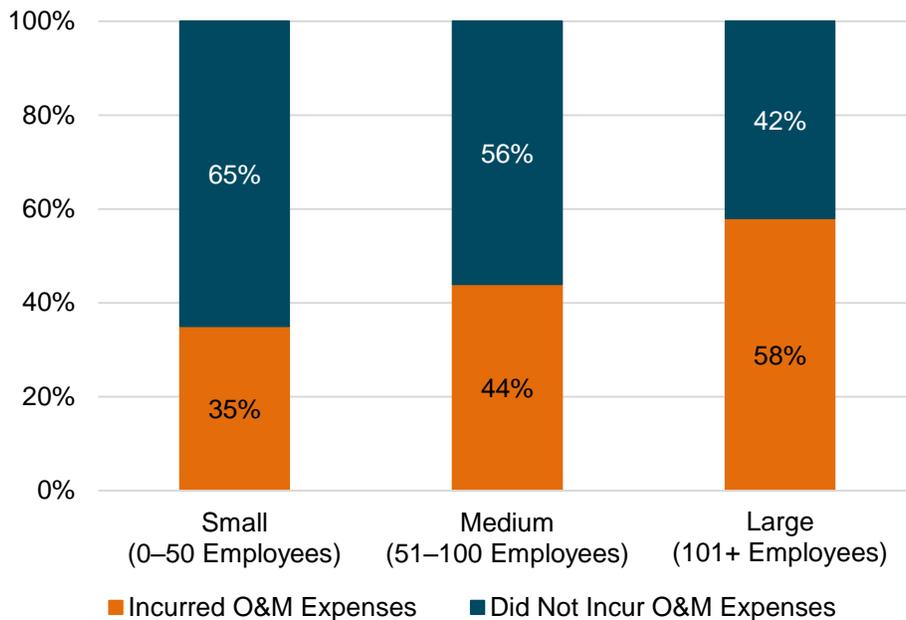
Operations and Maintenance for Capital Equipment or Other Tangible Items

Respondents were asked whether their company had operations and maintenance (O&M) 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, that respondent was asked to provide that cost. The survey revealed that roughly half (48 percent) of manufacturing firms incurred O&M expenses for tangible compliance-related purchases, at an average of \$17,306 for small firms, \$58,413 for medium-sized firms and \$1,023,251 for large firms during the 12 months prior.

O&M expenses for compliance-related purchases vary by firm size. While 48 percent of overall respondents reported having these expenditures, the percentage varies when separating responses by firm size. 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, and they are on average higher.

Using the data to estimate the cost to manufacturing as a whole indicates that O&M of capital equipment or other tangible items to comply with federal government requirements motivated expenditures of approximately \$10.7 billion by the manufacturing sector during the 12 months preceding the survey.

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



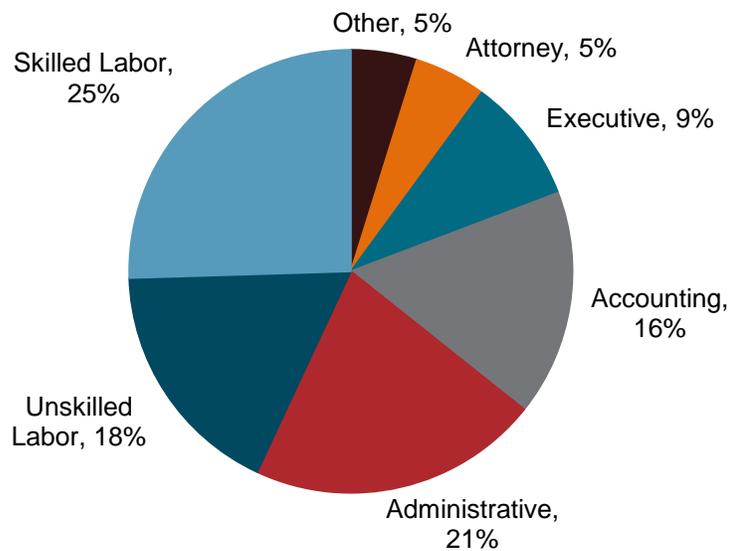
Full-Time Equivalents Devoted to Regulatory Compliance

Respondents were asked how many in-house full-time equivalents (FTEs) by occupation were devoted to federal regulatory compliance activities in their firm. On average, respondents estimated 10.2 FTEs. As Chart 8 shows, respondents indicated that skilled and unskilled labor combined made up 43 percent of the time spent on compliance activities, administrative staff made up 21 percent of the FTEs, and accounting followed at a distant third with 16 percent. Nine percent and 5 percent of the total compliance-allocated FTEs devoting time to regulatory compliance are executives and attorneys, respectively.

The cost of in-house FTEs devoted to compliance varies depending on the distribution of the occupations of the employees. The categories of FTEs, in descending order of cost, included attorneys, executives, administrative personnel, accounting, other, skilled labor and unskilled labor (see Appendix A for details and sources). The survey reveals that as a firm's size increases, the number of on-staff FTEs devoted to regulatory compliance activities expectedly increases as well. Average FTEs allocated to compliance as reported by respondents from

small firms was 2.5. Medium-sized and large firm FTEs were 4.3 and 17.0 FTEs, respectively. Firms with fewer employees have fewer FTEs devoted to compliance, and they have lower compliance-related total compensation costs. Small and medium-sized firms' employee benefit costs are typically lower than large firms' cost (see Appendix A), so it is likely that FTEs tasked with federal regulatory compliance activities cost less for small and medium-sized firms (relative to large firms) on a per-firm basis for the same category of employee type.

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

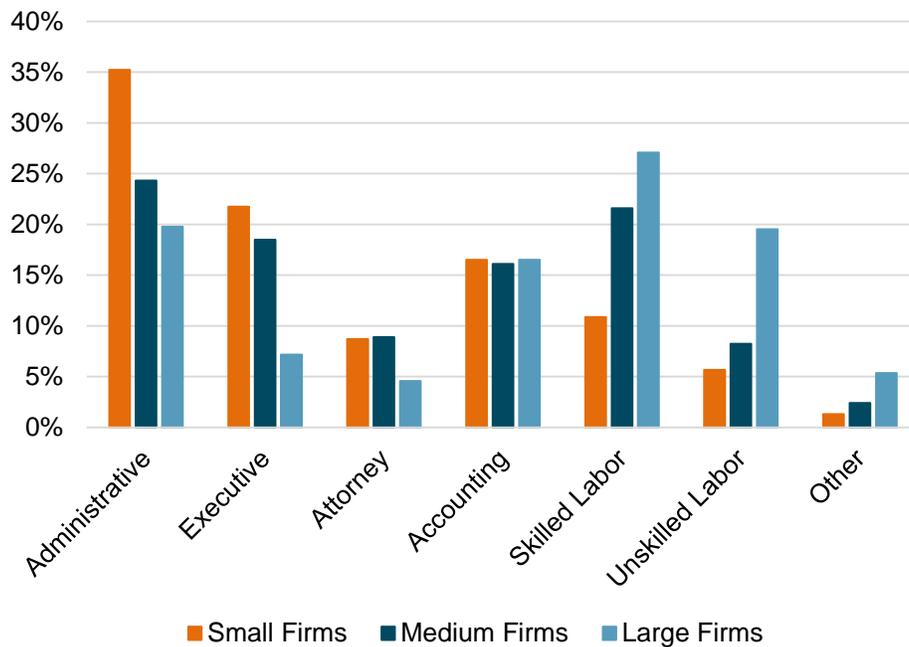


Note to Chart 8:

- Due to rounding, percentage totals sum to 99 percent.

Chart 9 shows the distribution of in-house employees devoted to regulatory compliance by firm size. Administration as a percentage of compliance FTEs is the greatest single category for firms of all sizes. However, small firms rely more heavily on in-house administrative personnel for compliance than medium-sized or large firms, at 35 percent, 24 percent and 20 percent, respectively. Large firms use fewer executives (7 percent) than small and medium-sized firms (22 percent and 18 percent), but more skilled labor (27 percent versus 11 percent for small firms and 22 percent for medium-sized firms). The percentage of in-house FTE accounting professionals remains about the same across firm sizes, in the 16 to 17 percent range.

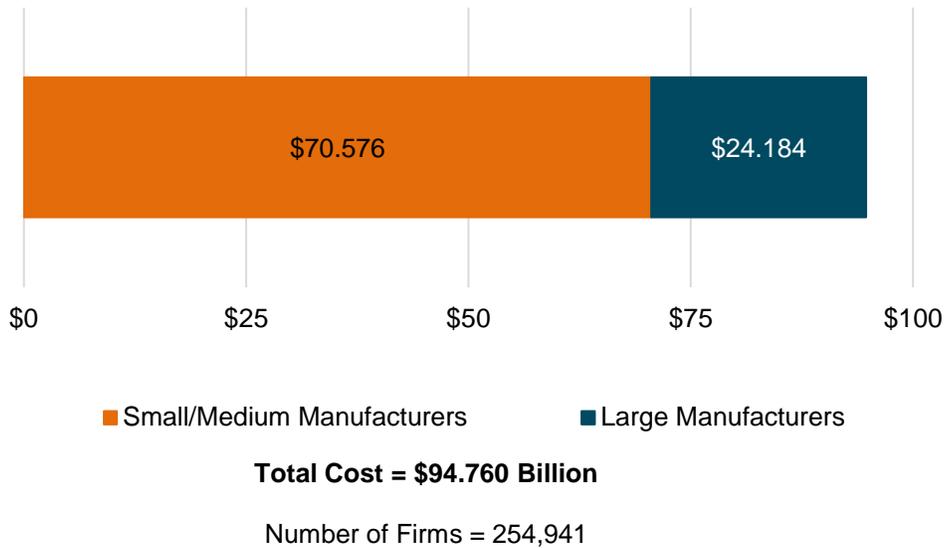
Chart 9. Survey Respondents: Compliance FTEs by Employee Category Across Firm Size



Estimated costs of FTEs devoted to federal regulatory compliance are the highest single cost estimate discussed in this section. To estimate the cost, responses regarding FTEs devoted to compliance were initially sorted by firm size. In each case, the cost 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 on how wage costs were adjusted to include benefits to arrive at average total compensation paid per firm by firm-size category.)

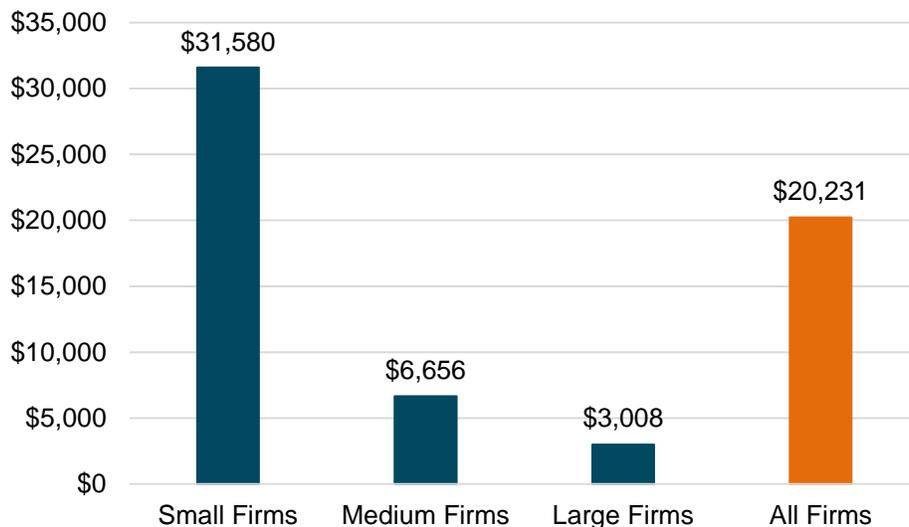
Using total compensation per firm by firm size and Census Bureau data for the number of firms by firm-size group, we estimated for small, medium-sized and large firms the total cost of FTEs devoted to federal regulatory compliance activities in the manufacturing sector. Finally, we added up the results from small, medium-sized 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 \$94.8 billion.

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



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 10 times that of large firms.

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



Total Direct Cost of Federal Government Regulations

Taking each of the previously discussed components for which we estimated regulation-related outlays from survey responses and aggregating them provides an overall estimate of much of the direct costs of regulations for the manufacturing sector. However, the component (or cost estimate by type of cost) information does not indicate the relative costs of different categories of federal regulations.

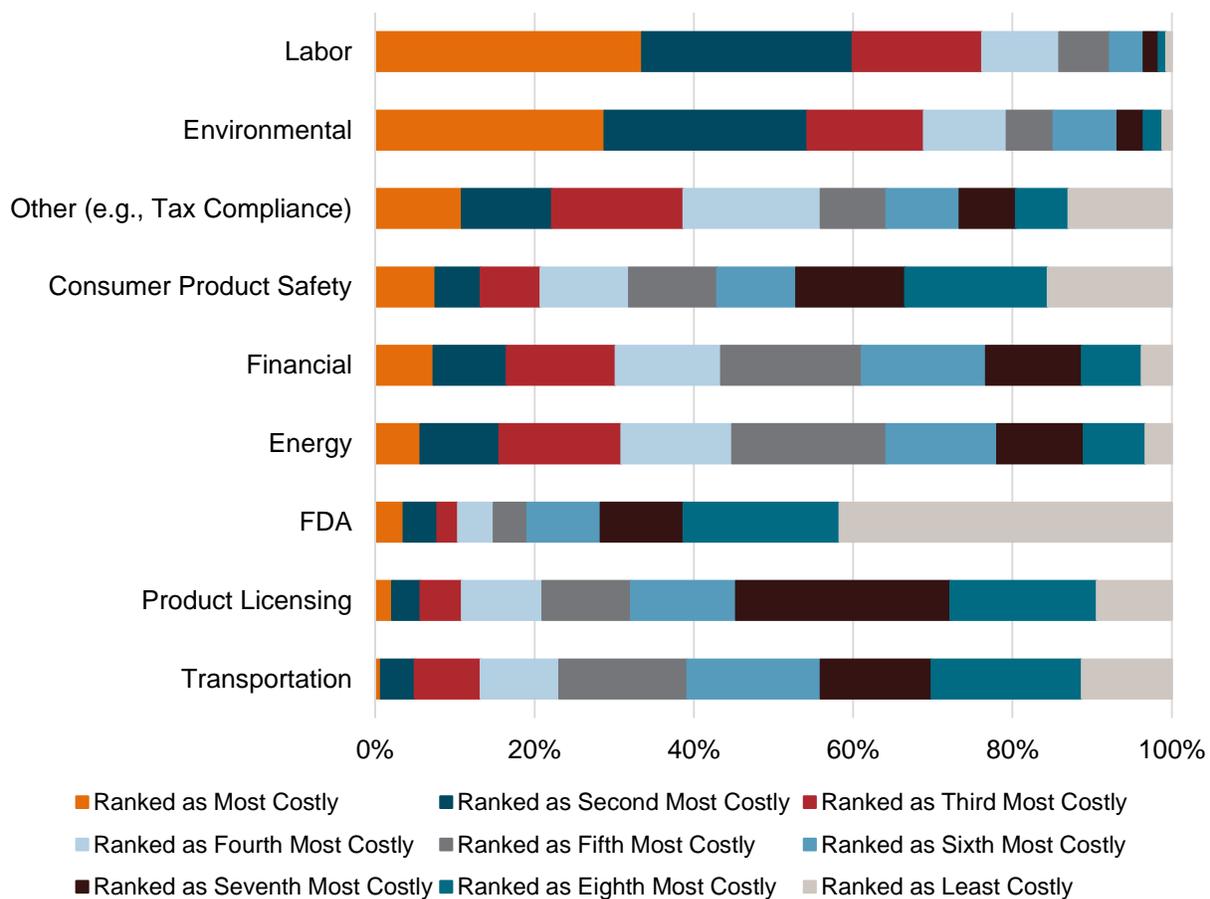
Chart 12 shows respondents' perspective on various types of regulations, based on their ranking of categories of federal government regulations in terms of costs of compliance. In their ranking, they were asked to consider staff time, the employment of outside advisers and changes to operating procedures or plans.¹⁵

Respondents ranked labor and environmental regulations as the highest cost regulations (labor at 33 percent and environmental at 29 percent). Furthermore, more than half of the respondents ranked labor regulations as either the most costly or the second most costly regulations, and the same is true for environmental regulations. Food and Drug Administration (FDA) regulations were most often ranked last, in ninth place, in terms of cost.¹⁶ Charts 13 and 14 show the breakdown of labor and environmental regulations selected by respondents by firm size.

¹⁵ There are nine categories: Labor, Environmental, Other (e.g., Tax Compliance), Consumer Product Safety, Financial, Energy, FDA, Product Licensing and Transportation. Each respondent ranked the categories from most costly to least costly. Each category (e.g., Labor) was ranked by each respondent, so each category sums to 100 percent. Also, since each respondent ranked all nine categories, each ranking (e.g., fifth most costly) sums to 100 percent.

¹⁶ OMB reports that the rules with the highest estimated cost, by far, come from the EPA. (2014 *Draft Report to Congress*, p. 13.) However, cost data are not available for the vast majority of regulations.

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



These two types of regulations, therefore, likely contribute the most to the total direct cost of regulation. They include hiring employees and consultants; purchasing and maintaining tangible items; and other compliance-related costs. As illustrated in Chart 15, the five categories included in the estimate are outside advisers, federal compliance/enforcement activity, capital equipment/tangible items and offsets, O&M of tangible items and FTEs devoted to compliance. Of these, the largest cost is the in-house FTEs devoted to compliance.

Chart 13. Survey Respondents: Labor Regulations—Ranking by Firm Size (1 = Most Costly; 9 = Least Costly)

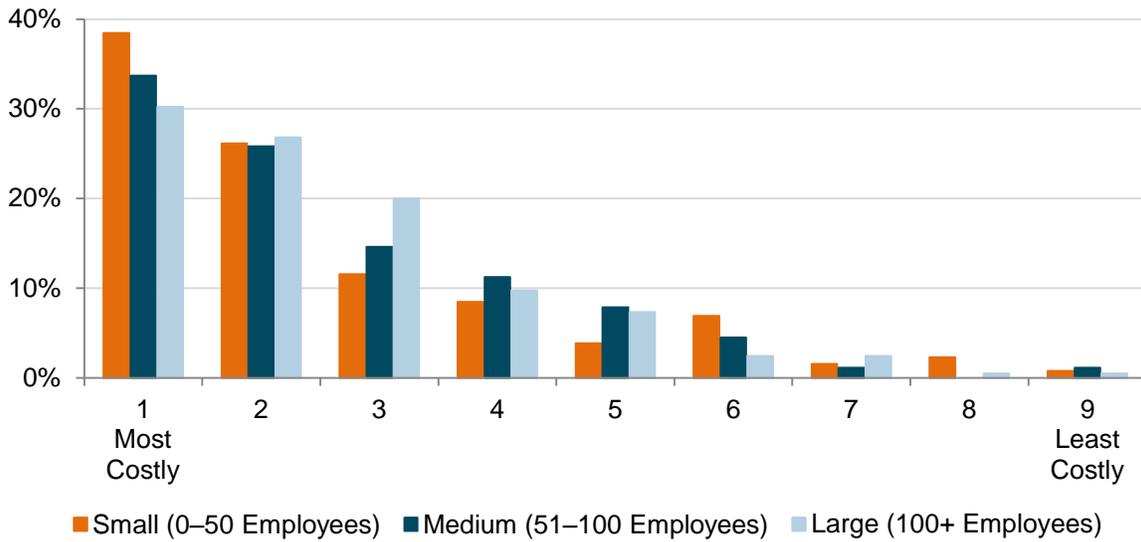
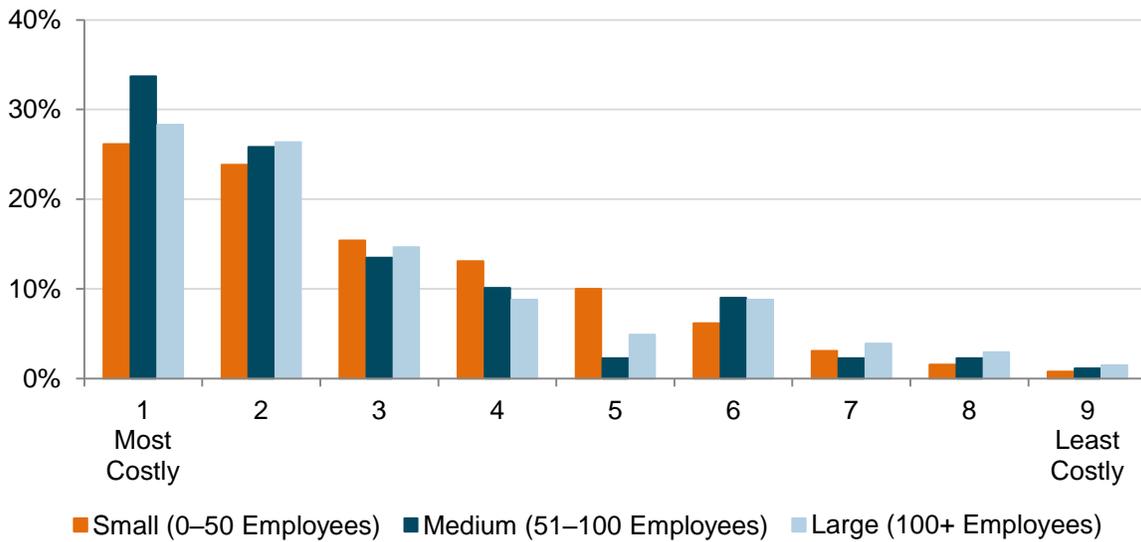
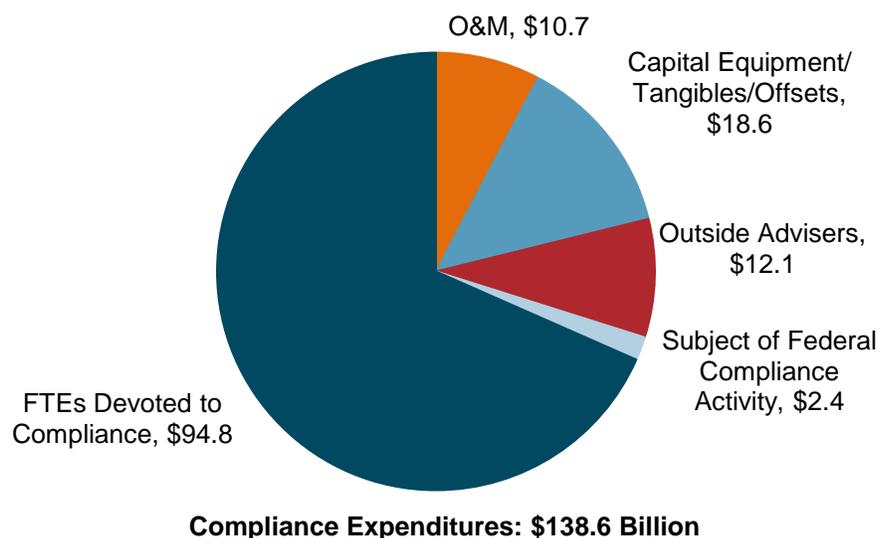


Chart 14. Survey Respondents: Environmental Regulations—Ranking by Firm Size (1 = Most Costly; 9 = Least Costly)



**Chart 15. Estimates of Direct Regulatory Costs on Manufacturers
(in Billions of 2014 Dollars)**



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 was \$138.6 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. These costs can be borne by firms and/or by society at large.

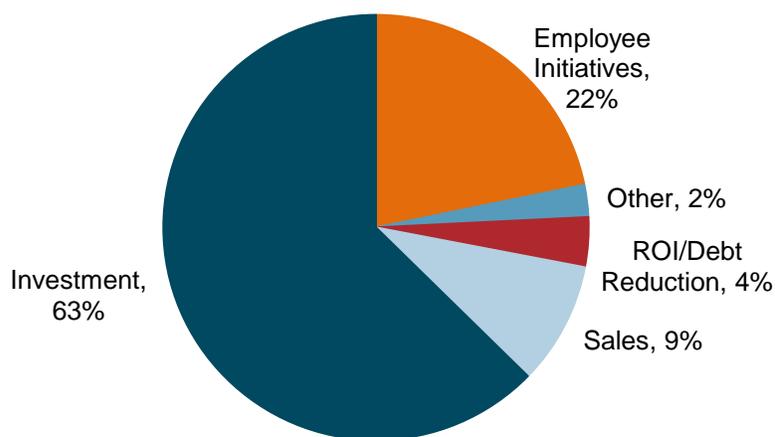
Additional regulatory costs may include supply chain disruptions, increasing unemployment, contracting or re-locating production and altering behavior. Respondents identified all of these in their open responses. They also reported, along with other emotionally charged comments, that regulators seem adversarial and impeded their abilities to run their

businesses efficiently. According to survey respondents, regulation increases uncertainty, stifles hiring and expansion 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 debt reduction and other. Chart 16 shows the distribution of responses across possible expenditure categories, with investment as the largest alternative use of funds at 63 percent.

Chart 16. Survey Respondents: Alternative Use of Funds Allocated to Federal Regulatory Compliance



Respondents answered the open-ended question by writing comments. The following discussion includes examples of responses to this question, sorted by category. Appendix B provides additional responses by survey respondents.

Investment

Respondents identified four areas of investment spending that likely would increase if regulatory compliance costs decreased: capital investment and expenditures, growth and acquisition, R&D and general (unspecified) investment.

Capital Investment/Expenditures; Growth and Acquisition

- “Capital improvements to improve viability.”
- “Grow the business and increase employment.”
- “Purchase more raw goods for production purposes.”

R&D; General (Unspecified) Investment

- “Develop energy-efficient products.”
- “Research, develop and introduce new products.”

Employee Initiatives

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

- “Add another employee.”
- “Invest in employee training.”
- “We would love to improve our employees’ wages.”

Sales

Respondents identified three areas related to sales that likely would increase if regulatory compliance costs decreased: marketing and sales efforts, competitiveness and customer satisfaction.

- “Focus on global sales.”
- “Lower pricing to compete with [foreign manufacturers].”
- “Creating value that customers are willing to pay for.”

ROI or Debt Reduction

Respondents identified three areas related to ROI or debt reduction that likely would be affected if regulatory compliance costs decreased: shareholders’ returns, the bottom line and reducing debt.

- “Increase profits or returns to shareholders.”
- “Pay the bills.”
- “Debt reduction.”

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 frustration with the timing, complexity and administrative requirements of regulation. The regulatory landscape also introduces uncertainty and reduces the global competitiveness of manufacturers in the United States. The reported effects of regulations according to respondents are reducing payroll, discouraging growth and adding inefficiencies. Respondents identified health care, the Environmental Protection Agency (EPA), OSHA and the FDA as specific areas of concern.

Respondents also noted morale, well-being and work environment consequences of regulation. They reported an adversarial perspective by regulators toward businesses, where a firm “is approached as an evil entity” populated by “bad guys.” In most cases, respondents’ comments reflect the perspective that regulators fail to understand the circumstances of the businesses they are regulating and create greater uncertainties.¹⁷ As a result of these and other factors related to regulation, some respondents experience increased levels of stress, reduced enjoyment and/or less motivation at work.

Respondents’ Comments

This section includes selected comments from respondents to provide an understanding of their perspective on regulation. A number of respondents made comments reflecting a commitment to responsible corporate behavior but had concerns about the complexity and administrative burden of regulations. One commenter stated the following:

“Regulations serve an important purpose in terms of ensuring responsible corporate operations and protection of investors/employees/communities/

¹⁷ Pande, *et al.* describe (p. 10) how regulations may be structured and created in developing nations: “In creating an enabling environment for business while retaining environmental goals, it is important to remember that industry’s primary focus is on managing the bottom line and maintaining a client base. . . . An enabling environment is a stable one, providing firms with certainty about future regulatory requirements and uniformity, reducing free-riding.” The responses to the open-ended questions suggest these insights may hold true for developed nations as well. That is, that an enabling, stable environment may not reflect the current situation of manufacturing and those who regulate it within the United States.

environment; and they help to maintain a level playing field with regard to competition and markets. It is the unnecessary complexity and administrative burden that often [accompany] these regulations, which result in excessive costs to corporations. In addition, the pace of regulatory review and permitting processes can often slow down the pursuit of new business to a pace, which results in missed opportunities.”

Many respondents expressed frustration or resignation with the current state of regulation and how it is implemented. Recurring themes were that the perspective of regulators was adversarial toward business, that there were too many regulations and that the regulations reduce job satisfaction.

- “The regulators generally approach business as an evil entity, which they are empowered to change and fix and fine for bad behavior.”
- “Too many, too complex, and many are unnecessary.”

Respondents expressed concern regarding the negative effects of regulatory uncertainty on business operations and planning. In short, the cost of regulation is not just in terms of direct compliance outlays, but also in diverting resources and constraining actions with respect to growth and employment.

- “Great uncertainty for the past six years on EPA regulations, including [National Emissions Standards for Hazardous Air Pollutants], [the Prevention of Significant Deterioration] and [carbon dioxide], has paralyzed the industry.”
- “For a small manufacturer, any additional compliance obligation reduces resources that would otherwise be dedicated to R&D, growth, profitability/efficiency studies, etc. As the owner of this very small business, I am the leader of any change that the business undertakes. . . .”
- “We also have offshore operations. The impact is to move more of our business offshore in order to average down our costs.”
- “Trickle-down effect of laws ‘that only affect big business’; [government] policy in general seems aimed at squeezing smaller business out of existence.”

One commenter stated:

“We are a business that averages 48 to 52 employees. The definition of a small business as 50 or more employees is costing us money and forcing us to keep our employment number under 50, which is prohibiting our growth.”

III. Estimating the Total Cost of Regulations

In this section, we turn to an estimate of the costs of regulations on all 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 primary 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 cost of regulations 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. These costs require direct outlays by firms and generally include direct costs in the cost estimates tallied 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 full and real 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 these within the scope of our analysis. Our methodology that includes the indirect costs is perhaps the main reason that the total costs of federal regulations in this report are much larger than those suggested in the OMB *Report 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 or statutory burden of regulations—that is, based on who bears the initial compliance costs. It needs to be acknowledged that this initial compliance burden can be shifted, and the final incidence of regulations may differ from this initial or statutory assignment of the regulatory

costs. The difference between the initial incidence and how costs are ultimately divided depends on the demand and supply elasticities in the respective product and input markets. 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 percent 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 to consumers willing to pay a higher price at the store. This methodological issue is raised again in Section IV.

While acknowledging that shifts in the cost burdens will occur, this report 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 in OMB's annual *Report to Congress*. We emphasize three reasons for this difference. First, OMB's annual estimate of the total costs includes only a tiny fraction of the universe of

economic regulations. In part, this is because regulations issued by independent (nonexecutive 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 newly created Consumer Financial Protection Bureau and the Securities and Exchange Commission, promulgate a vast number of economic regulations that are necessarily omitted in the OMB annual cost figures.

Second, the OMB aggregate estimate only includes major rules,¹⁸ meaning that the costs of thousands of non-major regulations—even those promulgated by executive branch agencies—are not included. While the costs of any single non-major rule may be small in relation to the U.S. economy, non-major rules in the aggregate may add substantially to compliance costs. The *Code of Federal Regulations* in 2013 contained 175,496 pages¹⁹; it is easy to imagine the large cumulative impact that non-major 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 look-back limitation means that OMB's total cost estimate excludes the compliance costs associated with major regulations, such as several

¹⁸ 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 (UMRA); or (3) rules designated as “economically significant” under section 3(f)(1) of Executive Order 12866.

¹⁹ See Crews (2014).

Clean Air Act rules.²⁰ For these reasons, relying on the OMB *Reports for Congress* would dramatically understate the costs of economic regulations.

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 countries that are members of the Organisation of Economic Co-operation and Development (OECD), which includes the United States.²¹

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 OECD leads them to conclude:

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.

Going for Growth (OECD, 2014, p. 66)

²⁰ 42 U.S.C. §7401 et seq. (1970). In earlier *Reports to Congress*, OMB used a variety of methods to estimate these costs. The 2000 *Report*, for example, puts the total cost for “EPA Air Rules” at \$96 billion in 1996 dollars (see OMB 2000, Table 3). By comparison, the 2014 *Draft Report* puts the total cost of *all* EPA rules between 2003 and 2013 at between \$38.2 billion and \$46.1 billion in 2010 dollars.

²¹ We rely on the sample of OECD countries for this analysis rather than a sample that includes a wider range of countries to eliminate for a variety of factors that might cause differences in economic output. For example, OECD countries tend to have similar political regimes, legal protections, monetary regimes, operative credit markets and so forth.

The OECD elevated regulatory reform to a central role of its multiyear strategic initiative, called “Going for Growth,” following nearly two decades of study and applied research.²²

Estimating the impact of economic regulations on living standards requires a reliable measure of regulation across countries and over time. For this purpose, we rely on data from the World Economic Forum’s annual *Global Competitiveness Report*. Beginning in 2005, the World Economic Forum has constructed a Global Competitiveness Index (GCI) that includes multiple indicators to capture “institutions, policies and factors that determine the level of productivity of a country.” Many of the indicators used to construct the GCI—including those we use in our analysis to measure economic regulation—are obtained through its annual Executive Opinion Survey.²³ We include three components of the GCI to construct a measure tailored specifically to reflect economic regulation. Appendix C provides a description of the components used from the GCI report. Alternative measures of economic regulations across nations are available from several sources. Appendix C provides results when these alternative measures are used instead of the Economic Regulation Index computed using the GCI indicators. We emphasize that the empirical relationship between economic regulations and macroeconomic performance remains robust and statistically significant using measures from the alternative sources.

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

$$\text{(Eq. 1) } \text{GDP per Capita}_{i,t} = \beta (\text{Economic Regulation Index})_{i,t-1} + \phi (\mathbf{X})_{i,t-1} + \alpha_i + \varepsilon_{i,t-1}$$

²² This OECD-sponsored research includes Bouis and Duval (2011); Bourlès, *et al.* (2010); Conway, *et al.* (2006); and Nicoletti and Scarpetta (2005). The OECD began to release its own index of Product Market Regulations (PMR) in 1998, which has become another widely used metric in the empirical literature. The PMR indicators are constructed from responses of national governments to the OECD Regulatory Indicator Questionnaires. For example, see the 2013 questionnaire at www.oecd.org/eco/reform/PMR-Questionnaire-2013.pdf.

²³ The Executive Opinion Survey “captures information on a broad range of factors that are critical for a country’s competitiveness and sustainable development, and for which data sources are scarce or, frequently, nonexistent on a global scale” (*Global Competitiveness Report*, 2013, p. 83).

The sample used to estimate Equation (1) consists of OECD countries for which data on all of the relevant variables are available. For most specifications, this yields a sample size of 34 countries (listed in Appendix C). 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 $t = 2006$ through 2013.

The dependent variable, GDP per capita in Equation (1) is denominated in constant 2005 U.S. dollars.²⁴ The main explanatory variable of interest in Equation (1) is the Economic Regulation Index.²⁵ We use the GCI scale for the Economic Regulation Index, and the values range from one to seven, where higher values correspond to improvements in regulatory quality—that is, reductions in the regulatory burden on product, factor and credit markets.

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 from the empirical literature that examines differences in economic levels across countries and over time.²⁶ The control variables we include are foreign trade as a share of GDP, the dependency ratio (population over 65 relative to population aged 19 to 65), new capital investment as a share of GDP, size of the labor force, tax revenues as a share of GDP and tax revenues as a share of GDP squared to allow for a nonlinear effect of tax policy.²⁷ GDP per capita and the size of the labor force are entered into the regression models as natural logarithmic transformations. Appendix C provides summary statistics for the variables

²⁴ The GDP data from the OECD are reported in 2005 dollars and come from the 2014 online database, StatExtracts. In deriving the final estimates for the cost of federal regulation, we convert the estimates into 2014 dollars.

²⁵ Source: *Global Competitiveness Report*, online data platform, 2014.

²⁶ 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) and Rode, *et al.* (2013).

²⁷ Sources: OECD, StatExtracts, online database, and World Bank, World Development Indicators, online database.

used in the analysis. Finally, the dataset of OECD countries is organized as a panel, and Equation (1) is estimated using a GLS [generalized least squares] random effects model.²⁸

The results are shown in Table 3. Two variations of the model are presented, one of which includes an adjustment for first-order autocorrelation (Column 1) and the other does not (Column 2). In both models, the coefficient on the Economic Regulation Index is positive and statistically significant at the 5 percent 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 GDP per capita. We use the coefficient in Column (1) (0.081) to calibrate the cost of economic regulations and point out that the cost estimate would be larger if we used the coefficient in Column (2) (0.116).

The next step is to project the reduction in U.S. GDP that is tied to the costs of complying with economic regulations. As a benchmark, we compute the mean value of the Economic Regulation Index for the five highest-ranked OECD countries. The difference between the mean value of these five countries and the value of the U.S. Economic Regulation Index is 26 percent. Using the parameter value in Table 3, Column (1), and this 26 percent difference in the Economic Regulation Index implies an impact on GDP equal to \$1.439 trillion. In other words, if the burden of economic regulations in the United States matched the benchmark countries, U.S. GDP would be \$1.439 trillion higher than it was in 2012 (denominated in 2014 dollars). This is the estimated cost of economic regulations we apply in Section IV. Finally, we add to this cost the estimated cost of import restrictions from the U.S. International Trade Commission (ITC) (2013), which was \$8.3 billion (in 2014 dollars).

²⁸ Because the number of years in the sample period is somewhat modest (2006 to 2013), we do not include country fixed-effects variables in the models.

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

	Dependent Variable: GDP per Capita ^a (in 2005 Dollars)	
	(1)	(2)
Economic Regulation Index	0.081 (2.46)*	0.116 (3.07)**
Trade / GDP	0.002 (3.60)*	0.002 (3.44)**
Dependency Ratio	0.007 (1.12)	0.013 (1.92)
Tax Revenue / GDP	0.061 (1.84)	0.043 (1.30)
(Tax Revenue / GDP) Squared	-0.0007 (-1.58)	-0.0005 (-1.08)
Capital Investment / GDP	0.025 (5.76)**	0.012 (2.86)**
Labor Force ^a	0.075 (2.57)**	0.059 (1.88)
Year = 2008	-0.100 (-2.38)**	-0.130 (-2.67)**
Year = 2009	-0.132 (-3.52)**	-0.140 (-3.35)**
Trend		-0.030 (-2.87)**
Constant	7.15 (10.35)*	67.89 (3.24)**
R-sq: Within	0.01	0.02
Between	0.74	0.60
Overall	0.58	0.50
Number of Observations	219	219

Notes to Table 3:

^a Indicates a variable is entered into the regression as a natural logarithmic transformation.

- The models are estimated using panel data for all OECD countries for which the data are available for the years 2006–2013. Each independent variable is lagged one year.
- z-statistics are shown in parentheses, where ** indicates significance at the 1 percent level and * indicates significance at the 5 percent level.
- Column (1) is a random-effects model with an AR(1) disturbance. Column (2) is a random-effects model without an AR(1) correction.

Environmental Regulations

The estimated cost of environmental regulations is derived from two sources: OMB's annual *Report to Congress* and Hahn and Hird (1991). OMB has reviewed the regulatory impact analyses (RIAs) for the most costly regulations promulgated by the EPA back through the late 1980s. In its early *Reports to Congress*, OMB relied on the cost estimates in Hahn and Hird

(1991) to gauge the costs of environmental regulations prior to 1988, and we follow that procedure in this study.²⁹

OMB discusses the shortcomings in these estimates, including the basic fact that cost estimates do not exist for all environmental regulations, and the inherent difficulties in performing the RIAs. 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-2002.³⁰ For this reason, this report begins with the OMB report for 2001, which includes its earliest cost accounting and takes the Hahn and Hird (1991) as its beginning estimate of the costs prior to 1988. To account for environmental regulations promulgated since then, the costs of newly reviewed regulations are taken from OMB's annual reports for 2002 through 2014.

²⁹ It is worth reiterating that OMB only includes the costs of economically significant regulations subject to EO 12866 review. These are less than 1 percent of the EPA's rulemaking. Moreover, as noted earlier, the OMB's 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.

³⁰ OMB, Office of Information and Regulatory Affairs (2003), *Informing Regulatory Decisions: Report to Congress on the Costs and Benefits of Federal Regulations*, Table 2. The OMB's cost estimates rely on RIAs issued mainly by the EPA.

Using the combination of Hahn and Hird (1991) and OMB estimates puts the cost of environmental regulations in a range between \$208.1 billion and \$329.6 billion (in 2014 dollars). This report uses the high end of the cost range provided in the OMB reports and Hahn and Hird (1991). This reflects a judgment that cost estimates are absent for important environmental regulations and that government agencies may be conservative in estimating regulatory costs.³¹ For comparison, if the midpoint of the high and low estimates were used, the cost of environmental regulations in this report would decline by roughly \$58 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 OSHA. We define this category somewhat narrowly in an effort not to duplicate costs that might well fall under the costs estimate for economic regulations.

This report relies on three sources to estimate the costs of occupational safety and health and homeland security regulations, which are summarized in Table 4.

³¹ Several regulatory experts draw a similar conclusion about the OMB environmental cost estimates, but considerable debate continues. For example, Johnson concludes that “the costs of water quality regulation totaled \$93.1 billion in 2001. While this figure is based on conservative estimates of regulatory costs, it is significantly larger than the cost and benefit estimates produced by the EPA” (Johnson, 2004). In contrast, in 1999, the EPA estimated the costs of the 1972 Clean Water Act at \$15.8 billion per year. (“A Retrospective Assessment of the Costs of the Clean Water Act: 1972 to 1997,” EPA, October 2000.) The discussion in Hahn (1996) is also informative. Hahn makes a strong case that government agencies overestimate benefits and underestimate costs systematically. In addition, the review article by Jaffe, *et al.* (1995) suggests that environmental costs in the long run have exceeded compliance cost estimates. Finally, the study by Harrington, *et al.* (2000) examines the estimates for 28 particular rules promulgated by the EPA and OSHA and finds, in contrast, that overestimation of unit costs occurs about as often as underestimation. Most recently, see Gayer and Viscusi (2014). OMB and federal agencies have started to undertake retrospective reviews of the costs and benefits of regulations. These reviews have been completed for only a small number of regulations. Over time, we expect this initiative to make an important contribution to the analysis of the cost of major regulations.

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

Category	Cost Estimate (in Millions of 2014 Dollars)	Source
Occupational Safety and Health (For Those Issued Before 2001)	\$ 70,337	Johnson (2005)
Occupational Safety and Health (For Those Issued 2001–2012)	\$ 733	OMB <i>Reports to Congress</i> (2009–2014)
Homeland Security (All Through 2012)	\$ 13,973	OMB <i>Reports to Congress</i> (2009–2014)
Homeland Security (2012)	\$ 7,289	Authors' Estimate
Total	\$ 92,332	

The cost calculations from the Johnson (2005) study are used where possible—that is, until 2001—and adjusted for inflation as shown in Table 4. The costs provided by OMB on OSHA regulations are used for those regulations issued subsequent to the Johnson study. The cost of homeland security regulations also uses 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.

We supplement the homeland security–related costs with an estimate of the costs associated with passenger delays tied to Transportation Security Administration (TSA) airport screening. This estimate follows the methodology in Hobijn (2002). The number of passengers boarding planes in 2012 was 815 million, and we use an added wait time of 15 minutes per passenger.³² This yields a total wait time of 204 million hours. We allocate 30 percent of these hours to business travelers and 70 percent to leisure travelers based on survey data from Results Travel.³³ Using survey data from the U.S. Travel Association, we use an average hourly

³² Source: Bureau of Transportation Statistics, DOT, online. A TSA estimate for 2008 states that “83 percent of passengers waiting 10 minutes or less nationwide” (Hawley, 2008, p. 2). However, changes in airline policies since 2008 that charge for checked bags has increased the number of carry-on bags by about 50 percent, which increases passenger wait time.

³³ Sources: *Certify*, www.certify.com/2013-09-12-Business-travel-accounting-for-large-percentage-of-flights and Hobijn (2002).

value of time for business travelers of \$43.75 and \$31.25 for leisure travelers.³⁴ This yields a total cost of \$7.29 billion, or \$2.73 billion in cost delays on business travelers and \$4.56 billion on leisure travelers. This estimate is likely on the low side because it ignores the number of trips that are not taken because of the wait times associated with security screening.

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. OMB estimates this total paperwork burden to have been 9.14 billion hours in FY 2011. However, these non-tax-related reporting and compliance requirements are largely tied 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 non-tax-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. 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 (IRS).

³⁴ Source: U.S. Travel Association, Travel Facts and Statistics. Available online at www.ustravel.org/news/press-kit/travel-facts-and-statistics.

Table 5. Estimated Costs of Compliance with the Federal Tax Code, 2012

	Businesses	Individuals and Nonprofits	Total
Number of Hours Required to Comply	2,636,682,453	1,575,928,830	4,212,611,282
Compliance Cost per Hour in 2014 Dollars	\$ 48.80	\$ 31.51	
Total Compliance Cost in 2014 Dollars	\$108,843,695,183	\$ 49,656,827,903	\$158,500,523,085
Share of Total Compliance Cost	69%	31%	

Note to Table 5:

- Columns might not total due to rounding.

The estimate of tax compliance costs in 2012 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 4.2 billion in 2012, with businesses devoting 2.6 billion hours and individuals and nonprofits devoting nearly 1.6 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 in the case of individuals and nonprofits and the hourly wage rate for human resources professionals in the case of businesses.³⁵ This procedure yields an estimated cost of nearly \$159 billion (in 2014 dollars) of federal tax compliance. This estimate includes the combined costs on individual filers, nonprofit organizations and business filers. The estimated cost of compliance for businesses is \$109 billion, which accounts for 69 percent of the total cost.

³⁵ Source: Bureau of Labor Statistics, online database.

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.

Table 6. The Cost of Federal Regulation, 2012 (in Billions of 2014 Dollars)

Type of Regulation	Cost Estimate	Sources
All Federal Regulations	\$ 2,028	Summation of costs by type
Economic	\$ 1,448	Authors' empirical analysis using index of regulatory burden; ITC (2014)
Environmental	\$ 330	Hahn and Hird (1991); OMB (2004–2013)
Tax Compliance	\$ 159	IRS and Bureau of Labor Statistics
OSHHS*	\$ 92	Johnson (2005); OMB (2009–2014); authors' estimate of cost of screening wait times

Note to Table 6:

* OSHHS stands for occupational safety and health and homeland security regulations.

IV. 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

The report uses a three-part firm-size classification, relying on data available from the Census Bureau. For purposes of this study, we define small firms as those with fewer than 50 employees; medium-sized firms have 50 to 99 employees; and large firms have 100 or more employees. Small, medium-sized and large firms are sometimes defined differently, and in Appendix D, we provide an alternative breakdown of the results. There we define small firms as those with fewer than 20 employees, medium-sized firms as those with between 20 and 499 employees and large firms as those with 500 or more employees.

The North American Industry Classification System (NAICS) devised by the Census Bureau divides American businesses into 2,000 distinct industry types. To make the results tractable, we aggregate these classifications down to five broad business categories:

- Manufacturing
- Trade (wholesale and retail)
- Services
- Health Care
- Other (a residual containing almost all other nonfarm employers)³⁶

³⁶ The firm-level data are provided in the “Statistics of U.S. Businesses” and cover almost all nonfarm employer businesses. It omits farms; railroads; most government-owned establishments; the U.S. Postal Service; large pension, health and welfare funds (more than 100 employees); and nonincorporated firms with no paid employees. According to the Census Bureau, nonemployers account for roughly 3 percent of all business activity (see Census Bureau, “Nonemployer Statistics,” www.census.gov/epcd/nonemployer).

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

Table 7. Size Distribution of American Business in 2011*

Size Measure	All Firms **	Firm Size		
		< 50 Employees	50–99 Employees	100+ Employees
All Sectors				
Firms	5,684,424	5,470,398	115,112	98,914
Employment	113,425,965	31,253,896	7,876,979	74,295,090
Payroll (in Thousands)	\$ 5,386,535,861	\$ 1,204,323,659	\$ 337,981,464	\$ 3,844,230,737
Manufacturing				
Firms	248,694	224,858	12,739	11,097
Employment	10,984,361	2,045,099	900,272	8,038,990
Payroll (in Thousands)	\$ 599,483,787	\$ 87,522,567	\$ 42,476,923	\$ 469,484,296
Trade				
Firms	951,881	921,329	18,455	12,097
Employment	20,324,891	5,398,243	1,238,546	13,688,102
Payroll (in Thousands)	\$ 759,156,344	\$ 196,675,074	\$ 56,211,566	\$ 506,269,704
Services				
Firms	2,991,384	2,882,489	56,533	52,362
Employment	53,294,350	15,705,166	3,764,456	33,824,728
Payroll (in Thousands)	\$ 2,630,132,453	\$ 556,895,154	\$ 149,804,026	\$ 1,923,433,272
Health Care				
Firms	623,308	594,264	14,685	14,359
Employment	18,059,112	4,024,533	1,102,301	12,932,278
Payroll (in Thousands)	\$ 813,608,600	\$ 180,422,935	\$ 42,698,980	\$ 590,486,684
Other				
Firms	869,169	847,461	12,701	9,008
Employment	10,741,997	4,062,706	871,404	5,807,887
Payroll (in Thousands)	\$ 584,150,910	\$ 182,804,163	\$ 46,789,968	\$ 354,556,780

Notes to Table 7:

* Source: SBA’s Office of Advocacy, “Statistics of U.S. Businesses: Firm Size Data,” www.sba.gov/advo/stats/data.html. The data for 2011 are the most recently available. The payroll data are converted into 2014 dollars.

** The 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.

- Columns might not total due to rounding.

Table 7 shows the distribution of American industry by sector and firm size using the most recently available data (for 2011).³⁷ Table 7 presents three relevant size indicators: the

³⁷ American industry is obviously not static, and the 2011 data on the distribution of business activity do not match up exactly with the years for the regulatory cost estimates (2012). However, changes in the basic structure of American industry generally occur only incrementally. The 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.

number of firms, the number of employees and payroll expenditures.³⁸ Overall, the data indicate some 5.7 million firms in the United States—nearly 5.5 million of which are in the small size category (fewer than 50 employees).

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 percent of all U.S. firms, 10 percent of all U.S. employment and 11 percent of all U.S. business payroll expenditures. Within the manufacturing sector, 90 percent of the firms are classified as small businesses (fewer than 50 employees), 5 percent have between 50 and 99 employees, and 5 percent have 100 or more employees. Twenty-nine percent of manufacturing employees work in small firms, 7 percent work in medium-sized firms, and 63 percent work in large firms. Finally, regarding the distribution of payroll expenditures, small firms account for 31 percent, medium-sized firms account for 8 percent, and large firms account for 61 percent.

³⁸ The SBA's Office of Advocacy contracts with the Census Bureau to collect the employer firm-size data (see www.sba.gov/advo/stats/data.html). When the Census Bureau compiles its "Statistics of U.S. Businesses," it relies on survey questionnaires filled out by firms. Occasionally, firms classify themselves under more than one industry type (or NAICS classification). This means that when summed by sector, the number of firms is greater than the actual number of firms. The data used in this report corrects for this over-count. In brief, the correction relies on the fact that the number of employees in each industry is accurately reported to the Census Bureau, and the share of employees by sector is used to eliminate the redundancy and scale back over counts of firms.

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

Size Measure	All Sectors	Manufacturing	Trade	Services	Health Care	Other
All Firms		4%	17%	53%	11%	15%
By Firm Size						
< 50 Employees	96%	90%	97%	96%	95%	98%
50–99 Employees	2%	5%	2%	2%	2%	1%
100+ Employees	2%	5%	1%	2%	2%	1%

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		10%	18%	47%	16%	9%
By Firm Size						
< 50 Employees	29%	29%	22%	38%	22%	38%
50–99 Employees	7%	7%	6%	8%	6%	8%
100+ Employees	63%	63%	72%	54%	72%	54%

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		11%	14%	49%	15%	11%
By Firm Size						
< 50 Employees	22%	31%	26%	96%	22%	31%
50–99 Employees	6%	8%	7%	2%	5%	8%
100+ Employees	71%	61%	67%	2%	73%	61%

Notes to Tables 8a, 8b and 8c:

- Source: See Table 7.
- Columns might not total due to rounding.

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 naturally follows this allocation of the workforce and business activity. 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 in 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 and state and local governments. As discussed in Section I, the report 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). It is worth emphasizing that all regulatory costs are—and can only be—borne by individuals, as consumers, as workers, as stockholders, as owners or as taxpayers.³⁹ 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 these are bundled with those borne by individuals to keep a relatively tractable division in business versus nonbusiness costs.

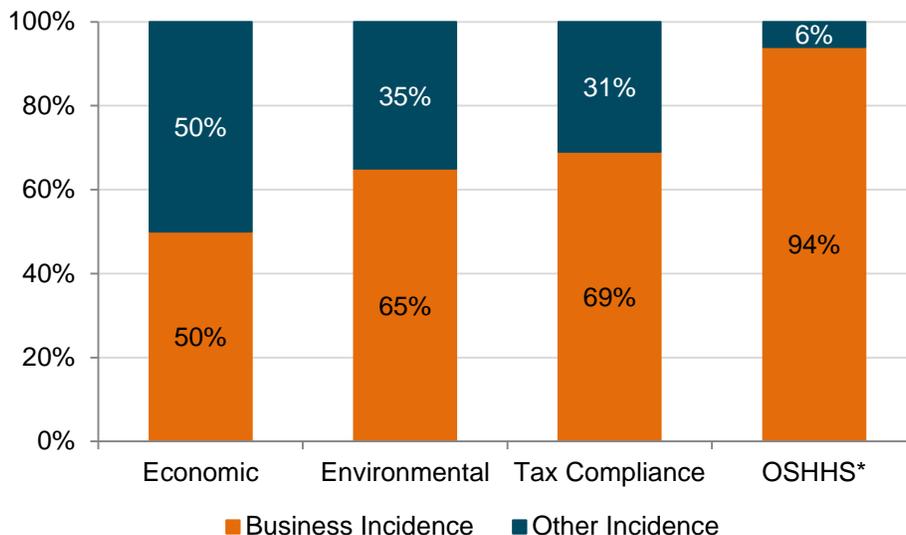
The cost allocations for each type of regulation are shown in Chart 17. These allocations generally employ the same methodology used in prior studies: Hopkins (1995a), Crain and Hopkins (2001), Crain (2005) and Crain and Crain (2010). The allocation of environmental regulations is based on the compliance data reported by the EPA.⁴⁰ In the absence of allocation data for economic regulation, a default judgment of 50/50 is applied. The allocation of tax compliance costs is based on the distribution of tax forms filed by individuals, businesses and

³⁹ The responses to the open-ended questions presented in Section II provide an intuitive sense of the distribution of these costs on manufacturers. See the chart “Alternative Uses of Funds Allocated to Regulatory Compliance.”

⁴⁰ EPA, “Environmental Investments: The Cost of a Clean Environment,” EPA 230-11-90-083, November 1990, pp. 2–5.

exempt organizations. The occupational safety and health and homeland security regulations are allocated 94 percent to businesses and 6 percent to other entities. 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.⁴¹ The assumption is that a small share (6 percent) of estimated homeland security costs is borne by state and local governments and individuals.

Chart 17. Allocation of Compliance Cost Incidence to Business (Percentage of Category Costs)



Note to Chart 17:

* OSHHS stands for occupational safety and health and homeland security regulations.

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 NAICS, in some cases aggregating categories.⁴²

⁴¹ 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 Jonathan Gruber, *Public Finance and Public Policy*, New York: Worth Publishers, 2004, pp. 539–540.

⁴² The NAICS data are from the Census Bureau (see www.census.gov/cgi-bin/sssd/naics/naicsrch?chart=2012).

For example, the NAICS separates both wholesale and retail trade, and we combine these as the “trade” sector. Table 9 lists these allocations by sector and sources. A more complete description of the allocation basis for each type of regulation is described in turn.

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	13%	14%	50%	8%	14%	Bureau of Economic Analysis (BEA) (value-added share of private GDP); SBA (employment share of private workforce)
Environmental	54%	0%	0.3%	0.7%	45%	Hazilla and Kopp, 1991 (compliance costs by sector)
Tax Compliance	3%	13%	62%	7%	15%	IRS data on the number of returns and forms by each industry category
OSHHS*	10%	17%	48%	15%	10%	SBA (employment share of private workforce); BEA (value-added share of private GDP)

Notes to Table 9:

- * OSHHS stands for occupational safety and health and homeland security regulations.
- Columns might not total due to rounding.

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 on the sector divided by total private-sector employment.⁴³ 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.

⁴³ The source of the value added to GDP by sector and the private-sector GDP data is the BEA’s Industry Economics Division online database. The data used were released on April 28, 2009. The source for the employment data is the SBA’s Office of Advocacy, “Statistics of U.S. Businesses: Firm Size Data,” website: www.sba.gov/advo/stats/data.html.

Environmental Regulations

The sector allocations for environmental regulations are taken from Hazilla and Kopp (1990). Almost all of these costs fall on the manufacturing sector (54 percent) and the “other” sector (45 percent). The “other” sector includes such businesses as coal mining, ore mining, oil and gas extraction, coal gasification and electric utilities, all of which are heavily affected by regulations promulgated under the Clean Air Act and the Clean Water Act. The remaining costs of environmental regulation fall on the health care and service sectors.

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 to 99 employees (medium-sized) and firms with 100 or more employees (large). To facilitate comparisons with other studies, Appendix D provides the allocation of costs using slightly different firm-size categories: those with fewer than 20 employees (small), firms with 20 to 499 employees (medium-sized) and firms with 500 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 uses a two-step procedure. We take into consideration the fact that some regulations explicitly exempt small firms (those with fewer than 50 employees, for example). 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 share is multiplied by the currently 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 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 percent increase in firm size (measured in terms of the number of employees) corresponds to a 0.43 percent decrease in pollution abatement costs per employee. In essence, this parameter estimates the degree of economies of scale in compliance costs.

This “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, although Becker (2005) finds that economies of scale differ depending on the type of pollutant.⁴⁴

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 (i.e., individuals and state and local government).

⁴⁴ See, for examples, Dean (1994) and Dean, *et al.* (2000). These two studies suggest that regulatory costs lower the startup rate for new firms, especially in the manufacturing sector, because of its higher capital requirements from environmental and other types of regulations. They also indicate that environmental regulations increase the minimum efficient scale of production. See also the related study by Staley, *et al.* (2001). As noted in the text, a recent study finds that relative costs of pollution abatement by firm size vary depending on the type of regulated pollutant (Becker, 2005).

Table 10. Cost of Federal Regulation by Type and Business Share (in Billions of 2014 Dollars)

	Total Costs	Business Portion		Others	
		Share (Percentage)	Amount	Share (Percentage)	Amount
All Federal Regulations	\$ 2,028	56%	\$ 1,133	44%	\$ 895
Economic	\$ 1,448	50%	\$ 724	50%	\$ 724
Environmental	\$ 330	65%	\$ 214	35%	\$ 115
Tax Compliance	\$ 159	69%	\$ 109	31%	\$ 50
OSHHS*	\$ 92	94%	\$ 86	6%	\$ 6

Note to Table 10:

* OSHHS stands for occupational safety and health and homeland security regulations.

The estimates in Table 10 indicate that the annual total cost of all federal regulations in 2012 was \$2.028 trillion. We estimate the portion falling on business to be \$1.133 trillion. The most costly are economic regulations at an estimated cost of \$1.448 trillion, with \$724 billion falling initially on business. Environmental regulations represent the second-most costly category (\$330 billion), and the cost apportioned to business is \$214 billion. The estimated cost of tax compliance is \$159 billion, and the estimated cost of occupational safety and health and homeland security regulations is \$92 billion.

Distribution of the Regulatory Burden Across Business Sectors

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, 2012 (in 2014 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	\$ 215	\$ 864,125	\$ 19,564	36%
Economic	\$ 87	\$ 351,511	\$ 7,958	15%
Environmental	\$ 115	\$ 463,646	\$ 10,497	19%
Tax Compliance	\$ 3	\$ 13,045	\$ 295	1%
OSHHS*	\$ 9	\$ 35,924	\$ 813	1%
Trade				
Total	\$ 143	\$ 150,065	\$ 7,028	19%
Economic	\$ 114	\$ 119,259	\$ 5,585	15%
Environmental	\$ -	\$ -	\$ -	0%
Tax Compliance	\$ 14	\$ 15,164	\$ 710	2%
OSHHS*	\$ 15	\$ 15,642	\$ 733	2%
Services				
Total	\$ 459	\$ 153,567	\$ 8,620	17%
Economic	\$ 351	\$ 117,236	\$ 6,580	13%
Environmental	\$ 1	\$ 213	\$ 12	0%
Tax Compliance	\$ 67	\$ 22,388	\$ 1,257	3%
OSHHS*	\$ 41	\$ 13,729	\$ 771	2%
Health Care				
Total	\$ 109	\$ 175,382	\$ 6,053	13%
Economic	\$ 87	\$ 140,248	\$ 4,841	11%
Environmental	\$ 1	\$ 2,310	\$ 80	0%
Tax Compliance	\$ 8	\$ 12,721	\$ 439	1%
OSHHS*	\$ 13	\$ 20,103	\$ 694	2%
Other				
Total	\$ 207	\$ 237,898	\$ 19,249	35%
Economic	\$ 85	\$ 97,446	\$ 7,885	14%
Environmental	\$ 97	\$ 111,454	\$ 9,018	17%
Tax Compliance	\$ 16	\$ 18,712	\$ 1,514	3%
OSHHS*	\$ 9	\$ 10,287	\$ 832	2%
Totals (All U.S. Businesses)				
Total	\$ 1,133	\$ 233,182	\$ 9,991	21%
Economic	\$ 724	\$ 142,054	\$ 6,381	13%
Environmental	\$ 214	\$ 55,923	\$ 1,889	4%
Tax Compliance	\$ 109	\$ 18,297	\$ 960	2%
OSHHS*	\$ 86	\$ 16,908	\$ 761	2%

Notes to Table 11:

- * OSHHS stands for occupational safety and health and homeland security regulations.
- Columns might not total due to rounding.

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 \$233,182. The cost per employee for the typical

U.S. firm is almost \$10,000. This cost of federal regulation in the typical U.S. firm equals 21 percent 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: \$864,125 annually per firm and more than three times the cost in the “other” category.

The cost estimate for manufacturing in Table 11 is broadly consistent with the survey results. The survey cost estimate for the manufacturing sector is \$138.6 billion. Table 11 reports a manufacturing sector regulatory cost estimate of \$215 billion. The relevant figure for comparing Table 11 to the survey estimate is to net out economic regulations. (One would not include the primarily indirect costs of the economic figure because those are inestimable from the survey results—the survey only informs that they exist.) Taking the sum of direct costs, environmental, tax compliance and occupational safety and health and homeland security regulations for manufacturing yield a total of \$127 billion. This figure is 8 percent lower than the survey estimate.

There are several deliberate ways in which the estimates differ. First, the survey includes federal enforcement or compliance activity for which firms shouldered costs, while the aggregate estimates do not include them in the three categories summed. Enforcement activity costs may be included in the estimated cost of economic regulations in Table 11, but there is no way to reasonably separate them out. Second, the survey did not separate out the cost of tax compliance, so all tax compliance costs likely were not included. Third, the aggregate figure for environment includes only estimates for major rules insofar as OMB provides those estimates, not for all of the environmental rules affecting manufacturing firms. The survey data include all environmental regulations.

Table 12. Regulatory Costs in Small, Medium-Sized and Large Firms, 2012 (Cost per Employee per year in 2014 Dollars)

Type of Regulation	All Firms	Firm Size		
		< 50 Employees	50–99 Employees	100+ Employees
Manufacturing				
Total	\$ 19,564	\$ 34,671	\$ 18,243	\$ 13,750
Economic	\$ 7,958	\$ 12,885	\$ 9,399	\$ 6,544
Environmental	\$ 10,497	\$ 20,361	\$ 7,625	\$ 6,239
Tax Compliance	\$ 295	\$ 378	\$ 346	\$ 269
OSHHS*	\$ 813	\$ 1,048	\$ 873	\$ 698
Trade				
Total	\$ 7,028	\$ 7,174	\$ 10,345	\$ 6,691
Economic	\$ 5,585	\$ 5,248	\$ 8,572	\$ 5,448
Environmental	\$ -	\$ -	\$ -	\$ -
Tax Compliance	\$ 710	\$ 950	\$ 961	\$ 593
OSHHS*	\$ 733	\$ 976	\$ 813	\$ 650
Services				
Total	\$ 8,620	\$ 7,574	\$ 9,099	\$ 9,007
Economic	\$ 6,580	\$ 4,554	\$ 6,888	\$ 7,487
Environmental	\$ 12	\$ 21	\$ 8	\$ 7
Tax Compliance	\$ 1,257	\$ 2,042	\$ 1,406	\$ 876
OSHHS*	\$ 771	\$ 956	\$ 797	\$ 638
Health Care				
Total	\$ 6,053	\$ 6,690	\$ 6,648	\$ 5,805
Economic	\$ 4,841	\$ 4,640	\$ 5,482	\$ 4,848
Environmental	\$ 80	\$ 187	\$ 70	\$ 48
Tax Compliance	\$ 439	\$ 939	\$ 325	\$ 293
OSHHS*	\$ 694	\$ 924	\$ 770	\$ 616
Other				
Total	\$ 19,249	\$ 25,948	\$ 18,052	\$ 14,745
Economic	\$ 7,885	\$ 6,284	\$ 9,589	\$ 8,748
Environmental	\$ 9,018	\$ 16,497	\$ 6,178	\$ 4,215
Tax Compliance	\$ 1,514	\$ 2,135	\$ 1,426	\$ 1,093
OSHHS*	\$ 832	\$ 1,032	\$ 860	\$ 688
Totals (All U.S. Businesses)**				
Total	\$ 9,991	\$ 11,724	\$ 10,664	\$ 9,083
Economic	\$ 6,381	\$ 5,662	\$ 7,464	\$ 6,728
Environmental	\$ 1,889	\$ 3,574	\$ 1,338	\$ 1,014
Tax Compliance	\$ 960	\$ 1,518	\$ 1,053	\$ 694
OSHHS*	\$ 761	\$ 970	\$ 809	\$ 647

Notes to 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.

- Columns might not total due to rounding.

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 regulation 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.

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 \$11,724 per employee.⁴⁵ Regulations cost medium-sized firms \$10,664 per employee and large firms \$9,083 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 (\$34,671) is more than two-and-a-half times the cost for large firms (\$13,750).

⁴⁵ 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.

V. Summary Comments

By far the most frequently identified business challenge in our survey was federal government regulation. Eighty-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. Further responses provided regulatory cost information for specific expenditures. Estimating the cost of outlays for manufacturing as a whole from the respondents' data indicates that direct expenditures related to regulation in the past year were \$138.6 billion. To put this figure in perspective, it is larger than the economies of 19 U.S. states.

The costs reported in the survey do not capture the total cost of regulations on a sector, or on the economy as a whole. The survey specifically asked for information regarding federal regulation and how it related to the distribution of employees' time; the cost of outside advisers; purchasing and maintaining tangible items; emissions credits or offsets; and costs resulting from federal government compliance-related activities. Respondents discussed other costs of regulations in their open-ended responses. 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 are among the other federal regulation consequences respondents identified.

Our economy-wide analysis buttresses and extends the survey estimate. The combined direct and indirect costs of federal regulations borne by the manufacturing sector are estimated to be \$215 billion. Considering this figure and the survey results together implies that direct costs make up two-thirds of the total costs of federal government regulations. Put another way, the total cost of regulation with respect to manufacturers exceeds direct expenditures by 37 percent.

This study provides new estimates of the total costs of federal regulations and the incidence of these costs across business sectors and firm sizes. The findings suggest that the

costs of federal regulations continued to rise to an estimated \$2.028 trillion in 2012. Both the survey and the broader empirical work indicate that small manufacturing firms bear a higher share of this cost than larger firms.

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., *Determinants of Economic Growth: A Cross-Country Empirical Study* (1997), 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*, (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. Clette, 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*, 8 (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*, Holmes & Meier, New York, NY.
- 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 archive.sba.gov/advo/research/rs264tot.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 archive.sba.gov/advo/research/rs207tot.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 online at [www.sba.gov/sites/default/files/advocacy/The%20Impact%20of%20Regulatory%20Costs%20on%20Small%20Firms%20\(Full\)_0.pdf](http://www.sba.gov/sites/default/files/advocacy/The%20Impact%20of%20Regulatory%20Costs%20on%20Small%20Firms%20(Full)_0.pdf).)
- Crews, Clyde Wayne Jr., annual editions, 1996 through 2014, *Ten Thousand Commandments*, Washington, D.C.: Competitive Enterprise Institute. (Available online at cei.org/10KC.)
- 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* 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 www.fraserinstitute.org and www.freetheworld.com.)
- 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*. 24: pp. 205–233.
- Hahn, Robert W. (1996), "Regulatory Reform: What Do the Government's Numbers Tell Us?" in Robert W. Hahn (ed.) *Risks, Costs, and Lives Saved: Getting Better Results from Regulation*, New York: Oxford University Press and AEI Press: pp. 208–253.
- Hahn, Robert W. and John A. Hird (1991), "The Costs and Benefits of Regulation: Review and Synthesis," *Yale Journal of Regulation* 8 (1), Vol. 8 (1): pp. 233–278.
- Hall, Joshua and Robert Lawson (2013), "Economic Freedom of the World: An Accounting of the Literature," *Contemporary Economic Policy*. (Available online 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*, 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 (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 (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 online 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 online at www.sba.gov/advo/research/rs163.html.)
- 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. (Available online at www.sba.gov/advo/.)
- International Monetary Fund (2004), *World Economic Outlook*, Ch. III "Fostering Structural Reforms in Industrial Countries," International Monetary Fund, April: pp. 103–146.
- 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 (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," in *Cross-Border Human Resources, Labor and Employment Issues*, Andrew P. Morriss and Samuel Estreicher (eds.), Kluwer Law International: Netherlands, 433-67.
- 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*, 58, pp. 269–275.

- Loayza, Norman V., Ana María Oviedo and Luis Servén (2004), “Regulation and Macroeconomic Performance,” September, World Bank. (Available online 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, “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. (Available online at www.oecd.org/economy/pmr.)
- 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 online at www.hks.harvard.edu/centers/mrcbg/programs/sustsci/documents/papers/2012-02.)
- 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 online at www.freetheworld.com/datasets_efw.html.)
- Sala-i-Martin, X., G. Doppelhoffer and R. Miller (2004), “Cross-Sectional Growth Regressions: Robustness and Bayesian Model Averaging,” *American Economic Review* 94 (4), September.
- Schiantarelli, Fabio (2008), “Product Market Regulation and Macroeconomic Performance: A Review of Cross-Country Evidence,” Boston College. (Available online 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 online 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, "Do Lax Environmental Regulations Attract Foreign Investment?" *Environment and Resource Economics*, 2002, 21, pp. 1–22.

Appendix A. Estimating In-House FTE Costs

The Society for Human Resource Management reports that an average of 19 percent of an employee's annual salary is spent on government-mandated benefits (e.g., unemployment, workers' compensation and Social Security). Another 19 percent is spent on voluntary benefits, and 11 percent is spent on pay-for-time-not-worked benefits (regular rate of pay for a nonworking period of time, such as vacations, holidays, personal, bereavement and sick leave), for a total of 49 percent of salary. Furthermore, its analysis by organization size "revealed that large-staff-sized organizations spent more on voluntary benefits when compared with small-staff-sized organizations."⁴⁶

For the purposes of this study, 30 percent of wages was the benefit adjustment for firms with 100 or fewer employees, and 49 percent was used for larger firms (i.e., those having more than 100 employees). This adjustment was made because the cost of an FTE to a firm is more than simply the wage cost; benefits are a cost as well. These calculations result in an average total FTE cost of \$270,972 for firms with 100 or fewer employees; compensation cost rises to \$1,591,679 for large firms.

We also use Census Bureau data in our calculations. The Census Bureau data for manufacturing, NAICS codes 31–33 (shown in Table A-1), do not reflect exactly the same categories used in the survey.

⁴⁶ See www.shrm.org/research/surveyfindings/articles/documents/2011_emp_benefits_report.pdf (p.12).

Table A-1. Census Bureau Data on the Manufacturing Sector

	All Firms	Firm Size		
		Small (< 50 Employees)	Medium (50–99 Employees)	Large (100+ Employees)
Number of Firms	254,941	226,207	13,540	15,194
Employment	10,984,361	2,045,099	900,272	8,038,990
Annual Payroll (in Thousands of Dollars)	\$ 574,817,032	\$ 83,921,306	\$ 40,729,140	\$ 450,166,586
Average Wage	\$ 52,330	\$ 41,035	\$ 45,241	\$ 55,998

For example, the survey used 0 to 50 employees for small firms, while the Census uses 0 to 49. Using the survey categories, which closely match the Census boundaries, provides a better estimate than using the figures for all firms not broken down by firm size because large firms have disproportionately higher per-firm costs but are a relatively small share of total firms. However, if we had elected to use this method, the first steps would have been to calculate all of the FTEs' costs (calculated by occupation and using Bureau of Labor Statistics data); then sum them up; and then divide by the total number of firms. That would yield a per-firm salary cost of \$670,527. Multiplying this figure by the total number of manufacturing firms leads to a total manufacturing regulatory compliance FTE salary cost of \$170,944,853,784. This figure would then be adjusted for benefits to determine total costs, but the adjustment factor is indeterminate given that small firms provide fewer benefits (as a share of income) compared to large firms.

Bureau of Labor Statistics data was also used to estimate annual wages. Reported "lawyers" annual wages were used for the attorney category reported here. Similarly, "top executives" was used for executives; "administrative service managers" was used for administrative; "accountants and auditors" was used for accounting; an average of broad "production occupations" was used to estimate the \$36,831 wage for skilled labor; unskilled

labor's wage was an average of "production occupations," "helpers—production workers" and "production workers, all other," and was \$30,327; and "all occupations" was used for "other."⁴⁷

⁴⁷ The exact occupation code is "occ_code" 51-xxxx. See www.bls.gov/oes/current/oes_nat.htm#00-0000.

Appendix B. Alternative Use of Funds Presently Allocated to Regulatory Compliance

In spring 2013, NAM members were surveyed (discussed in Section II) for the purpose of evaluating the effect of regulations on manufacturing in the United States. Respondents were asked how their company might reallocate funds if the cost of regulatory compliance was reduced and answered the open-ended question in writing. A sample of responses was provided in Section II. Additional responses are provided below.

Investment

Respondents identified four areas of investment spending that likely would increase if regulatory compliance costs decreased: capital investment and expenditures, growth and acquisition, R&D and general (unspecified) investment.

Capital Investment and Expenditures

- “New or improved facilities.”
- “New or upgraded equipment.”
- “Capital improvements to improve viability.”
- “Reinvest in manufacturing technology and general plant improvements to benefit the workers’ quality of life at work.”
- “Plant expansion.”

Growth and Acquisition

- “Additional growth resulting from re-investment in our businesses with the corresponding potential for increased jobs.”
- “Invest in growth initiatives.”
- “Expand business.”
- “Grow the business and increase employment.”
- “Purchase more raw goods for production purposes.”

R&D

- “Develop energy-efficient products.”
- “Invest in new product development.”
- “Research, develop and introduce new products.”
- “Invest in new products and innovation.”

- “Product and process development.”
- “Invest in product development to allow us to better compete.”
- “We would use all of the funds for developing new products.”
- “Product development and waste reduction.”

General (Unspecified) Investment

- “Reinvestment.”
- “Improvements.”

Employee Initiatives

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

Creating or Preserving Jobs

- “Hire more employees.”
- “Job preservation.”
- “Add another employee.”
- “Invest in product development, production and personnel.”

Employee Training

- “Hire and train more employees.”
- “Fund apprenticeship and training programs internally.”
- “Invest in employee training.”

Wages and/or Benefits

- “Share profits with employees/give them a raise.”
- “Profit sharing, bonuses, pay raises and improved benefits.”
- “Wage hikes.”
- “Higher salaries.”
- “We would love to improve our employees’ wages.”

Sales

Respondents identified three areas related to sales that likely would increase if regulatory compliance costs decreased: marketing and sales efforts, competitiveness and customer satisfaction.

Marketing and Sales Efforts

- “Enhance sales efforts.”
- “Increase marketing.”
- “Focus on global sales.”
- “Advertising for new customers.”
- “Increase product development and sales resources.”

Competitiveness

- “Be more price competitive with global competitors.”
- “Investment and becoming more price competitive.”
- “Reduce selling price to improve competitiveness.”
- “Lower pricing to compete with those foreign sourcing their manufacturing.”
- “Reduce prices to customers.”
- “Price reductions to grow the business.”
- “Reduce selling price to improve competitiveness.”

Customer Satisfaction

- “Creating value that customers are willing to pay for.”

ROI or Debt Reduction

Respondents identified areas related to ROI or debt reduction that likely would be affected if regulatory compliance costs decreased.

ROI or Debt Reduction

- “Increase profits or returns to shareholders.”
- “Pay the bills.”
- “Debt reduction.”
- “Pay down debt.”

Appendix C. Estimating the Cost of Economic Regulation

The Economic Regulation Index

The cost of economic regulation is measured in terms of the impact on U.S. GDP in 2012—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 Economic Regulation Index constructed from indicators used in the World Economic Forum’s GCI. We construct this Economic Regulation Index using the mean value for the following three components of the GCI:

- Burden of government regulation (GCI Variable No. 1.09)
- Efficiency of legal framework in challenging regulation (GCI Variable No. 1.11)
- Regulation of securities exchanges (GCI Variable No. 8.07)

Other variables may also reflect regulation, but rather than pick and choose arbitrarily, we simply selected all the variables that included a reference to regulation. These three GCI components are not available for every year. For the years not available, we computed the mean using the components that are available.

Sample of Countries Used in the Estimation and Summary Statistics

Table C-1 lists the countries used to estimate the parameters in Equation (1), and Table C-2 provides summary statistics for the variables used in the analysis.

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

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

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

Variable	Mean	Standard Deviation	Minimum	Maximum
GDP per Capita*	10.24	0.39	7.99	11.21
Economic Regulation Index**	4.08	0.70	2.07	5.59
Trade/GDP**	95.68	54.90	24.69	333.53
Dependency Ratio**	24.42	6.18	10.87	41.54
Tax Revenue/GDP**	34.25	7.28	17.21	49.62
Capital Investment/GDP**	21.08	5.83	10.76	52.84
Labor Force* **	8.74	1.48	5.12	11.89

Notes to Table C-2:

* Indicates a natural logarithmic transformation of the variable.

** One-year lagged value for the variable is used in the regression.

Alternative Measures of Economic Regulation

Other organizations have constructed indices to gauge and compare economic regulations across nations and over time. These include the World Bank's Regulatory Quality Index (World Bank, World Development Indicators, online database); the Economic Freedom of the World (EFW) Regulation Index (Qwartney, *et al.*, 2013); and the OECD PMR Index (OECD, online database). These three indices use different factors, survey different groups and have difference scales. For example, the Regulatory Quality Index is calibrated on a -2.5 to 2.5 scale, and the EFW Regulation Index is calibrated on a 0 to 10 scale.

Table C-3. The Impact of the World Bank Regulatory Quality Index on Economic Performance

	Dependent Variable: GDP per Capita ^a (in 2005 Dollars)	
	(1)	(2)
Regulatory Quality Index—World Bank	0.253	0.178
	(4.14)**	(3.79)**
Trade / GDP	0.002	0.002
	(3.31)**	(2.69)**
Dependency Ratio	0.011	0.003
	(1.97)*	(0.58)
Tax Revenue / GDP	0.030	0.025
	(1.17)	(1.30)
(Tax Revenue / GDP) Squared	-0.0003	-0.0002
	(-0.84)	(-0.78)
Capital Investment / GDP	0.0134	0.008
	(3.64)**	(3.03)**
Labor Force ^a	0.052	0.027
	(1.96)*	(0.96)
Year = 2008	-0.017	0.018
	(-0.69)	(0.73)
Year = 2009	-0.069	-0.036
	(-2.75)**	(-1.45)
Trend		0.010
		(4.69)**
Constant	8.06	-12.40
	(15.51)**	(-2.76)**
R-sq: Within	0.04	0.18
Between	0.66	0.61
Overall	0.59	0.55
Number of Observations	355	423

Notes to Table C-3:

- ^a Indicates a variable is entered into the regression as a natural logarithmic transformation.
- The models are estimated using panel data for all OECD countries for which the data are available for the years 1996, 1998, 2000 and 2002–2013. Each independent variable is lagged one year.
 - z-statistics are shown in parentheses, where ** indicates significance at the 1 percent level and * indicates significance at the 5 percent level.

For comparison, we estimate Equation (1) using the World Bank's Regulatory Quality Index. These results are shown in Table C-3. We note that estimating Equation (1) using the EFW Regulation Index also yields a statistically significant coefficient. Unfortunately, data for the United States are not included in the most recent (2013) edition of the OECD PMR Index.

Because the most recently available PMR Index value for the United States is for 2008, we do not perform the analysis using that index.

The estimated coefficients on the Regulatory Quality Index in Table C-3 are statistically significant at the 1 percent confidence level. These results provide additional evidence that complying with economic regulations systematic affects a nation's overall production.

As a further comparison, we apply the methodology described in the text to estimate the cost of economic regulations based on these two alternative indices. For the World Bank's Regulatory Quality Index, using the coefficient in Column (1) of Table C-3 and applying the 26 percent difference to the benchmark yields an estimated cost in terms of reduced GDP of \$1.41 trillion (denominated in 2014 dollars). We note that applying a different benchmark—the mean value of the Regulatory Quality Index for the five highest-ranked countries—yields an estimated cost of \$2.2 trillion. This is because the difference between the mean value for the five OECD countries with the least regulatory burden and the value of the Regulatory Quality Index is about 42 percent.

As a final comparison, we used a slightly different procedure to estimate the cost of economic regulation using the results for the EFW Regulation Index. This is because the EFW Index is calibrated such that the maximum value of 10 corresponds to “an effort to identify how closely the institutions and policies of a country correspond with the ideal of a limited government” (Gwartney, *et al.*, 2014, p. 2). In other words, a “10” does not imply the absence of regulation, so we use that as the benchmark for comparison. Based on the EFW Index, the estimated cost of economic regulation in 2012 is \$1.64 trillion (denominated in 2014 dollars).

Appendix D. Regulatory Costs by Firm Size Using Alternative Firm-Size Categories

Some past studies, including several for the SBA, have classified small, medium-sized and large firms in the following way: firms with fewer than 20 employees (small), firms with 20–499 employees (medium-sized) and firms with 500 or more employees (large). To facilitate comparisons to these studies, we allocate regulatory costs using these alternative firm-size categories. The allocations are presented in Table D-1.

Table D-1. Breakdown of Costs Using Alternative Firm-Size Categories, 2012 (Cost per Employee in 2014 Dollars)

Type of Regulation	All Firms	Firm Size		
		< 20 Employees	20–499 Employees	500+ Employees
Manufacturing				
Total	\$ 19,564	\$ 48,827	\$ 16,512	\$ 12,047
Economic	\$ 7,958	\$ 15,948	\$ 7,968	\$ 6,569
Environmental	\$ 10,497	\$ 31,265	\$ 7,400	\$ 4,526
Tax Compliance	\$ 295	\$ 573	\$ 278	\$ 259
OSHHS*	\$ 813	\$ 1,040	\$ 867	\$ 694
Trade				
Total	\$ 7,028	\$ 7,070	\$ 8,922	\$ 6,198
Economic	\$ 5,585	\$ 4,868	\$ 7,320	\$ 5,065
Environmental	\$ -	\$ -	\$ -	\$ -
Tax Compliance	\$ 710	\$ 1,249	\$ 808	\$ 499
OSHHS*	\$ 733	\$ 953	\$ 794	\$ 635
Services				
Total	\$ 8,620	\$ 8,130	\$ 7,932	\$ 9,174
Economic	\$ 6,580	\$ 4,590	\$ 5,999	\$ 7,693
Environmental	\$ 12	\$ 30	\$ 7	\$ 4
Tax Compliance	\$ 1,257	\$ 2,556	\$ 1,132	\$ 841
OSHHS*	\$ 771	\$ 954	\$ 795	\$ 636
Health Care				
Total	\$ 6,053	\$ 7,244	\$ 5,522	\$ 6,042
Economic	\$ 4,841	\$ 4,728	\$ 4,437	\$ 5,112
Environmental	\$ 80	\$ 266	\$ 63	\$ 39
Tax Compliance	\$ 439	\$ 1,348	\$ 270	\$ 290
OSHHS*	\$ 694	\$ 902	\$ 752	\$ 602
Other				
Total	\$ 19,249	\$ 32,676	\$ 15,841	\$ 13,681
Economic	\$ 7,885	\$ 5,878	\$ 8,386	\$ 8,723
Environmental	\$ 9,018	\$ 22,908	\$ 5,422	\$ 3,316
Tax Compliance	\$ 1,514	\$ 2,860	\$ 1,173	\$ 955
OSHHS*	\$ 832	\$ 1,031	\$ 859	\$ 687
Totals (All U.S. Businesses)**				
Total	\$ 9,991	\$ 4,063	\$ 9,304	\$ 8,845
Economic	\$ 6,381	\$ 5,883	\$ 6,402	\$ 6,798
Environmental	\$ 1,889	\$ 5,254	\$ 1,243	\$ 760
Tax Compliance	\$ 960	\$ 1,966	\$ 857	\$ 646
OSHHS*	\$ 761	\$ 961	\$ 801	\$ 641

Notes to Table D-1:

- * 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.
- Columns might not total due to rounding.



www.nam.org

Connect with Us

