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THE ROLE OF RETROSPECTIVE ANALYSIS AND REVIEW IN REGULATORY POLICY

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ABSTRACT

THE PRESIDENT'S DIRECTIVE to measure and improve the actual results of regulatory requirements is a welcome step. Retrospective analysis will have to be targeted and timely and to meet high standards for analysis to offer meaningful information about both the benefits and costs of existing regulations. Unfortunately, key regulatory agencies appear unable to perform such analysis of their own rules. Independent analysis by a congressionally mandated body may be warranted. In addition, retrospective analysis and review should not focus exclusively on individual rules, but rather should include some regulatory programs. Finally, new rules should be supported by better analysis of their likely benefits and costs relative to reasonable alternatives, and they should also be designed to promote measurement and evaluation of actual results of the regulation. Agencies should promote market-based mechanisms like permit trading as well as greater use of surveys of the effectiveness of information disclosure requirements. More aggressive implementation of the president's directive, accompanied by new emphasis along the suggested lines, will be necessary for success.

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WHEN BUYING PRESCRIPTION drugs, have you ever been confused by the medication guide your pharmacist is required to provide? Were you frustrated by how hard it is to read? If you have bought a home or refinanced a mortgage, have you had difficulty understanding the mandatory disclosure forms? At airports, have you worried about the safety of the x-ray machines or the effectiveness or necessity of federal rules treating elderly grandmothers as if they posed a significant threat? Fortunately, the federal government has a process, however imperfect, for reviewing the regulations these examples illustrate.

President Obama updated this process when he issued Executive Order 13563, Improving Regulation and Regulatory Review, in January 2011 and Executive Order 13579, Regulation and Independent Regulatory Agencies, in July 2011.¹ These executive orders newly emphasized the analysis and review of existing federal rules. Further, section 1(a) of Executive Order 13563, which covers all regulatory agencies whose heads serve at the pleasure of the president, stipulates that our regulatory system “*must measure, and seek to improve, the actual results of regulatory requirements*” (emphasis added). The one-year anniversary of the first of these executive orders provides an opportunity to evaluate the impact of this new emphasis.

There are several reasons why we should analyze and review existing rules. One is to evaluate the original analysis in support of the rule. Was it based on a sound understanding of economics or risk? A second is to evaluate, with the benefit of hindsight, the decision to regulate. Has the market failure that motivated the rule been overcome by technological or institutional change? Has the rule, or even the regulatory program, addressed the underlying problem successfully?

More measurement, analysis, and review of existing federal regulations are overdue and sorely needed. A variety of researchers—including scholars from the Mercatus Center at George Mason University—have highlighted the substantial growth in the volume of federal regulations, especially over the last 30 to 40 years.²

1. See Executive Order no. 13563, *Code of Federal Regulations*, title 3, sec. 3821 (January 18, 2011), http://www.reginfo.gov/public/jsp/Utilities/EO_13563.pdf; and Executive Order no. 13,579, *Code of Federal Regulations*, title 3, sec. 41587 (July 11, 2011), http://www.reginfo.gov/public/jsp/Utilities/EO_13579.pdf.

2. See, e.g., Susan Dudley and Melinda Warren, “Regulatory Restraint?” Mercatus Reports, *Regulation* 29, no. 2 (Summer 2006): 3-4, www.cato.org/pubs/regulation/regv29n2/v29n2-mercreport.pdf.

The Code of Federal Regulations (CFR), which includes all promulgated final rules but excludes their lengthy preambles, as well as proposed rules and documents like meeting announcements, had 165,494 pages in 2010.³ Since 1970, its total pages have tripled, growing by an average of 2.8 percent annually.⁴ Such a long and complicated set of regulations not only exceeds the comprehension of any individual, it also taxes the resources of entrepreneurs seeking to build private enterprises.

President Reagan's 1981 Executive Order 12291 and President Clinton's 1993 Executive Order 12866 directed economic analysis of regulations at new, economically significant regulations issued by executive branch agencies.⁵ Thus, in any given year, regulatory analysis focused on only a portion of the new regulations and, in general, only rarely on the stock of extant regulations, which is more than 30 times as large. This observation suggests there is plenty of opportunity to expand the scope of economic analysis of regulation. President Obama's executive orders may constitute a step in that direction, provided they are implemented in a manner that increases measurement and analysis of existing rules' effects and increases economic analysis at independent regulatory agencies, where historically there has been little such analysis.⁶

There is a shortage of systematic and authoritative information about how well or how badly various regulatory programs are working. Michael Greenstone, MIT economics professor and former Chief Economist of the President's Council of Economic Advisers (2009–2011), testified in 2011 that regulatory agencies generally do not have the information necessary to judge whether benefits exceed costs because the historical approach is to evaluate regulations' *likely* benefits and costs *before* they are enacted, when regulators know the least.⁷ Indeed, the Office of Management and Budget (OMB) in its annual reports to Congress on regulation, generally focuses on agencies' own *prospective* estimates, not measurement

3. See Office of the Federal Register (OFR), "Federal Register and CFR Publication Statistics—Aggregated Charts (XLS)," <https://www.federalregister.gov/blog/learn/tutorials/ofr-statistics-charts-all>. This measure of federal regulation also excludes interpretive documents like guidance documents, which some agencies use to expand the scope of regulatory requirements or to defer such requirements.

4. Author's calculation based on data from OFR, *Code of Federal Regulations: Actual Pages Published—Breakdown (1975 through 2010)*, <https://www.federalregister.gov/uploads/2011/07/CFR-Actual-Pages-published.pdf>.

5. In general, economically significant regulations are those with effects of more than \$100 million per year. Executive Order no. 12,291, *Code of Federal Regulations*, title 46, sec. 13,193 (February 17, 1981), <http://www.archives.gov/federal-register/codification/executive-order/12291.html>; Executive Order no. 12,866, *Code of Federal Regulations*, title 58, sec. 51735 (September 30, 1993), <http://www.epa.gov/fedreg/eo/eo12866.htm>.

6. On this latter point, see Art Fraas and Randall Lutter, "On the Economic Analysis of Regulations at Independent Regulatory Commissions," *Administrative Law Review* 63, special edition (2011): 213.

7. Michael Greenstone, "Improving Regulatory Performance" (testimony to the Senate Budget Committee, Task Force on Government Performance, Washington, DC, November 16, 2011), http://www.brookings.edu/testimony/2011/1116_regulation_greenstone.aspx.

and retrospective analysis.⁸ One might expect the Government Performance and Results Act to produce good information on the performance of regulatory agencies, because it requires all federal agencies to develop performance plans and goals and to report annually on their progress toward these goals. But key regulatory agencies use performance measures that focus on outputs or do not measure the results of their own performance.⁹ This dearth of evidence about the actual effects of regulations suggests that the focus of Executive Order 13563 on measurement, analysis, and review has promise.

Here, I follow the lead of President Obama's recent executive orders in distinguishing between review and analysis. By retrospective *review* I mean an administrative process of evaluating the appropriateness of extant regulations. The steps of this process include preliminary screening, more in-depth review and deliberation, and ultimately, an announcement of plans to revise certain rules as a result

8. See U.S. Office of Management and Budget, *2010 Report to Congress on the Benefits and Costs of Federal Regulations and Unfunded Mandates on State, Local, and Tribal Entities* (Washington, DC: U.S. Government Printing Office [GPO], 2010), http://www.whitehouse.gov/sites/default/files/omb/legislative/reports/2010_Benefit_Cost_Report.pdf. By way of comparison, the Congressional Budget Office (CBO) has for decades issued an annual list of up to 100 policy options to reduce the federal deficit by either increasing federal revenue or reducing expenditures, and it routinely publishes estimates of the effects of such policy changes on the deficit over the next 10 years. See CBO, *Reducing the Deficit, Spending and Revenue Options* (Washington, DC: GPO, March 2011), <http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/120xx/doc12085/03-10-reducingthedeficit.pdf>.

9. In 2004, the U.S. Government Accountability Office (GAO) noted, "Managers reported persistent challenges in setting outcome-oriented goals, measuring performance, and collecting useful data." See GAO, *Results-Oriented Government: GPRA Has Achieved a Solid Foundation for Achieving Greater Results*, GAO-04-38 (Washington, DC: GPO, March 10, 2004), 17, <http://www.gao.gov/assets/160/157517.pdf>. The Food and Drug Administration (FDA), for example, uses output measures like the number of questionnaires, exams, evaluations, and inspections completed, as well as outcome measures like the incidence of illness from exposure to five foodborne pathogens. See FDA, *FY 2012 Food and Drug Administration Congressional Justification, Foods Program, FY 2012 Congressional Budget Request* (Silver Spring, MD: FDA, n.d.), <http://www.fda.gov/downloads/AboutFDA/ReportsManualsForms/Reports/BudgetReports/UCM245580.pdf>. The pathogens are *Campylobacter*, *E. coli* O157:H7, *Listeria monocytogenes*, *Salmonella*, and *Salmonella Enteritidis*. See also FDA, *FY 2012 Food and Drug Administration Congressional Justification, Transforming Food Safety and Nutrition* (Silver Spring, MD: FDA, n.d.), <http://www.fda.gov/downloads/AboutFDA/ReportsManualsForms/Reports/BudgetReports/UCM244194.pdf>. As another example, last year the Department of Labor's Office of Inspector General (OIG) identified similar issues regarding programs of the Occupational Safety and Health Administration (OSHA). Its 2011 report stated, "OSHA has not evaluated the impact of its own enforcement program. . . . Since 1993, the Federal Government required effectiveness to be measured through the Government Performance Results Act (GPRA) where Federal agencies had to establish objective quantifiable performance goals and to measure program results. With its goal to improve workplace safety and health, OSHA measures its results using rates for injuries and illnesses, and fatalities. However, these measures are not sufficient to conclude on program effectiveness because the data are incomplete, unverified, and may be impacted by economic factors." OIG, *OSHA Has Not Determined If State OSH Programs Are at Least As Effective in Improving Workplace Safety and Health As Federal OSHA's Programs*, Report No. 02-11-201-10-105 (Washington, DC: GPO, March 31, 2011), <http://www.oig.dol.gov/public/reports/oa/2011/02-11-201-10-105.pdf>.

of the review in a manner consistent with the Administrative Procedure Act. By retrospective *analysis* I mean a study using methods from economics, statistics, and other fields like toxicology and epidemiology to assess the benefits and costs of existing regulations relative to a hypothetical scenario without such regulations. Measurement of a regulation's actual effects can and should be used in such an analysis. Furthermore, retrospective review may or may not include much retrospective analysis, and retrospective analysis may occur with or without any administrative process of retrospective review. In general, however, review of existing regulations would be enhanced with more retrospective analysis.

In this paper, I survey the practice of retrospective review, measurement, and analysis of existing regulations and draw conclusions about what the public and regulatory policy makers might expect from such efforts. I first show that previous administrations have typically attempted some form of organized retrospective review, and I examine those efforts. I also survey retrospective analyses of federal regulations as conducted by some federal agencies and by independent academics. I show that few retrospective analyses of the cost-effectiveness of federal regulations are sufficiently informative to permit a judgment about the regulation's efficiency.

Next, I survey the most recent reports on retrospective review issued by four selected regulatory agencies: the Environmental Protection Agency, the Food and Drug Administration, the National Highway Safety Transportation Administration, and the Securities and Exchange Commission. I argue that their retrospective reviews mostly reflect business-as-usual management, with little discernible new work on the retrospective analysis and measurement called for in the executive order.

Finally, I identify three obstacles to better regulatory measurement, analysis, and review in the agencies' retrospective analysis and review: a lack of impartiality, an inappropriately narrow focus, and an apparent failure to promote steps to better measure regulations' actual effects. I close with recommendations for overcoming these obstacles.

HISTORY AND BACKGROUND

THE NOTION THAT the federal government should examine existing regulatory requirements is not new. Indeed, it has undertaken administrative reviews and conducted retrospective analyses from time to time for years. The section below briefly describes some history and the background for contemporary efforts to review existing regulations.

Retrospective Review

PRESIDENT OBAMA'S JANUARY 2011 Executive Order 13563 specifies a process for retrospective analysis and review in section 6. It states:

- a. To facilitate the periodic review of existing significant regulations, agencies shall consider how best to promote retrospective analysis of rules that may be outmoded, ineffective, insufficient, or excessively burdensome, and to modify, streamline, expand, or repeal them in accordance with what has been learned. Such retrospective analyses, including supporting data, should be released online whenever possible.
- b. Within 120 days of the date of this order, each agency shall develop and submit to the Office of Information and Regulatory Affairs a preliminary plan, consistent with law and its resources and regulatory priorities, under which the agency will periodically review its existing significant regulations to determine whether any such regulations should be modified, streamlined, expanded, or repealed so as to make the agency's regulatory program more effective or less burdensome in achieving the regulatory objectives.¹⁰

President Obama's July 2011 Executive Order 13579, which applies to independent regulatory commissions, contains the same language, except that it uses the word "should" instead of "shall."¹¹

These provisions for analysis and review of extant regulations are similar to provisions in earlier executive orders. For example, President Clinton's Executive Order 12866, section 5, directs each agency to submit to the Office of Information and Regulatory Affairs (OIRA) a program to periodically review existing significant regulations to determine whether any should be modified or eliminated to make the program more effective, less burdensome, or in greater alignment with the president's priorities and the principles. It also authorizes the vice president to identify other existing regulations for agencies to review.

Reviewing the history of section 5 of Executive Order 12866 may shed light on the challenges of implementing similar sections of President Obama's executive orders. In 1995, Vice President Gore's initiative, the National Partnership for Reinventing Government, undertook a major reform of the U.S. regulatory system. In March 1998, it claimed that federal agencies "eliminated 16,000 pages of federal regulations."¹² The CFR's total pages declined by about 7,000 between 1995 and 1997, and in 1997 it contained about 14,800 fewer pages than it would have if growth from 1995 to 1997 had occurred at the 2.8 percent annual rate observed over the entire period since 1970.¹³ Pages of regulation are a simple and objective measure of regulatory complexity. But they are a relatively poor measure of total regulatory burden and are not clearly related to established economic concepts like compliance costs or opportunity costs.

10. Executive Order no. 13563, sec. 6.

11. Executive Order no. 13579.

12. See John Kamensky, "A Brief History," National Partnership for Reinventing Government, January 1999, <http://govinfo.library.unt.edu/npr/whoweare/history2.html>.

13. See OFR, *Code of Federal Regulations: Actual Pages Published—Breakdown (1975 through 2010)*. In 1995, the CFR had 138,386 pages.

The National Partnership estimated the reduced regulatory burden in dollar terms from the elimination of preexisting regulations, but only at an early stage in its process.¹⁴ During phase two in 1995, when the National Partnership undertook what it called a major reform of the regulatory system, it claimed, “Agencies identified \$28 billion a year in reduced regulatory burdens.”¹⁵ The National Partnership does not make clear what analytic standards, if any, agencies followed in estimating the reduced regulatory burden from cutting existing regulations. In a later listing of accomplishments for its first five years, the National Partnership makes no mention of a specific reduction in regulatory burden. Thus, it is unclear what economic effect this initiative might have had. Put differently, the elimination of regulations regarding buggy whips and horse-drawn carriages might constitute good house-keeping, but in the 1990s it could not be expected to promote regulatory efficiency. It is unclear what part of the regulatory reviews conducted under the National Partnership might have resulted in the streamlining of obsolete regulations like those covering buggy whips and horse-drawn carriages and what part might have promoted efficiency by eliminating regulations with costs well above their benefits.

The retrospective review requirements of section 5 of Executive Order 12866 and President Obama’s Executive Order 13563 supplement an oft-neglected statutory requirement that agencies periodically review extant regulations that disproportionately affect small businesses. Section 610 of the Regulatory Flexibility Act requires that each agency publish annually in the Federal Register a list of rules that have a significant economic impact on a substantial number of small entities and which are to be reviewed during the succeeding 12 months.¹⁶ The list must describe each rule, its necessity, and its legal basis, and also invite public comment on the rules.¹⁷ Section 610 isn’t having the intended effect, however. In congressional testimony in 2008, the Small Business Administration’s (SBA) chief counsel for advocacy stated, “Historically, federal agency compliance with section 610 has been limited. A July 2007 report issued by the Government Accountability Office (GAO) found that federal agencies’ reviews of their current rules, including the periodic reviews required under section 610, are neither as useful nor as open to public involvement as they should be.”¹⁸

14. See Kamensky, “A Brief History.”

15. Ibid.

16. See *Regulatory Flexibility Act*, “Periodic Review of Rules,” *U.S. Code* 5, part 1, chap. 6, sec. 610, <http://www.archives.gov/federal-register/laws/regulatory-flexibility/610.html>; Office of Information and Regulatory Affairs (OIRA), “About the Unified Agenda,” http://www.reginfo.gov/public/jsp/eAgenda/StaticContent/UA_About.jsp.

17. See Thomas M. Sullivan, “Regulatory Burdens on Small Firms: Rules Need Reforms?” (testimony to the U.S. House of Representatives, Committee on Small Business, Subcommittee on Regulations, Health Care and Trade, Washington, DC, July 30, 2008), http://archive.sba.gov/advo/laws/test08_0730.html.

18. See GAO, *Reexamining Regulations: Opportunities Exist to Improve Effectiveness and Transparency of Retrospective Reviews*, GAO-07-791 (Washington, DC: GPO, July 2007), 35, 43–44, <http://www.gao.gov/new.items/d07791.pdf>.

An attachment to the 2008 SBA testimony listed just four retrospective rule reviews that were “successful”; only three of these followed the review process under section 610.¹⁹ The more recent track record of review under section 610 is similarly lackluster. For example, the Environmental Protection Agency (EPA), in its July 2011 unified regulatory agenda, notes that it is closing its section 610 reviews for two regulations.²⁰ One of these reviews, regarding Effluent Guidelines and Standards for the Centralized Waste Treatment Industry, lasted for 10 years and resulted in no changes to the rule, perhaps because the EPA received no comments about it. In the EPA’s January 2012 progress report on its final plan for periodic retrospective reviews of existing regulations, the agency offers no information about the review of specific rules under section 610. Instead, it simply mentions section 610 as a requirement and states, “To the extent practicable, EPA will coordinate section 610 reviews with other statutorily or Presidentially mandated retrospective reviews it is coordinating.”²¹ Similarly, the Food and Drug Administration (FDA) does not mention section 610 in the discussion of its regulatory priorities that appears in the Fall 2011 Department of Health and Human Services statement of regulatory priorities.²²

In sum, prior to President Obama’s executive orders, agencies did not review extant regulations consistently or in a meaningful or informative way. This paper also examines how thorough the current process of retrospective review is.

Retrospective Analysis

SECTION 5 OF Executive Order 12866 implies that agencies analyze existing regulations as part of their retrospective review. But few agencies, with the important exception of the National Highway Traffic Safety Administration, have conducted

19. See Sullivan, “Regulatory Burdens on Small Firms,” Attachment A: Section 610 of the Regulatory Flexibility Act: Best Practices for Federal Agencies, http://archive.sba.gov/advo/laws/attachment08_0730.pdf.

20. See U.S. Environmental Protection Agency (EPA), “Regulatory Agenda Preamble,” *Code of Federal Regulations*, title 40, sec. 1 (March 15, 2011), http://www.reginfo.gov/public/jsp/eAgenda/StaticContent/201104/Preamble_2000.html.

21. See EPA, *Progress Report: Final Plan for Periodic Retrospective Reviews of Existing Regulations* (Washington, DC: EPA, January 2012), <http://www.epa.gov/lawsregs/rulemaking/retrospective/documents/eparetroreviewprogressrpt-jan2012.pdf>.

22. See U.S. Department of Health and Human Services (HHS), “Statement of Regulatory Priorities for FY 2012,” Fall 2011, http://www.reginfo.gov/public/jsp/eAgenda/StaticContent/201110/Statement_0900.html.

such analyses.²³ Even regulations that are reissued regularly, such as the EPA's national ambient air quality standards, are reissued without a retrospective economic analysis of the extant rule, at least in some important instances. For example, in the EPA's 2006 regulation revising the national ambient air quality standards for fine particles, it did not assess the benefits and costs of attaining the existing standard even though many areas of the country still had not attained that standard, suggesting that the costs of such attainment were quite high.²⁴ Further, data and modeling limitations precluded the agency from assessing the benefits and costs of the standards for larger particles, which it decided to drop under the 2006 rule.²⁵ Similarly, the EPA's analysis in support of its draft final ozone rule,²⁶ which President Obama rejected in September 2011, also focused on more stringent standards and assumed a baseline of full compliance with the preexisting rule in 2020, except in two areas of California where compliance was deemed too challenging to be realistic even by 2020.²⁷ These examples suggest that some important recurring regulations are updated or renewed, based on an economic analysis that simply assumes full compliance with existing regulations, and not on a retrospective analysis of the benefits and costs of those regulations.

Over the years, various federal agencies have expressed interest in additional analysis of existing regulations. In 1995, for example, the Congressional Office of Technology Assessment analyzed the Occupational Safety and Health Administration (OSHA) and found that "it is surprising, given the long-standing and contentious debate about the benefits and costs of OSHA's regulatory interventions, how little systematic knowledge exists about the actual effects of the agency's standards. OSHA would, no doubt, significantly benefit from a more routine effort to collect and interpret information pertaining to actual regulatory outcomes and

23. Another exception is OSHA's 2010 retrospective review of its methylene chloride regulation. It concluded that the "standard remains consistent with Executive Order 12866 because it has produced the intended benefits (i.e., protecting workers' health), and has not been unduly burdensome." Note, however, that this retrospective review did not provide quantitative estimates of compliance costs by firm or for the industry. It also did not provide quantitative estimates of workers' reductions in exposure, although it did provide new evidence of toxicity in its review of its earlier risk assessment. See OSHA, *Regulatory Review of 29 CFR 1910.1052: Methylene Chloride: Pursuant to Section 610 of the Regulatory Flexibility Act and Section 5 of Executive Order 12866* (Washington, DC: GPO, February 2010), 3, <http://www.osha.gov/dea/lookback/MC-lookback-Feb-2010-final-for-publication-May-2010.pdf>.

24. See EPA, "2006 National Ambient Air Quality Standards for Particle Pollution: The Regulatory Impact Analysis," October 6, 2006, <http://www.epa.gov/ttnecas1/ria.html>.

25. In the 2006 rulemaking, the EPA revised standards for particles of 2.5 microns in diameter (PM_{2.5}) and removed standards for particles of 10 microns in diameter (PM₁₀).

26. Office of Air Quality Planning and Standards, *Regulatory Impact Analysis: Final National Ambient Air Quality Standard for Ozone* (Research Triangle Park, NC: EPA, July 2011), http://www.epa.gov/glo/pdfs/201107_OMBdraft-OzoneRIA.pdf.

27. *Ibid.*, 5.

impacts.”²⁸ In 1999, the Government Accountability Office (GAO) studied the regulatory process and recommended, “To help determine if regulations need to be retained or improved, the EPA Administrator should establish a plan to study the actual costs and benefits of such regulations, including when and how to use retrospective studies as an integral part of its approach.”²⁹ Similarly, in July 2005, the GAO testified to the House Committee on Government Reform that “the regulatory process could benefit from more attention to evaluations of existing regulations.”³⁰

Regulatory agencies have limited but diverse experience with retrospective economic analyses of their programs and regulations. One prominent example of a retrospective program analysis is the EPA’s analysis of the benefits and costs of the Clean Air Act under section 812 of the Clean Air Act Amendments of 1990. First issued in 1997, the EPA’s analysis focused on the differences between two scenarios: a scenario that reflects historical economic and environmental conditions observed with the Clean Air Act in place, and a hypothetical scenario that projects the economic and environmental conditions that would have prevailed without any of the federal, state, and local programs developed pursuant to the goals of the 1970 and 1977 Clean Air Acts.³¹ The analysis estimated that the total benefits in pollution reduction from Clean Air Act programs over the 20-year period were \$6 to \$50 trillion. The mean estimate was about \$22 trillion, which was roughly the same as the aggregate net worth of U.S. households in that year.³² The analysis also concluded that it cost \$523 billion to achieve those benefits. Although the report lacked information about any alternative scenarios other than its chosen baseline, it did offer some information suggesting that the baseline is dubious or at least questionable.³³ In its baseline scenario of air quality without the 1970 Clean Air Act, six metropolitan areas would have been worse than Bombay, two would have been worse than Manila, and one would have been worse than Delhi, one of the world’s most polluted cities. The report also lacked information about *parts* of the program. For example,

28. See *Gauging Control Technology and Regulatory Impacts in Occupational Safety and Health: An Appraisal of OSHA’s Analytic Approach*, OTA-ENV-635 (Washington, DC: GPO, September 1995), 11.

29. GAO, *Assessing Impacts of EPA’s Regulations through Retrospective Studies* (Washington, DC: GAO, September 14, 1999), <http://www.gao.gov/assets/230/227989.pdf>.

30. See J. Christopher Mihm, “Prior Reviews of Federal Regulatory Process Initiatives Reveal Opportunities for Improvements” (testimony before the Subcommittee on Regulatory Affairs, Committee on Government Reform, House of Representatives, Washington, DC, July 27, 2005), <http://www.gao.gov/new.items/d05939t.pdf>.

31. See EPA, “Benefits and Costs of the Clean Air Act,” <http://www.epa.gov/air/sect812/index.html>. The EPA has also issued two other reports under section 812, but these are not retrospectives. One, issued in 1999, covered 1990 to 2010. Another, issued in 2011, covered 1990 to 2020.

32. See Randall Lutter and Richard B. Belzer, “EPA Pats Itself on the Back,” *Regulation* 23, no. 3 (2000): 23–28.

33. For a more detailed discussion of this report, see Lutter and Belzer, “EPA Pats Itself on the Back,” and Lutter and Belzer, “Authors, ACCACA Agree (Mostly),” *Regulation* 25, no. 1 (Spring 2002): 2, <http://www.cato.org/pubs/regulation/regv25n1/forthecord.pdf>.

it did not provide information about the costs and benefits of emissions control from mobile sources or about the regulation of hazardous air pollutants separately. It also did not provide retrospective estimates of the benefits and costs of specific rules. Perhaps most importantly, the EPA's section 812 report did not distinguish between air quality improvements due to Clean Air Act regulations and those attributable to all other causes (e.g., plant closures during the recession of the early 1980s and long-term shifts away from manufacturing and toward service industries). The EPA's report was less a retrospective analysis of the Clean Air Act, and more an analysis of the implications for health and the environment of observed emissions trends relative to the implications of hypothetical alternative trends in emissions.

The most prominent practitioner of retrospective analyses is apparently the National Highway Traffic Safety Administration (NHTSA), which has completed 92 separate evaluations of the costs and/or the effectiveness of various facets of its regulatory program since 1973.³⁴ For example, in 1998, it issued a detailed reappraisal of the cost and effectiveness of a 1983 final rule mandating center high-mounted stop lamps (CHMSL) on cars and light trucks.³⁵ In each state and calendar year of police-reported crash data, the NHTSA compared the ratio of rear impacts to nonrear impacts for model year 1986–89 cars (all CHMSL equipped) to the corresponding ratio in 1982–85 cars (mostly without the lamps) after adjusting the ratios for vehicle age. This reanalysis found that reductions in injuries and damages observed retrospectively were less than 5 percent and much less than prospective estimates of 33 percent, based on trials with random assignment. It also found that prospective estimates of costs were too low and the new benefits were nonetheless large and positive.

This retrospective analysis was unusual. The original prospective study was based on randomly assigning vehicles to have the special stop lamps under consideration. This random assignment is a rare example of high analytic rigor in a prospective federal study of a pending regulation. The retrospective analysis was forthright in identifying significant differences in conclusions between the prospective and retrospective studies. NHTSA's apparent comfort with self-criticism, at least with respect to its prior analyses, sets the agency apart.

In the 1990s, economists began to compare the results of retrospective studies with earlier prospective analyses issued when agencies first promulgated new

34. See NHTSA, List of Published Evaluation Reports and Plans Evaluation Division (and its predecessors), National Center for Statistics and Analysis (Washington, DC, 2011), available from NHTSA by emailing Charles Kahane at Chuck.Kahane@dot.gov. 1973–2011, 2011.

35. A CHMSL is a brake lamp in a vehicle's rear window designed to make braking activity more visible to other drivers and thereby reduce rear-impact crashes. Charles J. Kahane and Ellen Hertz, *The Long-Term Effectiveness of Center High Mounted Stop Lamps in Passenger Cars and Light Trucks*, NHTSA Technical Report DOT HS 808 696 (Washington, DC: GPO, 1998), <http://www.nhtsa.gov/cars/rules/regrev/evaluate/808696.html>.

regulations. Unlike some government studies, such as the EPA’s section 812 reports, the economists’ studies focused not on a policy question—did the rule offer benefits that justify or outweigh its costs?—but on an analytic question. They asked whether, with the benefit of hindsight, the prospective estimates of benefits and/or costs later appear accurate or valid.³⁶ Such research contributed to increased confidence in prospective cost estimates because it addressed whether such estimates were generally too high or too low relative to retrospective estimates. The OMB endorsed much of this work in its 2005 report to Congress on the benefits and costs of federal regulation.³⁷ That report reached the following conclusions:

- The agency analyses in the sample tended to overestimate the projected benefits of rules and the projected benefit-cost ratios.
- The costs of regulations were slightly more likely to be overestimated than underestimated.³⁸

In 2006, Resources for the Future senior fellow Winston Harrington reviewed the OMB report and the underlying studies and reached a somewhat different overall conclusion, based on reclassifying some regulations for which there were retrospective estimates and reinterpreting some retrospective estimates.³⁹ Harrington found “no bias” in prospective estimates of benefit-cost ratios.⁴⁰

Both the OMB and Harrington, as well as earlier work by Harrington and others,⁴¹ are careful to identify the limitations associated with this work:

- The sample of retrospective analyses does not cover a set of randomly chosen extant regulations; it is instead a convenience sample. As such, there is no basis for drawing more general inferences regarding the set of all extant regulations or the set of all prospective regulatory impact analyses prepared by U.S. regulatory agencies.

36. See, e.g., Winston Harrington, Richard D. Morgenstern, and Peter Nelson, “On the Accuracy of Regulatory Cost Estimates,” *Journal of Policy Analysis and Management* 19, no. 2 (Spring 2000): 297–322.

37. The OMB report used the word “benefits” even in instances where the retrospective study did not estimate benefits in monetary terms. A footnote in the OMB report states, “A ratio was used [in the OMB analysis] because in most cases benefits were not monetized and, in some cases, unit benefits were not projected for health or environmental improvements.” See OMB, *Validating Regulatory Analysis: 2005 Report to Congress on the Costs and Benefits of Federal Regulations and Unfunded Mandates on State, Local, and Tribal Entities* (Washington, DC: GPO, 2005), 42.

38. *Ibid.*, 48.

39. See Winston Harrington, “Grading Estimates of the Benefits and Costs of Federal Regulation” (RFF Discussion Paper 06-39, RFF, Washington, DC, 2006), 34. Available at www.rff.org/rff/Documents/RFF-DP-06-39.pdf.

40. *Ibid.*

41. Winston Harrington, Virginia McConnell, and Amy Ando, “Are Vehicle Emission Inspection Programs Living Up to Expectations?” *Transportation Research Part D* 5, no. 3 (2000): 153–72.

- Such retrospective validation studies offer little information about the merit of modifying the extant rule. For example, they do not estimate what part of the costs may be irretrievably sunk, e.g., spent on training or information technology systems with no market value in the absence of the rule.

More recently, EPA economist David Simpson provided a methodological critique of previous comparisons of prospective and retrospective cost estimates, claiming that the prior emphasis on ratios lacked an appropriate statistical foundation.⁴² He instead used a regression-based statistical test, and he reported that he cannot reject the hypothesis that prospective estimates are unbiased. Simpson's key point, however, is that prospective cost estimates are relatively inaccurate and that there are few careful studies of costs. He found only 18 estimates appropriate for use in his regression analysis.

Very few retrospective analyses of extant federal regulations provide sufficient information to evaluate whether benefits outweighed costs. The overwhelming majority of retrospective analyses that Harrington, the OMB, and Simpson reviewed provide information only about costs, about a key but incomplete measure of benefits (such as fatalities but not nonfatal injuries), or about both costs and a poor proxy for benefits (such as emissions reductions or the number of acres treated by a pesticide). In reviewing those retrospective analyses, I identified just four regulations, all issued by the NHTSA, for which retrospective studies provided both information about costs and reasonably comparable measures for benefits, expressed either in terms of dollars or in adverse health outcomes avoided. For another five regulations issued by OSHA, there are retrospective studies of reduced fatalities attributable to regulations. Unfortunately, these retrospective studies provide no estimates of the nonfatal injuries avoided or of the costs of the control technologies. In sum, I found credible retrospective estimates of benefits and costs for only four regulations.⁴³ The rest of the retrospective studies provide insufficient information to make any judgment about the regulations' economic merit.

A set of recent NHTSA studies modifies slightly this pessimistic conclusion. An NHTSA report lists many studies of the effectiveness and costs of various safety rules the agency has issued since 1973. It lists 17 separate reports for the years 2006 and later, suggesting that there is substantial continuing retrospective analysis at the NHTSA. None of these 17 reports, however, addresses both costs and effectiveness, so reaching conclusions about cost-effectiveness would require integrating results from multiple reports.

42. See David Simpson, "Do Regulators Overestimate the Costs of Regulation?" (National Center for Environmental Economics working paper series, EPA, Washington, DC, August 2011), <http://ideas.repec.org/p/nev/wpaper/wp201107.html>.

43. They are the following rules, all issued by the NHTSA: a 1982 rule relaxing bumper standards, a 1983 rule on center high mounted stop lamps, a 1984 rule on dual airbags, and Federal Motor Vehicle Safety Standard No. 208 on occupant crash protection.

THE CURRENT PROCESS OF RETROSPECTIVE ANALYSIS, MEASUREMENT, AND REVIEW

THE CONTINUING TEST for the administration is how to implement effectively the president's executive orders. I review here their implementation by selected agencies: the EPA, the Food and Drug Administration, the NHTSA, and the Securities and Exchange Commission. My review suggests that there is little new retrospective analysis by these agencies and that their plans for retrospective review appear to be leading to rulemakings that differ little from business as usual.

The EPA's Plans for Retrospective Review

IN ITS AUGUST 2011 final plan for retrospective review of regulations, the EPA states that "recent reforms, already finalized or formally proposed, are anticipated to save up to \$1.5 billion over the next five years."⁴⁴ This estimate of specific cost savings includes savings from items that simply should not be part of any "retrospective review" because they are a normal part of conventional, ongoing rulemaking. For example, the largest single source of "savings" that the EPA lists is from a "re-examined proposal" dealing with the renovation, repair, and painting of homes that contain lead-based paint. The EPA assigns savings of \$278 to \$300 million to this "re-examined proposal."⁴⁵

The EPA's January 2012 final plan regarding retrospective review presents no summary statement of aggregate savings and has even dropped the savings estimate from the reexamination of its own proposal. Instead, the final plan simply describes the status of 40 different retrospective projects. Of these, only six rulemakings (listed in figure 1) estimate potential costs or benefits per year, though some of these appear to be the same types of rules that the EPA might issue without any formal retrospective review process whatsoever. For example, the EPA describes one project titled "Multiple Air Pollutants: Coordinating Emission Reduction Regulations and Using Innovative Technologies" by saying, "EPA intends to explore ways to reduce emissions of multiple air pollutants through the use of technologies and practices that achieve multiple benefits, such as controlling hazardous air pollutant emissions while also controlling particulate matter and its precursor pollutants."⁴⁶ The EPA estimates incremental costs of \$2 to \$4 million annually associated with these new emissions controls.

As another example, the EPA is developing a possible new rule regarding electronic manifests for shipments of hazardous materials. The agency acknowledges

44. EPA, *Improving Our Regulations: Final Plan for Periodic Retrospective Reviews of Existing Regulations* (Washington, DC: GPO, August 2011), 5, <http://www.epa.gov/improvingregulations/documents/eparetroreviewplan-aug2011.pdf>.

45. *Ibid.*, 17, table 1, "Savings Estimates from Review of EPA Regulations."

46. In fact, the benefits of reducing fine particle concentrations have constituted the bulk of the benefits of EPA regulations aimed at other pollutants, such as hazardous air pollutants.

that it could issue this new rule only if new legislation under consideration in the Senate were to become law. Thus, this rule is not the result of any retrospective review of existing rules, except insofar as this phrase includes the review of rules that administrative agencies wish they had issued despite the lack of statutory authority. Regardless, the eventual cost savings from the EPA’s efforts will be negligible. Exactly one rulemaking, to eliminate “redundant” requirements regarding vapor recovery, has estimated cost savings greater than \$10 million—the annual savings from better regulation of vapor recovery would reach \$87 million.⁴⁷ Finally, the EPA’s plan does not address what steps, if any, it plans to take to implement the president’s directive to measure “actual” results.

FIGURE 1: SELECTED RETROSPECTIVE REVIEWS BY THE EPA

Title	Schedule	Anticipated Changes in Costs and/or Benefits
National Pollutant Discharge Elimination System (NPDES): coordinating permit requirements and removing outdated requirements	The EPA expects to issue its Notice of Proposed Rulemaking by April 2012.	The EPA estimates that public notice of draft permits in newspapers for NPDES major facilities, sewage sludge facilities, and general permits currently costs approximately \$1.6 million per year. Any savings from the EPA’s planned rule, however, are likely to be less.
Multiple air pollutants: reducing emissions through technologies and practices that achieve multiple benefits	The EPA issued a proposal for hazardous air pollutants (HAPs) from pulp and paper in December 2011. It expects to issue a final rule in July 2012.	The proposal’s estimated control costs are approximately \$4.1 million per year with associated emission reductions of approximately 4,100 tons per year of HAPs. Total industry costs are estimated to be approximately \$2.1 million per year.
Vehicle fuel vapor recovery systems for gas stations: eliminating redundancy	The EPA intends to issue a final rule in June 2012.	The EPA estimates the long-term cost savings associated with this rule to be approximately \$87 million per year (in 2010 dollars).
E-Manifest: reducing the burden of collecting hazardous waste shipment data	The next step for this action is internal review, which must occur within one year of enactment of a bill being considered in the Senate. That bill would authorize the establishment of a national system funded by user fees or other methods.	A national system could save hazardous waste handlers and states \$77–\$209 million, depending on the final rule and the ultimate adoption of the electronic manifest.
Consumer confidence reports (CCRs) for primary drinking water regulations: reducing costs	The EPA estimates it will complete a retrospective review of the CCRs by the end of 2013.	The EPA estimates a cost savings of approximately \$1 million (in 2010 dollars) per year based on the anticipated reduction in postage and paper costs for systems serving more than 10,000 customers.
States’ plans to implement national ambient air quality standards: reducing plan-preparation burdens	To be determined.	EPA regions 3 and 5 estimate the changes will save their states approximately \$165,000–\$180,000 per year.

Source: U.S. Environmental Protection Agency, *Final Plan for Periodic Retrospective Reviews of Existing Regulations, Progress Report*, January 2012: [eparetroreviewprogressrpt-jan2012-4.pdf](#).

47. Its projected savings are \$87 million annually. Vapor recovery is an emissions control system designed to control emissions related to vapors from gasoline.

The FDA's Plans for Retrospective Review

THE DEPARTMENT OF Health and Human Services in January 2012 updated its plan for retrospective review of existing regulations.⁴⁸ It also presented a new list of 26 Food and Drug Administration (FDA) regulations subject to retrospective review. The list appears to be mostly a collection of initiatives that the agency would ordinarily have pursued even without the executive order.

- Four regulations are updates recognizing changing technology:
 - ◆ electronic submission of postmarketing safety reports for drugs and devices
 - ◆ electronic submission of clinical study data
 - ◆ electronic distribution of prescribing information
 - ◆ electronic registration and listing for drugs and devices
- Another four regulations have outdated standards. These include regulations clarifying postmarketing safety-reporting requirements for combination products, and revising device premarket approval regulations.
- Five regulations appear to have direct effects that increase patient and consumer protections. These include, for example, a food-labeling nutrition initiative that would revise and update food-labeling regulations, and a rule to establish preventive controls requiring modern good manufacturing practices under the Food Safety Modernization Act. These rules are required under this act and thus are not rulemakings inspired by retrospective analysis or review.

Only a few rules appear to be aimed at potentially reducing the stringency of requirements. One is a rule that would downgrade approved medical devices so they would not have to be sold under the same requirements as higher-risk devices. The FDA is also reviewing two other regulations under section 610 of the Regulatory Flexibility Act. The FDA's plan does not mention efforts to measure better regulations' actual effects.

The NHTSA's Plans for Retrospective Review

IN AUGUST 2011, the U.S. Department of Transportation (DOT) offered a plan for retrospective review.⁴⁹ This plan mentions that the NHTSA has prepared 10

48. See HHS, "Retrospective Review of Existing Rules," <http://www.hhs.gov/open/execorders/13563/index.html>. See also the FDA Transparency Blog, <http://fdatransparencyblog.fda.gov/2011/10/26/1429/>.

49. See U.S. Department of Transportation, *Plan for Implementation of Executive Order 13563: Retrospective Review and Analysis of Existing Rules* (Washington, DC: GPO, August 2011). <http://regs.dot.gov/RetrospectiveReview.htm>.

evaluations of its rules' effectiveness in the last two years.⁵⁰ It also notes that the DOT had "scheduled all of DOT's existing rules as of 2008 for review during a specific year between 2008 and 2017."⁵¹ The plan lists 13 separate retrospective actions the NHTSA is taking. Three of these represent examinations, but not necessarily any rulemaking. None of the items estimates costs or cost savings.

The Securities and Exchange Commission's Plans for Retrospective Review

THE SECURITIES AND Exchange Commission (SEC), as an independent agency, is covered by Executive Order 13579 of July 2011 and so had less time to develop its retrospective review plans. In September 2011, the SEC solicited comments on how to manage its retrospective review process.⁵² It has not announced which regulations it might review or how it will follow the president's recommendation to conduct retrospective analysis. This reticence about retrospective review and analysis stands in contrast to a policy to implement vigorously the new statutory authority and requirements for rules under the Dodd-Frank financial reform legislation. The Federal Reserve Bank of St. Louis, which tracks proposed and final regulations on its website, indicates that the SEC issued 19 separate final rules from October 2010 through December 2011.⁵³

DISCUSSION AND RECOMMENDATIONS

THIS SURVEY LEADS to three observations and recommendations to promote better regulation.

1. Promote Impartiality in Retrospective Analysis

RETROSPECTIVE ANALYSIS AND review of regulations requires agencies to evaluate their own regulatory policies. Such self-evaluations are intrinsically difficult to perform impartially. Exceptions to this generalization are rare and notable. The NHTSA, for example, has a long history of performing retrospective studies of its rules that appear to be informative while suffering little loss of impartiality. Its apparent comfort with such studies may stem partly from an engineering culture that persists because of unparalleled access to data on highway safety that is sufficiently timely and of high enough quality to enable the agency to analyze first and make decisions later.

50. Ibid., 10.

51. Ibid.

52. See SEC, *Retrospective Review of Existing Regulations* (Washington, DC: GPO, 2011), sec.gov/rules/other/2011/33-9257.pdf.

53. This list does not specify which of these rules is economically significant. See Federal Reserve Bank of St. Louis, "Dodd-Frank Regulatory Reform Rules: Final Rules and Notices," <http://www.stlouisfed.org/regreformrules/final.aspx>.

One approach would be to pursue changes to make other agencies, including the EPA, more like NHTSA. NHTSA's defining characteristic regarding retrospective analysis and review may be its superior access to data enabling it to measure reliably the effects of its regulations. For example, accident data reported to local police departments and to insurance companies enable NHTSA to evaluate relatively quickly the frequency and severity of vehicle accidents by model year. Thus, NHTSA analysts have access to data to compare safety performance of vehicles from late model years that are required to be equipped with certain safety features with older vehicles lacking such equipment. They can then look for other data (e.g., from engineering studies) for additional evidence suggesting that the rule in question is more or less effective than expected. And armed with such data, they can then push more effectively for data-driven changes to regulations.

To create a comparably data-driven environment for other regulatory agencies Congress should consider directing them to implement pilot programs. One idea might be simply to authorize special programs intended to collect information about regulatory effectiveness. A stronger form of the same idea would authorize an agency to issue regulations only after it completed a pilot study of their likely effect. For example, Congress might even authorize an agency to issue regulations only after regulatory agencies first completed an appropriate pilot study. Such a study might show whether such fuel efficiency disclosures resulted in a material improvement in buyer comprehension of fuel costs relative to alternative forms of disclosure. Such pilot projects could help ensure that new rules have an empirical basis adequate to show that their benefits likely exceed their costs.

To protect the impartiality of analysis and thereby promote better understanding of the actual effects of regulation, Congress should create a nonpartisan office charged with conducting and reviewing both retrospective and prospective economic analyses of regulations and regulatory programs.⁵⁴ Such an office could cultivate the staff and expertise required for effective analyses and reviews. While a new body would entail additional federal costs at a time of austerity, its costs might be small relative to the savings from smarter evidenced-based regulation.

2. Reconsider the Scope of Retrospective Analyses

THE FOCUS ON retrospective analysis and review of regulations, as opposed to regulatory programs more broadly, may be too narrow. In particular, this focus may have led to retrospective reviews that do not appear to use information developed from broader retrospective analyses of regulatory programs. As one example, Greenstone studied differences in economic activity between plants located in counties that met

54. For a recent argument in favor of such a body, see Greenstone, "Improving Regulatory Performance." For an earlier essay with related arguments, see Randall Lutter, "The Role of Economic Analysis in Regulatory Reform," *Regulation* 22, no. 2 (1999): 38–46, <https://www.cato.org/pubs/regulation/regv22n2/econanalysis.pdf>.

the national ambient air quality standards and those in counties that did not. He reported that during the first 15 years, from 1972 to 1987, the counties that fell short and were subject to more stringent regulations relative to the other counties lost approximately \$75 billion of output in polluting industries.⁵⁵

Similarly, a 1999 study evaluated the incremental cost per cancer case averted in a large sample of Superfund sites subject to mandatory remediation, and showed that the cost was quite high. It reported that costs for the 5th percentile, the median, and the 95th percentile, respectively, were \$145 million, \$5 billion, and \$200 billion per cancer case avoided.⁵⁶ Although there may be other benefits of Superfund cleanup, including noncancer health effects and the value of increased services from improved water quality, these estimates of cost effectiveness are so high as to suggest strongly that Superfund cleanup to such high levels is an unwise and inefficient use of scarce resources.

More recently, Greenstone presented a preliminary retrospective analysis of Superfund and concluded, “Available evidence suggests that the benefits from Superfund clean-ups to the people living near these sites are small, at least relative to the costs of these clean-ups.”⁵⁷ The EPA’s plans for retrospective analysis and review do not mention any follow-up to these studies, presumably because its plans focus on individual regulations, not entire programs. Yet, these program evaluations are sufficiently informative to suggest that retrospective analysis and review should not be limited to regulations issued in final form on a particular date.

Evaluating regulatory programs rather than individual regulations may address other problems as well. First, any retrospective analysis or review begs the question of a counterfactual: What would the world have been like without the rule? In some instances, this question may be easier to answer by hypothesizing the absence of an entire regulatory program, as opposed to a single rule implementing part of that program. Similarly, with approximately 165,000 pages of extant rules, a wholesale approach focused on regulatory programs may be more likely to cover the wide scope of federal rules than a retail approach focused on individual regulations.

3. Promote Regulations that Measure Effects.

THE PLANS FOR retrospective review of the federal agencies reviewed here generally do not specify new steps for improving the measurement of federal regulations’

55. Michael Greenstone, “The Impacts of Environmental Regulations on Industrial Activity: Evidence from the 1970 and 1977 Clean Air Act Amendments and the Census of Manufactures,” *Journal of Political Economy* 110, no. 6 (2002): 1175–219.

56. Kip W. Viscusi and James Hamilton, “Are Risk Regulators Rational? Evidence from Hazardous Waste Cleanup Decisions,” *American Economic Review* 89, no. 4 (September 1999).

57. See Michael Greenstone, “Effective Regulation Through Credible Cost–Benefit Analysis: The Opportunity Costs of Superfund,” in Edward Balleisen and David Moss, eds., *Government and Markets: Toward a New Theory of Regulation* (New York: Cambridge University Press, 2010), 82.

actual effects. The NHTSA mentions several ongoing evaluations, but it has a history of doing such evaluations on a regular basis, beginning well before President Obama's Executive Order. The EPA has one retrospective study evaluating previous prospective estimates, but it is not focused on the measurement of actual effects. Otherwise, the EPA and FDA mention no new initiatives to improve measurement, despite the use of this term in the president's Executive Order 13563.

Improving such measurement is important. First, it would address the controversy associated with benefit-cost analysis. Prominent critics of benefit-cost analysis have argued that it is a deeply flawed device that "impedes rather than aids understanding of the concrete consequences of regulations."⁵⁸ Second, better measurement may help improve prospective estimates of benefits and costs, or at least those developed according to methods that have been "validated" with appropriate retrospective studies. In any event, a feasible and effective approach would be to design regulations to allow or ensure better measurement of their results. Permit trading would generate real-time information about compliance costs, and comprehension studies would help ensure that mandatory information disclosure achieves its intended goal.

Permit trading: For decades, economists have championed market-based regulatory mechanisms because of their cost-effectiveness. An example is regulatory programs that limit environmental emissions and allow the trading of permits to emit. These programs promote the lowest-cost means of meeting the specified emissions target. An additional advantage of such programs is the information they provide absent the effects of regulatory programs under changing market conditions. Emissions permit prices are unsurpassed at measuring one important aspect of the effects of regulations on regulated entities—the current marginal cost of controls, averaged across the industry. For example, a 2000 study used data on SO₂ permit prices and econometric models of abatement costs to draw conclusions about the limitations of prospective cost estimates, and to form explanations for price declines.⁵⁹ Further, futures markets for permits can also provide information about current expectations of future control costs.

Unfortunately, despite the value of cap-and-trade approaches in promoting the measurement of regulations' effects, their use by regulatory agencies has a decidedly mixed history. The decision by some states to "sunset" 1999 vintage NO_x allowances, a Washington, DC, circuit court decision to vacate the EPA's Clean Air Interstate Rule (CAIR), and the EPA's recent proposed Transport Rule to replace CAIR have

58. Lisa Heinzerling, "Lisa Heinzerling Responds to Richard Revesz On Cost-Benefit Analysis," Grist.org, May 15, 2008, <http://www.grist.org/article/cost-benefit-environmentalism-an-oxymoron>.

59. Curtis Carlson et al., "Sulfur Dioxide Control by Electric Utilities: What Are the Gains from Trade?" *Journal of Political Economy* 108, no. 6 (2002): 1292-326.

all affected the value of NO_x and SO₂ allowances and the stability of allowance markets. Regulators consider the rights embodied in banked emissions allowances to be subordinate to the environmental requirements of these programs. As a result, one recent study found that “the Title IV SO₂ allowances are now essentially without value—they can be purchased for the price of a lottery ticket—representing a loss to holders of banked allowances of \$3 billion dollars.”⁶⁰ A similar decline in NO_x permit prices has cost permit holders another billion dollars. Reinstating support for active emissions permit markets and for expanding the use of market-based regulatory mechanisms into regulatory arenas characterized by command-and-control methods may be the most practical and effective way to achieve the president’s goal of promoting the measurement of regulation’s actual effects and, in particular, its costs.

Comprehension studies: A common tool of federal regulation is the mandatory disclosure of information that may not otherwise be available to consumers. Such disclosure can take a variety of forms, from nutritional and content labeling on food, to warnings on pharmaceutical products, to disclosure of residential hazards to prospective tenants or buyers, to terms and conditions to borrowers. Despite the common use of this tool throughout the federal government, agencies rarely subject extant disclosure forms to systematic studies of their effectiveness in promoting comprehension.

To illustrate the possible value of such studies, consider one instance where researchers evaluated mandatory information disclosure for home mortgages taken out before the recent real-estate market crash.⁶¹ FTC staff studied the effectiveness of information disclosure forms in improving borrowers’ comprehension when taking out mortgages. Using a randomized assignment study, they found very low rates of understanding of basic concepts like annual percentage rates, loan amounts, and prepayment penalties. In addition, comprehension was significantly lower than with hypothetical alternative disclosure forms. The OMB and federal agencies should work to make routine similar studies of the actual results of mandatory information disclosure.

CONCLUSIONS

THE PRESIDENT’S DIRECTIVE to measure and improve the actual results of regulatory requirements is a welcome step. Retrospective analysis will have to be targeted and timely and to meet high standards for analysis to offer meaningful information about

60. Arthur G. Fraas and Nathan Richardson, “The Mixed History of EPA Management of Banked Emissions Allowances” (RFF Discussion Paper 10-42, RFF, Washington, DC, 2010), 43.

61. See James Lacko and Janis Pappalardo, “The Failure and Promise of Mandated Consumer Mortgage Disclosures: Evidence from Qualitative Interviews and a Controlled Experiment with Mortgage Borrowers,” *American Economic Review* 100, no. 2 (2010): 516-21.

both the benefits and costs of existing regulations. Unfortunately, key regulatory agencies appear unable to perform such analysis of their own rules. Independent analysis by a congressionally mandated body may be warranted. In addition, retrospective analysis and review should not focus exclusively on individual rules, but rather should include some regulatory programs. Finally, new rules should be supported by better analysis of their likely benefits and costs relative to reasonable alternatives, and they should also be designed to promote measurement and evaluation of actual results of the regulation. Agencies should promote market-based mechanisms like permit trading as well as greater use of surveys of the effectiveness of information disclosure requirements. More aggressive implementation of the president's directive, accompanied by new emphasis along the suggested lines, will be necessary for success.

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