IS REGULATION GOOD FOR YOU?

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Will all federal regulations soon pass a benefit-cost test? If the OMB's 2003 report is any indicator, the answer may be yes–at least for some categories of regulations. Applying the midpoint of OMB's estimates for quantified costs and benefits of agency rules, we find that 100 percent of regulations studied would pass a benefit-cost test for several agencies, and about 80 percent would pass for all agencies considered. Moreover, these regulations would confer at least $100 billion annually in net benefits, again using OMB's numbers. Sound too good to be true? That's probably because it is.

We argue that OMB's numbers are plausible, given the methodology that OMB uses. Whether they are reasonable is less clear. Some work by economists on related sets of regulations suggests that the percentage could be lower. A survey of experts in the field also casts doubt on the estimates of the number of regulations that would pass a benefit-cost test derived from OMB's report. The experts also suggest, in line with academic research, that there is considerable room for improvement in regulations that pass a benefit-cost test. We conclude with several suggestions for improving the regulatory process.

I. INTRODUCTION

The Office of Management and Budget (OMB) recently issued its sixth report on the costs and benefits of regulation. Normally not for prime time, this report made the front page of the *Washington Post*.[1] The punch line was that the benefits of clean air regulations "during the past decade were five to seven times greater in economic terms than were the costs of complying with the rules."[2]

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1. Eric Pianin, *Study Finds Net Gains from Pollution Rules*, WASH. POST, Sept. 27, 2003, at A1.

2. *Id.*

Will almost all federal regulations soon pass a benefit-cost test? If the OMB's 2003 report[3] is any indicator, the answer may be yes. Using OMB's numbers, we find that 100% of regulations already pass a benefit-cost test for several agencies.[4] Furthermore, the aggregate net benefits of regulation could be substantial. For example, the OMB 2003 Report estimates that for the ten year period from October 1, 1992, to September 30, 2002, the estimated total annual quantified benefits for major federal rules were between $146 billion and $230 billion, and the total annual quantified costs ranged from $36 billion to $42 billion.[5] That yields a minimum of over $100 billion annually in aggregate net benefits.

In this paper, we examine the OMB's numbers in detail to assess their plausibility and implications. Part II summarizes data on the fraction of regulations that pass a benefit-cost test, using OMB's data as a starting point. Part III examines whether OMB's numbers are reasonable. We conclude that OMB's numbers are plausible, given the methodology that OMB uses. Whether they are reasonable is less clear. My suspicion is that they are not, and we present some evidence and new survey research that supports this view. Part IV considers whether regulations and regulatory analysis are getting better or worse with time. Some evidence suggests that there is no obvious trend—either in the fraction of regulations passing a benefit-cost test or the quality of regulatory analysis.[6] But a new survey suggests that experts think regulations may be getting worse over time, at least as measured by the fraction likely to pass a benefit-cost test over the last two decades.[7] Finally, Part V summarizes my findings and makes several suggestions for improving the regulatory process.

II. HOW MANY REGULATIONS PASS A BENEFIT-COST TEST?

Before asking how many regulations pass a benefit-cost test, a word is needed about the nature of the test. We will use a test that

3. OFFICE OF INFO. & REGULATORY AFFAIRS, OFFICE OF MGMT. & BUDGET, INFORMING REGULATORY DECISIONS: 2003 REPORT TO CONGRESS ON THE COSTS AND BENEFITS OF FEDERAL REGULATIONS AND UNFUNDED MANDATES ON STATE, LOCAL, AND TRIBAL ENTITIES (2003) [hereinafter OMB 2003 REPORT], *available at* http://www.whitehouse.gov/omb/inforeg/2003_cost-ben_final_rpt.pdf.

4. The Department of Education, the Department of Energy, and the Department of Housing and Urban Development were all found to have 100% of their regulations pass benefit-cost tests between 1992 and 2002. *See infra* tbl. 1 for the percentages by agency.

5. *See* OMB 2003 REPORT, *supra* note 3, at 3, 7. Estimates of costs and benefits are in 2001 dollars.

6. *See infra* fig.1.

7. *See infra text* accompanying notes 37-39 for a discussion of the survey questions.

focuses on quantifiable benefits and costs in the interest of simplicity. It is not because we think unquantifiable benefits and costs are unimportant in making decisions, but rather because we do not have a simple way to address them here.

OMB basically takes the agency's analyses of the expected economic impacts of regulation as given and monetizes benefits where it can.[8] For example, if the agency computes the tons of pollution reduced or the number of lives saved, OMB will monetize those numbers. Further, OMB only counts regulations for which a substantial portion of costs and benefits was quantified and monetized by the agency or, in some cases, monetized by OMB.[9] This is important because there are many regulations for which agencies do not quantify any benefits.[10] The question naturally arises as to whether there are really benefits to those regulations. In addition, OMB does not revisit any of the assumptions or numbers in the agency's analyses. Whatever the agency says is gospel for purposes of OMB's analysis.

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8. *See* OMB 2003 REPORT, *supra* note 3, at 5 ("All of the estimates presented . . . are based on agency information or transparent modifications of agency information performed by OMB."). The transparent modifications consist of annualizing agency numbers, converting to different year dollars, and monetizing pollution reductions in a few instances where the agency does not monetize them. *See id.* at app. A.

9. OMB should not always omit regulations for which the agency does not estimate benefits or costs. Consider the EPA regulation of Petroleum Refining Process Waste reviewed between April, 1998 and March, 1999. The EPA reported zero benefits for this program, while reporting costs of $30 million per year. However, the EPA noted that "recovered oil benefits were identified and netted out of the cost estimate." *See* Report to Congress on the Costs and Benefits of Federal Regulations, 65 Fed. Reg. 7198, 7219 tbl. 6 (Feb. 11, 2000) [hereinafter OMB 2000 REPORT]. Moreover, agency omissions of benefit or cost estimates are not always justifiable:

> [T]he agency has been operating under a restriction on the use of appropriations for the last six fiscal years. The restriction has prevented the agency from gathering and analyzing data relating to fuel economy capabilities and the costs and benefits of improving the level of fuel economy. Particularly since that restriction was lifted only on December 18, 2001, the agency has been unable to prepare a separate economic analysis for this rulemaking. The agency notes, however, that the standard it is setting for the 2004 model year will not make it necessary for the manufacturers with a substantial share of the market to change their product plans.

OMB 2003 REPORT, *supra* note 3, at 12 tbl. 4 (regarding cost-benefit measurement of the "Light Truck Average Fuel Economy Standard, Model Year 2004," 67 Fed. Reg. 16,052 16,059).

10. Regulations with costs that are not quantified refer to the 34 regulations included in the OMB 2003 REPORT, at 7 tbl. 2. These regulations have "not estimated" under benefits. For a complete list of those regulations and their estimated benefits and costs, see OMB 2003 REPORT, at 12 tbl. 4, app. A; *see also* Draft Report to Congress on the Costs and Benefits of Federal Regulations, 67 Fed. Reg. 15,014, 15,025-27 tbl. 7 (Mar. 28, 2002) [hereinafter OMB 2002 REPORT]; OMB 2000 REPORT, *supra* note 9, at tbls. 7, 11, 12, 13, 14, 16.

One reason OMB may take the agency numbers as given is that it has already reviewed the benefit and cost numbers as part of the regulatory review process. During that review process, OMB can ask the agency to make changes and use different assumptions at both the proposed and final stages during both informal and formal reviews. Even though OMB can provide such input, this process is a negotiation. And OMB has very limited resources to review these regulations. Thus, while OMB has input, it does not provide a detailed review of many aspects of these regulations. OMB neither does its own analysis from scratch because of resource limitations, nor does it effectively enforce its own regulatory guidelines.[11] Thus, it is not clear the extent to which OMB technocrats would actually approve of the agencies' analyses if they were in a more academic environment. We speculate that the reason that OMB takes the agency numbers as given is because it would be politically difficult for an Administration to deal with two sets of benefit-cost numbers—one from the regulatory agency and a second from OMB.

Interestingly, OMB reports on the aggregate net benefits of regulation, but it does not report on the number of regulations that are likely to pass a benefit-cost test by category. We believe information on the number of regulations that could pass a benefit-cost test is potentially useful to decision makers. If a large fraction of regulations failed a benefit-cost test in particular categories, there might be more need for oversight.[12] Of course, if the oversight process resulted in substantial improvements in net benefits, then it could still be quite useful.[13] The problem is that it is very difficult to ascertain the impact of OMB oversight.[14]

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11. *See* ROBERT W. HAHN & PATRICK DUDLEY, HOW WELL DOES THE GOVERNMENT DO COST-BENEFIT ANALYSIS? 9-14 (AEI-Brookings Joint Center for Regulatory Studies, Working Paper 04-01, 2004) (arguing that the compliance with OMB guidelines is low, citing inconsistent comparison of costs and benefits, a failure to evaluate alternatives which might yield higher net benefits, insufficient clarity of presentation, and a failure to clearly state analytical assumptions), *available at* http://www.aei-brookings.org/admin/authorpdfs/page.php?id=317.

12. *See, e.g.*, STEPHEN BREYER, BREAKING THE VICIOUS CIRCLE: TOWARD EFFECTIVE RISK REGULATION (1993).

13. In some cases, statutes may require a particular regulation, independent of whether it passes a benefit-cost test. For example, the Clean Air Act requires that the Environmental Protection Agency set National Ambient Air Quality Standards for a variety of air pollutants including ozone, but it allows some flexibility regarding implementation. Although regulations setting ozone standards have failed benefit-cost analyses, *see* OMB 2000 REPORT, *supra* note 9, at 7239-40 tbl. 13, the legislative mandate does not eliminate the need for oversight. Further analysis could still help develop a more cost-effective regulation.

14. *See, e.g.*, SCOTT FARROW, IMPROVING REGULATORY PERFORMANCE: DOES

Some insight into the number of regulations that pass a benefit-cost test using OMB's numbers is shown in Table 1. The table presents various estimates of benefits and costs using the low and high endpoints for benefits and costs along with the midpoint.[15] The range of regulations that pass a benefit-cost test appears to be between 60% and 90%, depending on one's assumptions.[16] Furthermore, some agencies have perfect batting averages despite some controversial regulations. The Department of Energy, for example, has several regulations requiring energy efficiency standards that supposedly pass muster.[17] The Department of Health and Human Services ("HHS"), similarly, has estimated benefits that exceed costs for all rules, including privacy standards for health records—a regulation that has been quite controversial in the medical community.[18] The Department of Education and the Department of Housing and Urban Development ("HUD") also have perfect records, but have finalized only a few major regulations.[19]

Recall that OMB's analysis does not include regulations with

EXECUTIVE OFFICE OVERSIGHT MATTER? 18-23 (AEI-Brookings Joint Center for Regulatory Studies, Working Paper, 2001) (arguing that although Executive Officer oversight may result in rejecting some inefficient regulations, these rejections have not been strongly correlated with increasing cost-per-life-saved, and such oversight has no "efficiency improving impact" on regulations from the time of their proposal to their finalization or on the cost effectiveness of regulations that are implemented), *available at* http://www.aei-brookings.org/admin/authorpdfs/page.php?id=123; Christopher C. DeMuth & Douglas H. Ginsburg, *White House Review of Agency Rulemaking*, 99 HARV. L. REV. 1075, 1082-88 (1986) (arguing that Executive Office oversight is generally desirable, especially for its ability to prompt agencies to ask "hard questions" before committing to a particular regulatory approach). Others, like John F. Morrall III, would argue that the reason regulations have improved is due in part to OMB oversight. See JOHN F. MORRALL III, SAVING LIVES: A REVIEW OF THE RECORD 15-16 (AEI-Brookings Joint Center for Regulatory Studies, Working Paper 03-6, 2003) (noting that the absence of a positive time trend "may indicate that the agencies and OMB have had some success."), *available at* http://www.aei-brookings.org/admin/authorpdfs/page.php?id=275.

15. There is some debate about the use of point estimates to approximate the net benefits of regulations due to the large amount of uncertainty inherent in predicting costs and benefits. See David M. Hassenzahl, The Effect of Uncertainty on Cost-Effectiveness Estimation, 7 J. Risk Res. (forthcoming 2004) (analyzing the importance of including information about uncertainty in regulatory decisions). In general, it is useful to consider uncertainties in key parameters. Unfortunately, regulatory impact analyses do not provide such information in a systematic fashion. In the absence of such information, we think point and mid-point estimates can provide some useful insights.

16. *See infra* tbl. 1.

17. For examples, see, e.g., OMB 2003 REPORT, *supra* note 3, at 91 tbl. 19; OMB 2000 REPORT, *supra* note 9, at 7239-40 tbl. 13. Energy Efficiency Standards for Air Conditioners is one such example

18. *See* FRED H. CATE, PRIVACY IN PERSPECTIVE 52-54 (2001).

19. *See* OMB 2003 REPORT, *supra* note 3, at 99 tbl. 20; OMB 2002 REPORT, *supra* note 10, at 15042 tbl. 14; OMB 2000 REPORT, *supra* note 9, at 7212. *See also infra* tbl. 1 (reflecting the number of regulations finalized over the time period 1992-2002 by the n values in table 1).

benefits that were not estimated. In order to measure the extent of the bias caused by the omission of these regulations, we calculated the number of regulations that would pass a benefit-cost test for each agency if these regulations were included in the totals. There were a total of thirty-four more regulations to consider that were included in the OMB 2003 Report as major regulations, but excluded from their totals because the benefits or costs were not estimated.[20]

We assign zero benefits to these regulations for lack of a better assumption. Some would argue that zero is a lower bound and can lead to misleading results. We would argue that this is a matter of interpretation. For example, if a regulation had some quantified costs, and benefits were assigned a zero value, then quantifiable net benefits would be negative, and the regulation would not pass a benefit-cost test based on quantifiable net benefits. But the regulation could still pass a more broadly defined benefit-cost test if non-quantifiable benefits were included in the final decision.

Homeland security regulations provide a good example. So far, it has been very difficult to quantify the benefits of those regulations. At the same time, we would argue that it is useful to put pressure on the agency to try to quantify the benefits of those regulations to the extent feasible to avoid wasteful social expenditures.

Note that if some costs and all benefits are left out of the calculation, the direction of bias in the net benefits estimate is unclear. That is, the estimate could be high or low relative to some objective estimate of net benefits. This is so precisely because we do not know how the unquantified costs and the unquantified benefits compare without further information.

In short, we think it is not unreasonable to assign a zero dollar value to unquantified benefit and cost categories for three reasons. First, it would provide regulatory agencies with an incentive to provide more information on quantifiable benefits and costs. Second, any other assumption seems totally arbitrary since we do not have information on the actual non-quantified benefits and costs.[21] Third,

20. *See* OMB 2003 REPORT, *supra* note 3, at 12 tbl.4.

21. If one were doing a more in-depth study of particular regulations, it might be possible to obtain some quantifiable estimates using expert judgment or some other method. But this is precisely what the agencies should be doing. *See* KENNETH J. ARROW ET AL., AM. ENTER. INST. ET AL., BENEFIT-COST ANALYSIS IN ENVIRONMENTAL, HEALTH, AND SAFETY REGULATION 4-8 (1996) (arguing that benefits and costs should be quantified wherever possible; agencies should be encouraged to use economic analysis to help set regulatory priorities, and such analyses should be subject to peer review both inside and outside government), *available at* http://aei-brookings.org/admin/authorpdfs/

the measure of quantifiable net benefits should be used in conjunction with non-quantifiable benefits and costs to reach a decision. Exactly how is a matter of some debate.

In quantitative terms, assigning zero benefits to regulations where the agency did not estimate benefits decreases the fraction of regulations that pass from 80% to 57% using midpoint estimates.[22] The totals for the Department of Transportation (DOT), the Environmental Protection Agency (EPA), and the Department of Agriculture (USDA) are affected the most. The percentage of regulations that pass a benefit-cost test at the midpoint estimate for the DOT drops from 42% to 24%, for the EPA it drops from 83% to 67%, and for the USDA the percentage drops from 80% to 31%.[23] Interestingly, these numbers are similar to numbers we derive independently.[24]

III. ARE THE OMB NUMBERS REASONABLE?

There are two questions we address. First, are the OMB results plausible, given its methodology and assumptions? And second, are the OMB results reasonable, i.e., are they good estimates of the likely net benefits of regulation?

To examine the issue of whether the numbers are plausible, we consider twenty-one regulations that overlap with an analysis that Hahn authored.[25] Table 2 compares the results of Hahn's analysis with OMB's results.[26]

While the two methods for assessing benefits and costs differ in terms of valuing both benefits and costs, they both take the agency analyses as the basic point of departure.[27] Thus, they provide a crude

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22. See *infra* tbl. 1. When zero benefit regulations were not included, we determined a pass rate by dividing 68, the number of regulations that passed a benefit-cost test, by 85, the number of regulations considered. Adding 34 to the denominator reduces the overall pass rate to 57%.

23. These calculations were performed by adding 9 zero benefit regulations to the denominator for the DOT, 9 for EPA, and 8 for the USDA.

24. *See* ROBERT W. HAHN, AEI-BROOKINGS JOINT CENTER FOR REG. STUD., REVIVING REGULATORY REFORM: A GLOBAL PERSPECTIVE 58 tbl. 3-9 (2000) (suggesting that less than half of final regulations appear to pass a strict benefit-cost test), *available at* http://www.aei-brookings.org/admin/authorpdfs/page.php?id=111.

25. *See id.*

26. *See infra* tbl. 2.

27. For Hahn's methodology for assessing benefits and costs of regulation, see HAHN, *supra* note 24, at 38-41. For OMB's methodology, *see* OMB 2003 REPORT, *supra* note 3, at app. A. There are four main differences between Hahn's method and OMB's. First, while OMB took agency discount rates and values of statistical life as given, Hahn introduced a common discount rate and value of life. Hahn's real discount rate for the

check on the plausibility of OMB's results. The table reveals that OMB finds that sixteen of twenty-one regulations pass a benefit-cost test, and we find that fourteen of twenty-one regulations pass a benefit-cost test. For the two regulations on which we differ, we have similar estimates of benefits and costs; for one regulation, Oil and Gas Extraction, it just barely fails using my estimates, and the discrepancy between the numbers on the other regulation, Onboard Diagnostics, results from different valuations of the benefits of preventing certain pollution emissions. Thus, two somewhat different methodologies arrive at similar findings about which regulations are likely to pass a benefit-cost test. This leads me to the conclusion that the OMB numbers are plausible, given the methodology that the agency employed.

We have established that the OMB numbers are plausible, but do they really make sense? To determine this, we suggest that selected economists take a random sample of the regulations OMB addressed and compare their estimates of each program's expected net benefits with OMB's estimates.[28] This approach could be done in principle, but has not been done in practice.

For now, we note that there are a number of regulations about which economists would disagree with the OMB 2003 report. Examples include energy efficiency standards, setting limits on arsenic and radon in drinking water, the cleanup of lead in soil at hazardous waste sites, and corporate average fuel economy standards.[29]

There is no systematic analysis of the issue of regulations passing a benefit-cost test for the regulations considered here, but there are two analyses that are relevant, if not definitive. One by Morrall examines

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base case is 5 percent, with 3 percent and 7 percent used in the sensitivity analyses, and value of life for the base case is $5 million, with $3 million and $7 million used in the sensitivity analyses. Second, OMB's pollution values were also different from Hahn's. For Hahn's pollution values, see HAHN, *supra* note 24, at 40 tbl. 3-3, and for OMB's pollution values, see OMB 2003 REPORT, *supra* note 3, at 91 tbl. 19. Third, Hahn annualized estimates of costs and benefits for each regulation using 1995 dollars, whereas OMB annualized estimates using 2001 dollars in its 2003 Report. Finally, Hahn and OMB also had different assumptions for latency periods and willingness-to-pay values for reducing nonfatal risks of injury and disease.

28. Ideally, one would want to know the actual economic impact of the regulation after it is implemented, but this is not known at the time the regulation is passed. As OMB has noted, the issue of retrospective analysis of regulations deserves more attention. For an insightful discussion of the retrospective anlysis of regulation, see Winston Harrington et al., *On the Accuracy of Regulatory Cost Estimates*, 19 J. POL'Y ANALYSIS & MGMT. 297, 298 (2000).

29. *See, e.g.*, representative papers under "Regulatory Reform/Benefit-Cost Analysis," *at* http://www.aei-brookings.org/publications/.

the cost-effectiveness of seventy-six regulatory actions from 1967 to 2001.[30] If we assume that Morrall's numbers are a reasonable proxy for the costs and benefits of a particular regulation,[31] and assume that the value of a statistical life ("VSL") is $3 million, then 46% of Morrall's regulations would pass a benefit-cost test.[32] If the VSL equals $7 million, then 58 % of Morrall's regulations would pass.[33] Hahn, Lutter, and Viscusi find similar results.[34] They concentrate on regulations aimed at saving lives by restricting their sample to regulations where mortality reductions account for at least 90% of total benefits, according to agency estimates.[35] Using this smaller number of regulations, they find that just ten of twenty-four rules (42%) pass a benefit-cost test.[36]

A survey conducted by the AEI-Brookings Joint Center provides

30. *See* MORRALL, *supra* note 14.

31. *See id.* at 7-8. Where possible, Morrall tries to isolate the costs and estimated impact on health of different regulations to derive his measure of cost effectiveness for those regulations. Cost effectiveness in this context is defined as the discounted present value of costs divided by the discounted present value of lives saved. To derive this measure of cost-effectiveness, Morrall first estimates the monetized non-health benefits when that number is available or can be derived. He then subtracts that number from the estimated total costs of the regulation to get an estimate of the costs of the regulation associated with improving health. Note that for Morrall's approach to provide a reasonable measure of cost effectiveness as defined here, the monetized non-health benefits would need to approximate the monetized non-health costs. Additionally, the costs of achieving health benefits and non-health benefits would need to be separable. For example, suppose a benefit of the regulation was that it would reduce pollution by one ton and the monetary non-health benefits associated with that reduction (e.g., due to increased visibility) were $1000. Then, Morrall is implicitly assuming that the monetary non-health costs were $1000 and that these costs could be separated from the health costs that would need to be made to achieve the regulation's objectives. In many situations, the costs may not be separable, so this method could be problematic—even if the incremental or average non-health benefits were equal to the incremental or average non-health costs, which may often not be true. Unfortunately, there is no simple adjustment that will solve this problem, unless more information is known about the precise nature of the cost function. To some extent, Morrall addresses these measurement issues by focusing on regulations that primarily offer health benefits.

32. VSL is assumed to be in 2002 dollars to match the other figures in the study. From 1985-2000 various government agencies calculated the VSL to be anywhere between $1.04 million and $6.55 million (in 2002 dollars). For specific agency VSL values, see W. KIP VISCUSI & JOSEPH E. ALDY, THE VALUE OF A STATISTICAL LIFE: A CRITICAL REVIEW OF MARKET ESTIMATES THROUGHOUT THE WORLD, tbl. 12 (National Bureau of Economic Research, Working Paper No. 9487, Feb. 2003) (reviewing the VSL literature), *available at* http://www.nber.org/papers/w9487.pdf. $3 million corresponds with the Federal Aviation Administration's 1996 estimate.

33. Morrall uses a VSL of $7 million for the purpose of his paper. *See* MORRALL, *supra* note 14, at 15.

34. *See* ROBERT W. HAHN ET AL., DO FEDERAL REGULATIONS REDUCE MORTALITY? (2000), *available at* http://aei-brookings.org/admin/authorpdfs/page.php?id=106..

35. *Id.* at 15.

36. *Id.* at 21 fig. 3-2.

another check on OMB's numbers. We surveyed a group of leading regulatory economists, Joint Center fellows, Joint Center Board members, former OIRA heads and deputy directors. These experts were selected because they have a deep knowledge of the federal regulatory process, and were fairly evenly distributed in terms of their political affiliation.

The survey included the following questions for the period 1993-2002:

> Consider major environmental, health and safety regulations implemented between *1993 and 2002*. If you were doing the analysis, approximately what percentage of those regulations do you think would have passed a benefit-cost test based on your assessment of:
>
> *a. Only* benefits and costs that can be quantified?
>
> __% (*fill in*)
>
> b. For those regulations that you think *pass* a comprehensive benefit-cost test, by what percentage do you estimate net benefits would increase if those regulations had been designed optimally? ___% (*fill in*)

The same questions were asked for the period covering the preceding decade. The results are summarized below.[37]

The experts' mean estimate of 36% for the period 1993-2002 is a far cry from OMB's estimate of 80% of regulations passing a benefit-cost test between 1992 and 2002. Moreover, the experts believe that less than half of regulations would pass a benefit-cost test in both periods.[38] Finally, the experts generally believe that regulations became worse over time. The mean estimate of regulations passing a benefit-cost test decreased from 44% in the years 1983-1992 to 36% in the years 1993-2002.[39]

IV. ARE REGULATIONS AND ANALYSIS IMPROVING?

First, we examine whether regulations are improving, according to OMB's and the Joint Center's calculations. To address this issue, we consider a time series that combines OMB's data with some earlier data that we collected.[40] Recall that these analyses rely heavily on the

37. *See infra* tbl. 3.
38. *Id.*
39. *Id.*
40. The data came from Robert W. Hahn, *Reviving Regulatory Reform*, *supra* note 24.

government's own analyses. Because the numbers are not directly comparable, we consider the percentage of regulations that pass in a given year. One such time series is shown in Figure 1.

My results suggest that, contrary to the estimates of the survey respondents, there is no obvious time trend in the fraction of regulations passing a benefit-cost test.[41]

Second, we examine how the cost-effectiveness of regulations changes over time. Using Opportunity Costs per Statistical Life Saved (OCSLS), a measure for cost effectiveness, there is no evidence of a time trend in the health and safety regulations based on the data from Morrall's 2003 study. However we do find that the cost-effectiveness of EPA regulations in Morrall's study, all related to reducing human exposure to carcinogens, declines over time.

In addition, there is overwhelming support for the view that there is substantial room for improvement. Survey respondents think that for those regulations that would have passed a benefit-cost test, aggregate net benefits could have increased by 93% during the period 1983 to 1992 and by 85% during the period 1993 to 2002.[42]

Examining the relative cost-effectiveness of regulations reveals a clue about how that improvement might be achieved. In Morrall's data, regulations designed to reduce human exposure to toxins are significantly less cost-effective than other regulations. The mean OCSLS for toxin regulations in Morrall's study is $5.8 billion—compared with about $4.2 million for all other health and safety regulations.[43] This suggests that reallocating some resources away from regulating human exposure to toxins would allow the federal government to save more lives at a lower cost.[44]

In addition, there are numerous studies suggesting that there is ample room for improvement of individual regulations. Some examples of proposals include substituting an energy tax for corporate average fuel economy standards,[45] allowing states and municipalities

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Hahn's data was built on earlier work: a study of ninety-two environmental, health and safety regulations from 1990 to mid-1996, and is part of a continuing project to track the costs and benefits of federal regulation. For more information about the original study, *see* Robert W. Hahn, *Regulatory Reform: What Do the Government's Numbers Tell Us?, in* RISKS, COSTS, AND LIVES SAVED 208 (Robert W. Hahn ed., 1996).

41. *See infra* tbl. 3.

42. *See infra* tbl. 3.

43. *See infra* fig. 2.

44. This is consistent with a finding by Tammy O. Tengs & John D. Graham. *See* Tammy O. Tengs & John D. Graham, *The Opportunity Costs of Haphazard Social Investments in Life-Saving, in* RISKS, COSTS, AND LIVES SAVED, *supra* note 40, at 167.

45. *See* RANDALL LUTTER & TROY KRAVITZ, AEI-BROOKINGS JOINT CENTER FOR

to set their own water standards for arsenic,[46] and allowing parties responsible for cleaning up hazardous waste sites to substitute clean up of lead dust in nearby residences.[47]

Finally, consider the question of whether analysis has improved over time, specifically across different presidential administrations. Hahn and Dudley assess the quality of benefit-cost analyses of fifty-five regulations from the Reagan, first Bush, and Clinton administrations and conclude that there is no clear trend in the quality of benefit-cost analysis across administrations.[48] Furthermore, they find that over 70% of the fifty-five analyses during all three administrations fail to quantify net benefits.

V. CONCLUSION

This paper asked whether there is evidence that regulation is good for you. The answer, of course, is that some regulations make economic sense and others do not. In the aggregate, social regulation may be good for you, but there are also regulations that are likely to fail a benefit-cost test.

We suggest that the OMB numbers are plausible, using their methods and assumptions. Whether they are reasonable is less clear. If one believed that OMB regulatory oversight was effective or that regulatory agencies actually cared about the net benefits of

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REG. STUD., DO REGULATIONS REQUIRING LIGHT TRUCKS TO BE MORE FUEL EFFICIENT MAKE ECONOMIC SENSE? AN EVALUATION OF NHTSA'S PROPOSED STANDARDS (2003), *available at* http://www.aei.brookings.org/admin/authorpdfs/page.php?id=244. Lutter and Kravitz also take issue with the failure of NHTSA's Regulatory Impact Analysis to consider the unintended consequences of increased fuel economy—namely that because driving will take less fuel to travel a given distance, consumers will drive more and exacerbate driving-related externalities such as traffic, accidents, and pollution. *Id.*. at 23.

46. *See* JASON BURNETT & ROBERT W. HAHN, AEI-BROOKINGS JOINT CENTER FOR REG. STUD., EPA'S ARSENIC RULE: THE BENEFITS OF THE STANDARD DO NOT JUSTIFY THE COSTS (2001) (arguing that the EPA's arsenic rule is unlikely to pass a benefit-cost test), *available at* http://www.aei.brookings.org/admin/authorpdfs/page.php?id=122. Burnett and Hahn also explore the option of targeting specific water systems and find that this strategy might improve the cost effectiveness of the rule, but not enough to generate net benefits. *Id.* at 10. The EPA presents a more optimistic view. *See* National Primary Drinking Water Regulations; Arsenic and Clarifications to Compliance and New Source Contaminants Monitoring, 66 Fed. Reg. 6976 (Jan. 22, 2001). See CASS SUNSTEIN, AEI-BROOKINGS JOINT CENTER FOR REG. STUD., THE ARITHMETIC OF ARSENIC 22-37 (2001), *available at* http://www.aei.brookings.org/admin/authorpdfs/page.php?id=153, for a review and synthesis of these studies.

47. *See* RANDALL LUTTER & ELIZABETH MADER, AEI-BROOKINGS JOINT CENTER FOR REG. STUD., LITIGATING LEAD-BASED PAINT STANDARDS: IS IT A SOLUTION? 22 (2001), *available at* http://www.aei.brookings.org/admin/authorpdfs/page.php?id=127. The authors recommend policies to regulate lead that would both reduce costs and improve children's health.

48. *See* HAHN & DUDLEY, *supra* note 11.

regulations, then the results would not be surprising. If, on the other hand, one thought that agencies tended to focus on their mission, as Justice Breyer does,[49] and that OMB has very limited power to change regulations, then the numbers do appear to be on the rosy side. Ideally, we would want a scientific study of the issue that provided an independent assessment using a random sample of regulations.[50] Absent that, we must rely on other pieces of evidence.

Some work by economists on regulations that overlap with OMB's sample suggests that OMB's numbers could be optimistic.[51] But because they are non-random and do not cover the same time period, they are suggestive.

A survey of experts in the field also casts doubt on the estimates of the number of regulations that would pass a benefit-cost test derived from OMB's 2003 report.[52] The experts also suggest, in line with academic research, that there is considerable room for improvement in regulations that pass a benefit-cost test.[53] We also find that there does not appear to be a time trend in the fraction of regulations that pass a benefit-cost test using each regulatory agency's numbers; nor does their appear to be a trend in the quality of regulatory analysis over time.[54] However, experts appear to believe that the fraction of federal environmental, health and safety regulations that pass a benefit-cost test has declined over time.[55]

The economic analysis by OMB should be complemented by findings from scholarly research. A large body of scholarly research suggests that many regulations do not pass a benefit-cost test and that there is substantial room for improvement.

So, where does that leave us?

First, we observe that all numbers should be taken with a grain of salt, and numbers that are developed by regulatory agencies responsible for promoting specific regulations should be taken with

49. *See* BREYER, *supra* note 12.

50. See Robert W. Crandall & Clifford Winston, *Does Antitrust Policy Improve Consumer Welfare? Assessing the* Evidence, 17 J. ECON. PERSP. Fall 2003, at 3, 16-20, for such an analysis of antitrust policy in certain areas. *See also* Jonathan B. Baker, *Policy Watch: Developments in Antitrust Economics*, 13 J. ECON. PERSP. 1, 181, 191-192 (1999). The point is that such analyses can be done.

51. *See, e.g.*, BURNETT & HAHN, *supra* note 46. For a different perspective, see Cass R. Sunstein, *The Arithmetic of Arsenic*, 90 GEO. L.J., 2255, 2276-90 (2002). *But see* LUTTER & MADER, *supra* note 47.

52. *See infra* tbl. 3.

53. *See id.*

54. *See infra* fig. 1.

55. *See id.*

many grains. Ideally, an independent assessment of all such regulations would be produced by respected academics, but the payoffs for doing such work are generally too low even though the economic stakes are frequently high. The AEI-Brookings Joint Center does some work along those lines, but more is needed to ascertain what we are getting in exchange for regulating in different arenas, and the extent to which specific regulations could be improved with better design.

Second, it is important that the analysis itself be improved. At a minimum, OMB should insist that the agencies provide some information on point estimates and ranges for key parameters, such as costs and benefits. Procedures need to be put in place to help improve the quality of analysis.

Third, OMB should consider including in its final tally regulations where agencies do not estimate benefits or costs. One good reason is to motivate agencies to provide benefits and costs where possible. A second is that it is inconsistent with their methods to simply exclude these regulations from their totals. Their basic method is to take the agency numbers as given. If agencies do not assign a number to a particular category of benefits or costs, then it is not unreasonable to assign it a zero for purposes of calculating quantifiable benefits and costs. Perhaps more research can provide insights into the characteristics of regulations for which agencies do not estimate benefits or costs.

Fourth, OMB should also consider asking agencies to report estimates of the extent to which the proposed regulations fall short of maximizing net benefits. According to the survey results and empirical research, this shortfall could be substantial.[56]

Fifth, OMB should require that agencies provide more information on individual components of regulations. In general a major federal regulation frequently consists of bundles of smaller regulations that affect different activities. While some of these may pass a benefit-cost test, it is quite likely that some do not. For example, in the case of arsenic, regulating small rural water systems may have resulted in very little health benefit, but was generally quite expensive.[57] It would be useful to identify those parts of regulations that don't pass a

56. *See, e.g.*, LUTTER & KRAVITZ, *supra* note 45 (arguing that NHTSA's ruling to regulate the fuel efficiency of light trucks is seriously flawed); BURNETT & HAHN, *supra* note 46.

57. *See* BURNETT & HAHN, *supra* note 46.

benefit-cost test, so policy makers could modify proposals accordingly.

Sixth, OMB should push for funding of comparisons of the economic impacts of regulations before and after they are implemented. Such retrospective comparisons could provide useful hints on how to improve prospective estimates of the impacts of regulations. Agencies could also be asked to help with this evaluation effort as part of the Government Performance and Results Act.[58]

The generally rosy regulatory scenario painted in the OMB report has left many critics on the Right wondering whether the exercise is worthwhile. And those on the Left are rejoicing because they think that economists have been beaten at their own game. If all or almost all regulations pass a benefit-cost test, regulation's supporters can explain why regulation is good for you.

We prefer to think about the issue of evaluating regulatory benefits and costs in a dynamic context. Seven years ago, OMB was asked to provide a comprehensive assessment of the costs and benefits of federal regulation.[59] It has made a good-faith effort to do so and has come up with some informative reports. If it continues to stick with each regulatory agency's story, and does nothing to clean up the agency's analytical act, then the basic story in its report won't change. If, on the other hand, OMB introduces some changes that either improve the information base from agencies, or uses other information sources, a very different story is likely.

So at some point, in one of our wilder dreams—remember, we are economists—we can imagine OMB either not taking the agencies' numbers at face value or making each agency really sing for its supper. When that will happen, we cannot say, but we can at least enjoy the dream.

58. *See* Government Performance and Results Act of 1993. Pub.L.No. 103-62, 107 Stat. 285 (codified in scattered sections of 31 U.S.C.) (requiring each agency to submit annual performance reports to OMB).

59. *See* OFFICE OF INFO. & REGULATORY AFFAIRS, OFFICE OF MGMT. & BUDGET, REPORT TO CONGRESS ON THE COSTS AND BENEFITS OF FEDERAL REGULATIONS (1997), *available at* http://www.whitehouse.gov/omb/inforeg/rcongress.html.

Table 1

OMB Percentage of Regulations that Pass a Benefit-Cost Test (1992-2002)

Results by Agency	Scenario[a]				
Department	Low Benefits and High Costs	Low Benefits and Low Costs	Midpoint Benefits and Midpoint Costs	High Benefits and High Costs	High Benefits and Low Costs
Education (n=1)	100%	100%	100%	100%	100%
DOE (n=6)	100%	100%	100%	100%	100%
DOL (n=5)	60%	60%	60%	60%	60%
DOT (n=12)	42%	50%	42%	50%	67%
EPA (n=40)	48%	50%	83%	85%	85%
HHS (n=13)[b]	92%	100%	100%	100%	100%
HUD (n=3)	100%	100%	100%	100%	100%
USDA (n=5)	60%	60%	80%	80%	80%
TOTAL (n=85)	61%	65%	80%	82%	85%

Source: OMB 2003 REPORT, *supra* note 3.

Notes:

Education = Department of Education;
DOE = Department of Energy;
DOL = Department of Labor;
DOT = Department of Transportation;
EPA = Environmental Protection Agency;
HHS = Department of Health and Human Services;
HUD = Department of Housing and Urban Development;
USDA = Department of Agriculture.

[a] Regulations were found to have passed a cost-benefit test for a given scenario only when estimated benefits exceeded estimated costs for that scenario.

[b] Twenty-three separate food labeling regulations from HHS were combined into one regulation for the purpose of this table. That regulation passed a benefit-cost test for all scenarios.

Table 2

Benefit-Cost Comparison for Regulations that Overlap

REGULATION	OMB[a] Pass Benefit-Cost Test?	Hahn Pass Benefit-Cost Test?
Department of Labor		
Confined Spaces	Yes[b]	Yes
Occupational Exposure to Asbestos	No	No
Department of Transportation		
Vessel Response Plans	No	No
Double-Hull Standards	No	No
Stability Control of Medium and Heavy Vehicles During Braking	Yes	Yes
Environmental Protection Agency		
Oil and Gas Extraction	Yes	No
Acid Rain Permits	Yes	Yes
Vehicle Inspection and Maintenance	Yes	Yes
Evaporative Emissions from Light-Duty Vehicles	Yes	Yes
Phase II Land Disposal	No	No
Phase-Out of Ozone-Depleting Chemicals	Yes	Yes
Reformulated Gasoline	No	No
Acid Rain NOx Title IV	Yes	Yes
Hazardous Organic NESHAP	Yes	Yes
Refueling Emissions from Light-Duty	Yes	Yes
Non-Road Compression Ignition Engines	Yes	Yes
Deposit Control Gasoline	Yes	Yes
Onboard Diagnostics	Yes	No
Health and Human Services		
Food Labeling (combined analysis of 23 individual rules)	Yes	Yes
Housing and Urban Development		
Manufactured Housing Wind Standards	Yes	Yes

REGULATION	OMB[a] Pass Benefit-Cost Test?	Hahn Pass Benefit-Cost Test?
Department of Agriculture		
Nutrition Labeling of Meat	Yes	Yes
Total Number Passed	16	14
Percentage	76%	67%

Sources: OMB 2003 REPORT, *supra* note 3, at 87-90 tbl. 18; HAHN, *supra* note 24, at 59 tbl. 3-10; Hahn, *supra* note 40.

Notes:

The final tally of the number of rules passing a benefit cost test appears in HAHN, *supra* note 24, at 59 tbl. 3-10. The rules listed above are included in this tally.

[a] OMB cost and benefit estimates were calculated by finding the midpoint estimate of the reported cost and benefit ranges in the OMB 2003 Report.

[b] A regulation is ruled to have passed a benefit-cost test if its estimated benefits exceed its estimated costs.

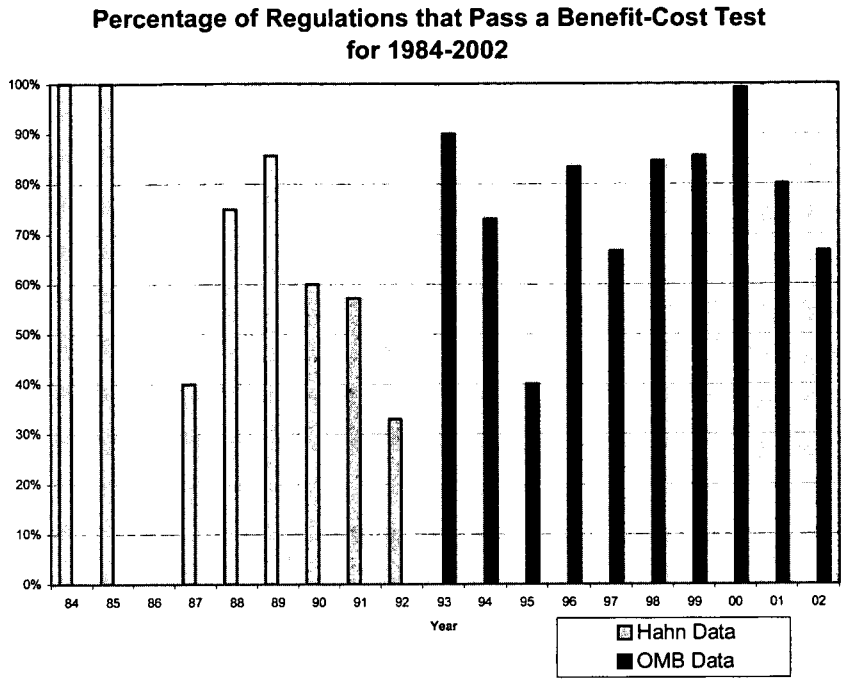
Table 3

Expert Opinions on Efficiency of Regulations and Potential for Improvement

Period	1993-2002	1993-2002		1983-1992	1983-1992
Question	Pass a Benefit-Cost Test	Potential Improvement		Pass a Benefit-Cost Test	Potential Improvement
Mean	36%	85%		44%	93%
Responses	31	30		31	30
Standard Deviation	22%	89%		22%	93%

Source: AEI-Brookings Joint Center Questionnaire

Figure 1



Sources: OMB 2003 REPORT, *supra* note 3, tbls.18-19; OMB 2002 REPORT, *supra* note 10, tbl. 19, OMB 2000 REPORT, *supra* note 9, tbls. 11-14; Hahn, *supra* note 24.

Notes:

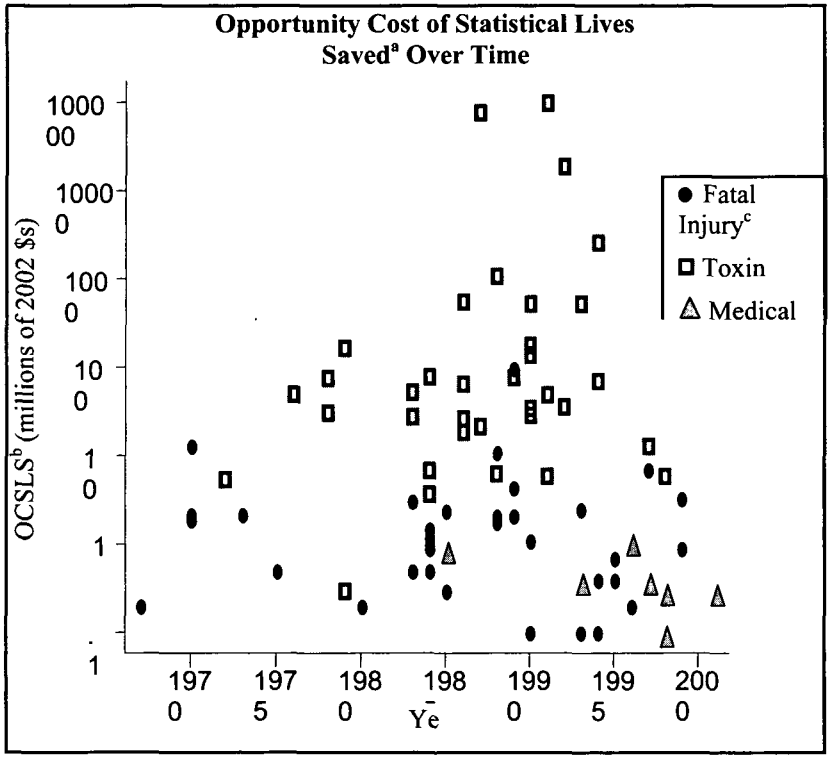
The sample used for Figure 1 excludes regulations with zero benefits and regulations for which the agency did not estimate benefits. If we included these regulations, the percentage of regulations passing a benefit-cost test would be lower. In the early years, 1984 through 1986, the sample size is small. Therefore, it is difficult to draw any conclusions for these years. We also ran a logit regression to test for the existence of a time trend. The results suggested that there is no evidence of a time trend in the percentage of regulations that pass a benefit-cost test at the 90% level of significance.

Twenty-three food-labeling regulations from HHS are combined into one regulation. The number of regulations in the 1980s is lower than

in the 1990s. Using Hahn's numbers instead of the OMB's within the overlap period (1992-1995) does not affect the conclusion that there is no time trend.

Each year for the OMB study refers to the time period beginning on October 1 of the previous year and ending on September 30 of year indicated. For instance, the year 1993 refers to major regulations reviewed by the OMB between October 1, 1992 and September 30, 1993. The year 1992 refers to regulations from the Joint Center study that were reviewed between January 1 and September 30, 1992 in order to prevent overlap and to be consistent with OMB results.

Figure 2



Source: MORRALL, *supra* note 14, at 23-24 tbl. 2.

Notes:

[a] Morrall focuses on regulations that primarily offer health benefits.

[b] OCSLS stands for the Opportunity Costs of Statistical Lives Saved. OCSLS is derived by dividing the discounted present value of costs by the discounted present value of lives saved.

[c] These are the same categories used by Tengs et al. for grouping regulations: toxin control, fatal injury, and medical intervention. *See* Tammy O. Tengs et al., *Five-Hundred Life-Saving Interventions and Their Cost-Effectiveness*, 15 RISK ANALYSIS 365, 365-390 (1995). We perform a t-test to test the equivalence of the means of toxin

regulations and other regulations. We find that the mean of toxin regulations is higher at a 5 percent level of significance.

Morrall includes health and safety regulations reviewed by the OMB between 1967 and 2001

We use an ordinary least squares regression with the natural logarithm of OCSLS as my dependent variable and year as my independent variable and find that time does not have a significant effect on OCSLS. The finding of no significant time trend is robust, even after accounting for several variables including agency and regulation type.