

Reforming Regulatory and Spending Analysis:
Introduction to a Symposium on Revising Benefit-Cost Guidance

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April 2025

Abstract:

Benefit-cost analysis plays a key role in regulatory activity in most countries around the world. In the United States, the Office of Management and Budget's Circular A-4 provides crucial guidance to U.S. federal agencies on how to undertake a regulatory analysis, and Circular A-94 provides similar guidance on federal spending. These key documents have profound impacts on agency decisions on environmental rulemaking and spending on environment-related programs. In November 2023, these crucial documents were very substantially revised, bringing to the forefront important conceptual questions about the discount rate, how distributional effects are incorporated, the valuation of mortality risk, and how ecosystem and environmental services are included in benefit-cost analysis. This symposium delves deeply into the economic issues inherent in the guidance, presenting reflections on the intellectual foundations of several of the most important issues inherent in the guidance.

JEL Codes: Q58

Keywords: Regulatory analysis, cost-benefit analysis, climate change policy, environmental policy

Main Text:

The U.S. Office of Management and Budget's Circular A-4 is often described as "the most important document that most people have never heard of" (U.S. OMB 2023a). It provides crucial guidance to federal agencies in the United States on how to undertake a regulatory analysis, including the technical assumptions on how to calculate the benefits and costs of proposed regulations. These technical assumptions may seem to be in the weeds, but they have sweeping implications for the resulting net benefits of regulations in the United States. They may even influence the decision whether to regulate a particular action at all. The reason is that the final estimated net benefits in the regulatory analyses play an important role in court cases, as judges often carefully examine agency cost-benefit analyses to assess whether the final rule is neither "arbitrary" nor "capricious." While positive net benefits are not necessary for a regulation to move forward, agencies have typically found it more difficult to defend a regulation in court

when the net benefits are negative. This applies across many areas of regulation, including environmental regulation, such as fuel economy standards, air pollution regulations, water pollution regulations, energy efficiency standards, and many more.

Complementing Circular A-4 is a closely related circular, known as Circular A-94 (U.S. OMB 2023b). While Circular A-4 provides guidance on regulatory analysis, Circular A-94 provides guidance on major federal programs. In other words, Circular A-94 focuses on federal spending, rather than on regulating private sector activities, as in Circular A-4. For many years, Circular A-4 was front-and-center. However, with the major federal spending on climate change-related projects under recent legislation, most notably the Bipartisan Infrastructure Law and the Inflation Reduction Act, Circular A-94 has become increasingly prominent. It provides the guidelines for how federal agencies can spend Congressionally-allocated funding.

Benefit-cost analysis in support of regulatory or government spending has a long history, arguably going back to the work of Jules Dupuis in 1844 France, which developed the concept of “consumer’s surplus” in a marginal analysis of public works projects (Pearce 1998). Modern economic analysis of the benefits and costs of projects appears to have begun in the 1930s, with a set of pathbreaking reports on the planning of water projects and other public works, and the 1936 Flood Control Act, which considers “if the benefits to whomsoever they may accrue are in excess of the estimated costs...” In 1950, the U.S. government issued a report that became known as the “Green Book,” which provided some of the first somewhat complete guidance on conducting benefit-cost analysis, aimed at guiding the development of water resource development projects (Holmes 1972).

The Green Book laid the initial groundwork for Circular A-4 and the other guidance documents discussed in this symposium. In 1981, the Reagan Administration formalized federal benefit-cost analysis with Executive Order 12291, which required federal agencies to develop detailed economic analyses of major regulations (Smith 1984). The agencies received standardized guidance for conducting such analyses with the first issuance of Circular A-4 during the George W. Bush administration, on September 17, 2003 (OMB 2003). Circular A-94, always the shorter of the two guidance documents, goes back even further, to at least 1972. It was last revised on October 29, 1992, prior even to the writing of Circular A-4 (Liscow and Sunstein 2024).

In November 2023, for the first time in many years, these two important guidance documents received a major overhaul by the Biden Administration. Given that it had been decades since the last issuance of the documents, the updates to both documents were substantial. Indeed, the field of economics, and environmental economics specifically, has progressed a very long way in the subsequent decades. Yet, any changes to such bedrock documents inherently touch upon especially interesting and deep issues for environmental economists. And any update that involves such complex issues can be expected to lead to at least some disagreements within the profession. In February 2025, the second Trump Administration released an executive order that reverted Circular A-4 back to the 2003 guidance document. Similarly, a memorandum from the Trump administration Office of Management and Budget reverted Circular A-94 back to the

1992 guidance document in April 2025. Despite the reversion to the 2003 guidance, the deep economic issues discussed in this symposium are not going away and are sure to come up again.

This symposium brings together a set of experts to reflect upon and discuss several of the most important multifaceted economic issues involved in the Biden Administration's overhaul of Circular A-4 and A-94. These include the discount rate to use in government analysis, the updated role of equity and distributional effects in regulatory analysis, valuation of mortality risk reductions in regulations, and the new guidance on including ecosystem and environmental services in regulatory analysis. There is a clear emphasis in the symposium on topics that are the most relevant to environmental economists. The focus is on Circular A-4, but most of the economic concepts discussed carry over to Circular A-94, and the last of the articles in this symposium makes the connections clear.

The core content of this symposium begins with a paper by Billy Pizer and Brian Prest on one of the most significant aspects of the guidance: the discount rate to use for government analysis. With a focus on regulatory analysis and Circular A-4, Pizer and Prest cogently explain how and why the discount rate was changed in the Biden Administration's update from two rates, 3 percent and 7 percent, to a baseline rate of 2 percent, along with an updated approach to valuing capital based on the shadow price of capital. Such an update to the discount rates has massive implications, as it changes central calculations in benefit-cost analysis. The lower 2 percent discount rate means that benefits (or costs) that accrue in the distant future are given greater value in the calculations, making it easier to find positive net benefits from policies that have long-term benefits, such as climate change mitigation. Pizer and Prest also discuss the economic concepts behind updates to the treatment of uncertainty and risk, which is a multilayered topic. This piece clarifies the economic underpinnings of the Biden Administration's updates to discounting, while also highlighting the areas Circular A-4 addresses that are at the frontier of our knowledge.

The second contribution in this symposium is by a group of authors consisting of Art Fraas, John Graham, Kerry Krutilla, Randall Lutter, Jason Shogren, and Kip Viscusi. This paper examines a quite dramatic update by the Biden Administration on the topic of how equity and distributional effects should be taken into account. As the authors clearly discuss, the Biden Administration's updated Circular A-4 guidance greatly raises the profile of distributional analysis, with an expectation that federal agencies will perform much more detailed distributional analyses than in the past. The authors further explore a set of very conceptually interesting technical issues relating to one of the most dramatic updates: allowing agencies to use distributional weights based on the marginal utility of consumption. These distributional weights have the effect of placing greater weight on the costs and benefits accruing to poorer households relative to wealthier households, based on the standard concept that a dollar provides more utility for poorer households than for wealthier households. Using distributional weighting is a profound shift, and the authors carefully dive into the deeper economic implications of such a change, illustrating some challenges that agencies will face as they try to implement the guidance.

The third paper in this symposium is a paper by Joe Aldy and Kip Viscusi that delves into the Biden Administration's updates to Circular A-4 that provide guidance on valuing reductions in mortality risk in government benefit-cost analysis. Aldy and Viscusi explain how the guidance requires a risk-tradeoff approach for calculating the value of a statistical life (VSL) and value of a statistical life-year (VSLY). These are extremely important concepts for the net benefits of many environmental regulations because reducing mortality is often one of the primary benefits of the regulations. Aldy and Viscusi discuss the advantages of revealed preference evidence (evidence from real-world consumer behavior) based on reliable labor market studies. They note that the Biden Administration's revised Circular A-4 takes a broader perspective that includes stated preference (survey data) and other studies. The authors also emphasize that there is very little guidance in either the original or updated Circular A-4 on how to think about the VSL over an individual's lifecycle and how the willingness to pay for reduced mortality risks varies over the lifecycle. The paper lucidly discusses income adjustments and distributional weighting of the benefits of mortality risk reduction, an area at the intellectual frontier.

The fourth contribution to the symposium, by Eli Fenichel, Lydia Olander, and Heather Tallis, covers another brand-new addition to the Biden Administration's updated Circular A-4: the inclusion of ecosystem services in benefit-cost analysis. This is one of the areas where environmental economics has come a particularly long way in the past two decades, as we have improved our understanding of how to value the many services that nature provides. Fenichel et al. describe how the updated Circular A-4 draws upon this growing literature and provides clear guidance on the all-important technical details of how the agencies can place a value on ecosystem and environmental services in regulatory analyses. This is a new area for agencies to handle, yet including ecosystem services in the benefits and costs could considerably shift the net benefits of many environmental regulations.

The final paper in this symposium, by Zach Liscow, brings environmental economists up to speed on the Biden administration changes to Circular A-94. While there are some commonalities in the updates to Circulars A-4 and A-94, such as discounting and the increased emphasis on distributional effects, there are several distinctions between regulation and spending. Liscow cogently lays out the details of how benefit-cost analysis for government spending works in practice under Circular A-94, with helpful exposition on the differences from Circular A-4. One major difference is that, for spending, the ratio of benefits to cost (benefits divided by costs) can be used instead of the net benefits (benefits minus costs). Liscow clearly explains why this makes a difference, and discusses other recent major advances in the revised Circular A-94, such as the option of using the marginal value of public funds (MVPF) metric (Hendren and Sprung-Keyser 2020).

While the insights in this symposium focus on the updates to regulatory guidance in the United States, benefit-cost analysis has been used in some form in as many as 197 countries, with applications in countries as varied as China, Guatemala, Nigeria, India, Australia, Mexico, Canada, El Salvador, and Cambodia (Jiang and Marggraf 2021). It is mostly used by governments, but also by aid organizations and non-governmental organizations (USAID 2024).

Few other countries in the world have a regulatory process quite like the United States, but many countries and organizations follow the United States carefully and occasionally draw from the U.S. guidance documents. The sophisticated discussions of the deeper economic issues discussed in this symposium should be of interest to economists and policymakers around the world as they navigate the frontiers of benefit-cost analysis.

This symposium covers what are arguably the weightiest economic issues in the Biden Administration's updates to Circulars A-4 and A-94, not only providing a deep dive into the content, but also insights into the economic basis for the changes, as well as where more research is needed. There were other changes to the guidance as well and this symposium cannot feasibly cover all issues. Still, in covering the issues most relevant for environmental economists in the Biden Administration's guidance updates, this symposium aims to inform readers about the economic considerations that were already beginning to shape federal regulatory and spending analysis, and will likely continue to remain at the forefront of debates in the policy community and in the courts. The intellectual discussion about the appropriate approaches to benefit-cost analysis is so crucial to regulatory analysis that it can be expected to play a role in policy discussions around the world for many years to come.

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