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EXECUTIVE SUMMARY

Recently, Congress has begun to show a greater interest in assessing the economic impact of regulation. This interest was driven in part by estimates that federal regulation costs several hundred billion dollars annually. In 1996, Congress required the director of the Office of Management and Budget to provide estimates of the total annual benefits and costs of all federal regulatory programs and estimates of the benefits and costs of individual regulations. OMB has now produced its first report on the benefits and costs of regulation and is working on a second report, which will be published in the fall of 1998. This paper reviews the increasing use of economic analysis in regulatory decisionmaking, critically assesses the first OMB report, and considers how the use of economic analysis can help inform regulatory decisionmaking.

An Analysis of the First Government Report on the Benefits and Costs of Regulation*

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Federal regulation-especially environmental, health, and safety regulation-has grown dramatically in recent decades, whether considered absolutely or as a relative share of the U.S. economy. During that period, policymakers have substantially deregulated several industries including airlines, trucking, and railroads.

Over the next decade, regulations and regulatory expenditures are likely to significantly increase. As regulatory activities grow, so does the need to consider their implications more carefully. Yet, the economic impacts of regulation receive much less scrutiny than direct, budgeted government spending.

One should, of course, compare the benefits of regulation with the costs. Research suggests that more than half (57%) of the federal government's regulations would fail a strict benefit-cost test using the government's own numbers (Hahn, 1998). Moreover, there is' ample research suggesting that regulation could be significantly improved, so that we could save more lives with fewer resources (Morrall, 1986; Viscusi, 1996). One study has found that a reallocation of mandated expenditures toward those regulations with the highest payoff to society could save as many as 60,000 more lives a year at no additional cost (Tengs and Graham, 1996).

Recently, Congress has begun to show a greater interest in assessing the economic impact of regulation. This interest was driven in part by estimates that federal regulation costs several hundred billion dollars annually. In 1996 Senator Ted Stevens added an unprecedented amendment to the Omnibus Consolidated Appropriations Act of 1997 that could have a major impact on how regulations are assessed in the future. That amendment requires the director of the Office of Management and Budget (OMB) to provide Congress with estimates of the total annual benefits and costs of all federal regulatory programs and estimates of the benefits and costs of individual regulations. That is the first statute to mandate such an accounting.

OMB has now produced its first report on the benefits and costs of regulation in response to the Stevens amendment and is working on a second report, which will be published in the fall of *1998*. At this point it is not clear whether Congress will require additional reports.

This essay reviews the increasing use of economic analysis in regulatory decisionmaking, critically assesses the first OMB report, and considers how the use of economic analysis can help inform regulatory decisionmaking.

Economic Analysis and Regulatory Reform: An Overview

When regulation represented only a small part of the activity of the federal government, there was no pressing need to evaluate its overall impact. Now that regulatory policy plays an increasingly important role in many areas of everyday life, the need for evaluation has become more apparent.

To address the dramatic increase in regulatory activity that began in the late 1960s, the past five presidents have introduced different oversight mechanisms with varying degrees of success. In 1971 President Nixon established a "Quality of Life Review" of selected regulations. The review was born out of concern that some of the Environmental Protection Agency's (EPA's) environmental regulations were ineffective or excessively costly. OMB administered the process and required agencies issuing regulations affecting health, safety, and the environment to coordinate their activities. President Ford formalized and broadened the review process in Executive Order 11821, which required that agencies prepare, and OMB review, inflation impact statements for major rules - that is rules whose annual impact typically exceeded $100 million. In 1978 President Carter strengthened executive regulatory oversight by issuing Executive Order 12044, which required detailed regulatory analyses of proposed rulemakings and review by the Executive Office of the President. In addition, he established two interagency groups. The Regulatory Analysis Review Group, comprised of representatives from the Executive Office of

the President and regulatory agencies, examined a limited number of proposed regulations expected to have substantial regulatory impact. The Regulatory Council, consisting of the heads of federal regulatory agencies, was asked to publish a *Calendar of Federal Regulations,* which summarized major regulations under development and was designed to point out regulatory overlap and to describe the benefits and costs of the proposed actions.

The Reagan administration further sought to strengthen executive regulatory oversight. Just after entering office, President Reagan announced the formation of his interagency Task Force on Regulatory Relief to be chaired by Vice President Bush. The task force reviewed existing regulations and was used, in the president's words, to "cut away the thicket of irrational and senseless regulations." President Reagan also issued Executive Order 12291, requiring agencies to conduct benefit-cost analyses for all major rules. Although OMB could not veto agency rules, it could improve the quality of a rule by sending the analysis back to the agency for reconsideration. A second executive order required annual publication of the *Regulatory Program of the United States,* which reviewed regulations proposed by agencies for conformance with administration policy and priorities. The approach of the Reagan administration was unique in both the scope of the regulatory review and the formal inclusion of benefits estimation in the regulatory impact analyses for major rules. That analysis was continued under the Bush administration, which replaced the Task Force on Regulatory Relief with the Council on Competitiveness, headed by Vice President Quayle. President Clinton replaced the Reagan Executive Order 12291 with Executive Order 12886*,* which requires similar regulatory analyses. In addition, President Clinton initiated a National Performance Review aimed at helping to reinvent government."

Following the Clinton initiatives, the 104th Congress made passionate pleas for designing smarter, more efficient regulation, but the rhetoric fell short of the reality. Several comprehensive regulatory reform bills, which called for greater use of benefit-cost analysis and improved risk assessment, failed to pass-partly out of concern for the "rolling back" of regulation.

While far-reaching legislative reforms failed, some legislation passed that will increase congressional oversight of regulation and provide more information on the benefits and costs of Regulations. Examples include the Unfunded Mandates Reform Act of 1995, the Small Business Regulatory Enforcement Fairness Act of 1996, and the Stevens amendment. While the thrusts of each piece of legislation and the Clinton executive order differ, they share one common theme-the requirement that agencies use economic analysis to assess the benefits and costs of different kinds of regulations.

There is also some evidence that states are moving toward a systematic analysis of significant regulatory actions. According to a survey by the National Association on Administrative Rules Review in 1996, administrative law review officials in twenty-seven states noted that their state statutes require economic impact analysis for all proposed rules, and ten states require benefit-cost analysis for all proposed rules. Although progress is evident, the level of compliance with those requirements, the quality of the analysis conducted, and their influence on decisionmaking is not clear.

The economic analysis of regulatory decisions is also increasing worldwide (Guasch and Hahn, 1997). Although the requirements for analysis and the structure of oversight vary from country to country, eighteen Organization for Economic Co-Operation and Development (OECD) countries, including the United States, require some assessment of the impacts of their regulations (OECD, 1997). The OECD study concluded that those analyses generally only have a "marginal influence" on decisionmaking.

The trend toward formally considering economic benefits and costs in regulatory decisionmaking is likely to continue. It is, thus, important to assess those pathbreaking efforts, such as the OMB report, that could have a dramatic impact on analyses that are done by government agencies in the future.

The First Government Report on the Benefits and Costs of Regulation

To estimate the benefits and costs of regulation, one must define the subject. In its report to Congress, OMB defines federal regulation as statements issued by federal regulatory agencies such as the EPA and the Federal Communications Commission to implement, interpret, or prescribe laws (OMB, 1997). The report distinguishes between social regulation, such as environmental, health, and safety regulation - and economic regulation, which primarily addresses control of entry and/or prices. It also includes a category for process regulation, often referred to as paperwork or disclosure regulation, which includes the administrative burdens of filing forms and reporting information to comply with regulations.

The report effectively conveys some of the problems with estimating the aggregate economic impacts of federal regulation. It also provides a credible estimate of the total benefits and costs of regulation.

OMB's uses an estimate of the total benefits and costs of regulation by Hahn and Hird (1991) as well as an estimate of the cost of environmental regulation (U.S. EPA, 1990) to set a baseline estimate for costs and benefits in 1988. To update those numbers to 1997, the report considers more recent work that identifies the benefits and costs of individual social regulations between 1990 and 1995 (OMB, 1996; Hahn, 1996). It updates the estimate of the costs of economic regulation by adding some costs of transportation and banking from Hopkins's update of Hahn and Hird (Hopkins, 1992) and then reduces those costs to account for some recent banking and telecommunications deregulation.

For 1997, OMB estimates that the benefits of environmental regulation were $162 billion and the benefits for "other social regulation" were $136 billion in 1996 dollars. The costs for those two categories were $144 billion and $54 billion, respectively. So for social regulation, the aggregate annual benefits were about $300 billion, and the aggregate annual costs were about $200 billion. For economic regulation, OMB finds that the costs were $71 billion and for paperwork

the costs were $10 billion. The agency makes no attempt to estimate the benefits of economic regulation or paperwork, but suggests that those benefits could be significant. Examples include the potential benefits from the regulation of local telephone companies and information disclosure requirements in the financial sector. No numbers are given to substantiate those claims.

In addition to examining the total benefits and costs of regulations, the report provides information on forty-one regulations with annual gross costs of $100 million or more, which represents 15 percent of final rules reviewed by OMB during that period. OMB focused its discussion on twenty-one of those regulations that have a direct impact on the private sector. The other twenty of the regulations were rules necessary to implement federal budgetary programs.

The final section of the main report provides recommendations. It argues that the existing data on benefits and costs of programs would not support a recommendation to eliminate or reform any particular program. It highlights the problems with aggregate estimates and notes the need for more and better analysis of individual regulations. It also notes some problems with the general quality of analysis contained in regulatory analyses performed by the regulatory agencies.

The report then suggests how the regulatory oversight arm of OMB can play an important role in improving the quality of analysis and in developing a database on the benefits and costs of major rules. For the most part, those recommendations build on a consensus emerging within the economics community on how to improve the quality of regulatory analysis (Arrow et al., 1996; Crandall et al., 1997).

The study raises several important issues related to the actual cost and benefit estimates in the report, the broader issue of what to include in such estimates, and how to improve the quality of economic analysis in the regulatory process.

The Estimate of Total Benefits and Costs

OMB could significantly improve its report by more carefully evaluating the implementation of its methodology for estimating total benefits and costs. In fairness to the authors, they recognize many of the methodological issues and correctly note that the "substance is in the details, not in the total." While the report identifies some problems with aggregation, it glosses over many other important issues.

One potentially serious problem with the report's aggregate estimates is that they rely on very different data sources. For example, the baseline for environmental costs is an EPA (1990) estimate for 1988 that relies primarily on historical survey information on government and private expenditures. OMB then adds assessments of potential costs from government regulatory analyses of major final regulation between 1987 to 1996. The first estimates are actual compliance costs of environmental regulation in general as reported by regulated entities, while the second represent expected costs of future regulations with an assumption of full implementation and compliance. The same is true for the estimate of other social costs. The baseline estimate is a Hahn and Hird (1991) estimate for 1988 that relies on retrospective studies on the economic impact of regulations in general areas such as highway safety and drug approval. The baseline cost estimates are not directly comparable with the estimated incremental costs in the government regulatory analyses, and it is not clear how best to combine them. The OMB report did not address that issue.

The estimate of the cost of economic regulation also has some problems. For example, the empirical basis for adjusting the 1988 baseline estimate is weak. An estimate OMB relies on to assess the additional costs from banking regulations is based on a study that the General Accounting Office criticizes for having a poor survey design and low response rates (General Accounting Office, 1993). That cost estimate also represents mostly paperwork compliance costs while the total cost estimate developed in Hahn and Hird (1991) represents efficiency costs from the various economic regulations. In addition, OMB's downward adjustment from recent

deregulation seems to be a back-of-the-envelope calculation with little empirical support.

A second problem is that the report fails to assess how critical assumptions affect the net benefit estimates. For example, if OMB had included a rule related to stratospheric ozone, not included in the Hahn (1996) database, the benefit-cost ratio would have been orders of magnitude higher. Another example relates to how costs are defined. OMB relied on a cost measure that included a number of questionable cost savings, such as savings from productivity gains and the avoided costs of cleanup. Excluding those savings yields total costs that just exceed total benefits. At the very least, the OMB report should have better highlighted key sensitivities.

A third problem is that OMB does not provide a quantitative assessment of the uncertainties in its estimates, though it notes they could be substantial. For example, OMB estimates that the annual benefits of social regulation exceed annual costs by about $100 billion. But how much confidence should be placed in that estimate? My suspicion is that total benefits and costs are likely to be within an order of magnitude of each other, but that is only a guess. Moreover, that guess does not include the adverse impacts of social regulation on investment, which could be substantial; nor does it include the growing positive impacts of economic deregulation over time, which also appear to be substantial (Hazilla and Kopp, 1990; Winston, 1998).

A relatively simple issue future reports should address is precisely how the total benefit and cost estimates are derived. Table 1 provides a straightforward derivation. The first column of numbers, labeled "Reported", presents the OMB estimates for the benefits and costs of regulation. The second column, labeled "Replicated", attempts to duplicate OMB's estimate by replicating its methodology. This exercise revealed an arithmetical error in the benefit-cost ratio for social regulation which, when corrected, leads to an increase of over $30 billion in benefits. The third column, labeled "Modified", uses a different cost measure to derive the benefit-cost ratio, which excludes some questionable cost savings. Net benefits are slightly negative when that new ratio is applied. The different cases illustrate the kinds of sensitivities that could be analyzed with a simple spreadsheet.

Table 1: Derivation of OMB Estimates

(Billions of 1996 dollars)

	Reported[1]	Replicated [2]	Modified [3]	Sources
Costs				
Environmental	$144	$144	$144	
Baseline	$101	$101	$101	U.S. EPA (1990)
Incremental	$43	$43	$43	OMB (1996)
Other Social	$54	$53	$53	
Baseline	$35	$35	$35	Hahn and Hird (1991)
Incremental	$19	$18	$18	OMB (1996)
Economic	$71	$71	$71	
Baseline	-	$61	$61	Hahn and Hird (1991)
Incremental	-	$10	$10	Hopkins (1992) and OMB (1997)
Paperwork	$10	$10	$10	OMB (1997)
Total Costs	**$279**	**$278**	**$278**	
Benefits				
Environmental	$162	$161	$154	
Baseline	-	$101	$101	Hahn and Hird (1991)
Incremental[4]	-	$60	$53	
Benefit-Cost Ratio[5]	1.4	1.4	1.2	Hahn (1996)
Other Social	$136	$168	$122	
Baseline		$47	$47	Hahn and Hird (1991)
Incremental[4]	-	$121	$75	
Benefit-Cost Ratio[5]	5.3	6.5	4.1	Hahn (1996)
Economic	$0	$0	$0	
Baseline	-	-	-	
Incremental	-	-	-	
Total Benefits	**$298**	**$329**	**$276**	
Net Benefits	**$19**	**$51**	**($2)**	

Notes:
1. Estimates reported in OMB (1997).
2. Estimates derived from replicating the methodology in OMB (1997).
3. Estimates derived from modifying OMB's methodology by using a different benefit-cost ratio.
4. Incremental benefit is derived from multiplying incremental cost by the benefit-cost ratio.
5. Benefit-cost ratio was calculated by dividing the present value of total benefits by the present value of total costs presented in Hahn (1996). OMB (1997) used the net costs to calculate the ratio; estimates in the "modified" column use gross costs.

Estimates of the Benefits and Costs of Individual Regulations

Total estimates of the benefits and costs of regulation are useful for comparing regulation with other governmental activities such as taxation. But in terms of providing guidance on specific policies and programs, economic analysis of individual regulations can be much more helpful.

The primary contribution of that section of the report is to summarize some information that is not easy to obtain. For example, we learn that one-third of the twenty-one rules summarized by the OMB in the report have positive monetized net benefits. And in six cases, regulatory assessments noted benefits that were quantified, but not monetized.

That summary, while useful, did not take account of any of the knowledge that OMB has about particular rules. Indeed, the summary OMB provides takes the analysis contained in each agency's regulatory assessments as gospel. OMB's basic comparative advantage, which resides in its detailed knowledge of individual regulations, is thus lost.

Even if OMB did not want to be seen as disagreeing with an agency over current rulemakings, it could have provided some illustrations in the past where its assessments differed from those of the agencies. While many of those differences are not publicly available, some of them can be gleaned from correspondence between OMB and the regulatory agencies.

Recommendations for Improving the Quality of Analysis

OMB's report was valuable because it highlighted the limitations of our knowledge in

many areas. For example, we still know very little about the benefits and costs of antitrust, banking and security regulation, and regulation aimed at protecting consumers from fraud. It also suggested that we know very little about the dynamic impacts of regulation on innovation. Those gaps in our knowledge should help serve as a wakeup call to those in the academic community wishing to produce useful knowledge for policy makers. Furthermore, academics can be helpful in providing new insights on the relationship between retrospective and prospective estimates of the impacts of specific regulations. It is unclear whether an inherent bias exists in the ex ante estimation of regulatory benefits and costs.

The OMB report has been criticized for ignoring several key economic aspects of regulation (Hopkins, 1997; Dudley and Antonelli, 1997). For example, the report does not estimate how regulation affects transfers of wealth among different groups, such as producers and consumers. The size of those transfers is potentially quite large relative to the static cost of regulation. Information on transfers can be useful to the public and policymakers because they can help identify the likely winners and losers from different regulations; however, transfers should not be treated as a part of the aggregate cost of regulation, but rather should be listed as a separate category.

A second, more contentious issue relates to including certain paperwork costs -most notably those from completing tax forms. Whether to include such costs in a measure of regulation depends on both the definition and the ability to specify a counterfactual. Because the average person views filling out tax forms as a kind of government regulation, its burdens should be included in the report in some form.

At the same time, keeping that category separate avoids mixing apples and oranges. Moreover, when we change the amount of paperwork associated with filling out tax forms, the structure of taxation is likely to change. That will have an impact on efficiency. Because disagreement about the appropriate counterfactual is likely, it may be best simply to report the raw estimate in a separate category - to the extent it is not included elsewhere.

A third issue relates to the estimates of less direct impacts of regulation, such as potentially adverse impacts on investment, productivity and market structure Gaffe et al., 1995). For example, firms frequently make strategic use of the regulatory process to increase barriers to entry in an industry, which can reduce competition and consumer welfare. And regulators may change a firm's behavior in subtle ways simply by having the ability to pass regulations or enforce laws that could hurt the firm. Unfortunately, there have been few systematic studies that measure the different costs of regulation because it is very difficult. At the same time, not all the benefits of regulation can be quantified or monetized. OMB wisely chose not to explore those issues in detail in its first report.

A related issue concerns the extent to which agencies have information on the full array of regulatory tools they use. Recent research suggests that agencies overseen by OMB have a great deal of information on major rulemakings, but very little information on minor rulemakings (Hahn, 1998). Knowledge in other agencies is generally less complete. Moreover, knowledge of the economic impacts of other forms of regulation, such as licensing, permitting, guidelines, enforcement, administrative orders, and letters of opinion is minimal (U.S. House of Representatives, 1997). That is an area in which both the agencies and academics can contribute.

OMB can do many things to help improve our understanding of the economic impact of regulation. First and foremost, it can tell the public what it really believes about the benefits and costs of old and new regulations. The fact that it did not do so in the first report can be explained, in part, by time and resource limitations. But there is also a strong likelihood that the political views of the administration affected the report's scope and conclusions. Second, OMB can ask the agencies to provide better information on the claimed benefits and costs of regulation. For example, several agencies or divisions within agencies attribute large net benefits to their programs without any empirical data. OMB should ask them to support those claims. Many of those agencies could fund research in that area if they were so inclined. Third, OMB should require agencies to show the maximum net benefits associated with their proposed regulation in all cases. If those are small or negative, then the agency should have to explain its reason for

regulating. Fourth, if there were the political will, OMB could acquire the powers to enforce the guidance given to the agencies on improving the general quality of analysis in regulatory assessments. Fifth, OMB should reconsider its claim that there is insufficient evidence to recommend eliminating or reforming specific regulatory programs. The authors could easily specify a number of programs, ranging from the Superfund program to the Federal Maritime Commission, where net benefits could be increased dramatically with a regulatory overhaul. Moreover, if the authors are not comfortable advocating the elimination or reform of programs, they can certainly bring some evidence to bear on specific regulations. The fact that they did not suggests politics played an important role. Finally, OMB should develop a scorecard for individual regulations, regulatory programs, and statutes, to facilitate determining which regulations, programs, and laws are likely to pass a benefit-cost test.

Congress can also improve the quality of analysis of regulations by lowering the cost of obtaining information and increasing competition. For example, a House member recently introduced a bill to establish a congressional office of regulatory analysis. The proposed office would provide another source of information and also stimulate better analysis and review of agency rules within the executive branch. Both the administrative agencies and OMB are likely to improve the analysis of proposed regulations if they know that a congressional agency is providing an independent review. In the case of OMB, it is useful to draw an analogy to the process for making budget estimates. Both the Congressional Budget Office and OMB develop budget estimates, and each is disciplined by the existence the other.

Even if those suggestions are implemented, a very real question exists as to how such improved analysis would affect policy outputs. Scholars, including myself, have argued that economic analysis has had an important constructive impact on the policy process (Morgenstern, 1997). In certain instances, such optimism is justified; one must, however, be careful about generalizing from a small sample. In many situations, analysis tends to get ignored or manipulated to achieve political ends. At the same time, exposing such analysis to sunshine and reassessment should encourage politicians to pursue more efficient policies.

Conclusion

The economics community is forming a consensus about the appropriate use of economic analysis in regulatory policy. Most economists agree, for example, that it is important to focus on the incremental impacts of regulatory policy. By reviewing individual regulations before they are implemented, it is possible to make improvements that increase the efficiency and effectiveness of regulations. Measures of the aggregate impacts of regulation can also be useful for framing the problem. Trying to measure the aggregate impact of regulation over decades is an exercise fraught with difficulties, however. While attempting to develop better estimates, we should be honest about the uncertainties. The best way to reduce those uncertainties is through careful empirical research at the microeconomics level.

The first OMB report on the benefits and costs of federal regulation shows how the ideas of economists get implemented in practice. That report's primary contribution is to lend further legitimacy to the idea that policymakers should, where possible, quantify and compare benefits and costs before making major regulatory decisions. In addition, the report revealed how politics can constrain the application of economic analysis.

Unfortunately, the report falls short in two very important areas -- critically appraising the economic impacts of individual regulations and providing information on the benefits and costs of regulatory programs and laws. In particular, the report fails to confront a growing body of research that suggests that many government regulations would not pass a strict benefit-cost test.

The OMB report needs to be seen in a broader political context. The public has a growing concern that at least some regulation is highly inefficient and overly intrusive. One simple way to reduce regulatory errors is to have better information. But it would be foolhardy to presume that better information is sufficient for good regulatory policy, even though such information will often be helpful.

We should now think about how to improve such information within and outside of government because politicians, facing a dilemma, are becoming more receptive to new ideas. Politicians frequently hear from voters and business about the evils of regulation, but they also see social regulation as an increasingly attractive mechanism for redistributing wealth, given fiscal constraints.

Economists, thus, face two challenges: first, to help provide better information that can lead to better regulatory decisions; and second, to help design political institutions that yield regulatory policy outcomes that we consider more desirable. We shall meet those challenges if we persevere.

References

Arrow, Kenneth J., Maureen L. Cropper, George C. Eads, Robert W. Hahn, Lester B. Lave, Roger G. Noll, Paul R. Portney, Milton Russell, Richard Schmalensee, V. Kerry Smith and Robert N. Stavins, *Benefit-Cost Analysis in Environmental, Health, and Safety Regulation: A Statement of Principles*. Washington, D.C.: AEI Press, 1996.

Crandall, Robert W., Christopher DeMuth, Robert W. Hahn, Robert E. Litan, Pietro S. Nivola, and Paul R. Portney, *An Agenda for Reforming Federal Regulation*. Washington, D.C.: AEI and Brookings, 1997.

Dudley, Susan E. and Angela Antonelli, "Congress and the Clinton OMB," *Regulation,* 1997, 20:4, 17-23.

General Accounting Office, *Regulatory Burden: Recent Studies, Industry Issues, and Agency Initiatives*. GAO/GGD-94-28, December 1993.

Guasch, J. Luis and Robert W. Hahn, "The Costs and Benefits of Regulation: Implications for Developing Countries," Background Paper for the *World Development Report 1997,* Policy Research Working Paper 1773*,* World Bank, June 1997.

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

Hahn, Robert W. (ed.) *Reviving Regulatory Reform: A Global Perspective*. New York: Cambridge University Press and AEI Press, 1998*,* forthcoming.

Hahn, Robert W. and John A. Hird, "The Costs and Benefits of Regulation: Review and Synthesis," *Yale Journal on Regulation,* 1991, *8*:1, 233-78.

Hazilla, Michael and Raymond J. Kopp, "The Social Cost of Environmental Quality Regulations: A General Equilibrium Analysis," *Journal of Political Economy,* 1990, *98*:4, 853-873.

Hopkins, Thomas D., "Cost of Regulation: Filling the Gaps," Report Prepared for the Regulatory Information Service Center. Washington, D.C., August 1992.

Hopkins, Thomas D., *OMB's Regulatory Accounting Report Falls Short of the Mark*. St. Louis, Missouri: Center for the Study of American Business, Washington University, November 1997.

Jaffe, Adam B., Steven R. Peterson, Paul R. Portney and Robert Stavins, "Environmental Regulation and the Competitiveness of U.S. Manufacturing: What Does the Evidence Tell Us?," *Journal of Economic Literature,* March 1995, 33:1, 132-163.

Morrall, John F., "A Review of the Record," *Regulation,* November/December 1986*, 10,* 25-34.

Morgenstern, Richard D. (ed.) *Economic Analyses at EPA: Assessing Regulatory Impact.* Washington, D.C.: Resources for the Future, 1997.

Organization for Economic Co-Operation and Development, *Regulatory Impact Analysis: Best Practices in OECD Countries.* Paris: Organization for Economic Co-Operation and Development, 1997.

Office of Management and Budget, *More Benefits Fewer Burdens: Creating A Regulatory System that Works for the American People,* A Report to the President on the Third Anniversary of Executive Order 12866. Washington, D.C.: Office of Management and Budget, December 1996.

Office of Management and Budget, *Report to Congress on the Costs and Benefits of Federal Regulations.* Washington, D.C.: Office of Management and Budget, September 30, 1997.

Tengs, Tammy O. and John D. Graham, "The Opportunity Costs of Haphazard Social Investments in Life-Saving," in R. Hahn (ed.) *Risks, Costs and Lives Saved: Getting Better Results from Regulation.* New York: Oxford University Press and AEI Press, 1997.

U.S. Environmental Protection Agency, *Environmental Investments: The Cost of a Clean Environment.* Washington, D.C.: United States Environmental Protection Agency, Office of Policy, Planning and Evaluation, October 1990.

U.S. House of Representatives, Committee on Commerce, *Survey of Federal Agencies on Costs of Federal Regulations,* Staff Report. Washington, D.C.: U.S. Government Printing Office, January 1997.

Viscusi, W. Kip, "Economic Foundations of the Current Regulatory Reform Efforts," *Journal of Economic Perspectives,* 1996, *10:3*, 119-134.

Winston, Clifford, "U.S. Industry Adjustment to Economic Deregulation," *Journal of Economic Perspectives,* Spring 1998, forthcoming.