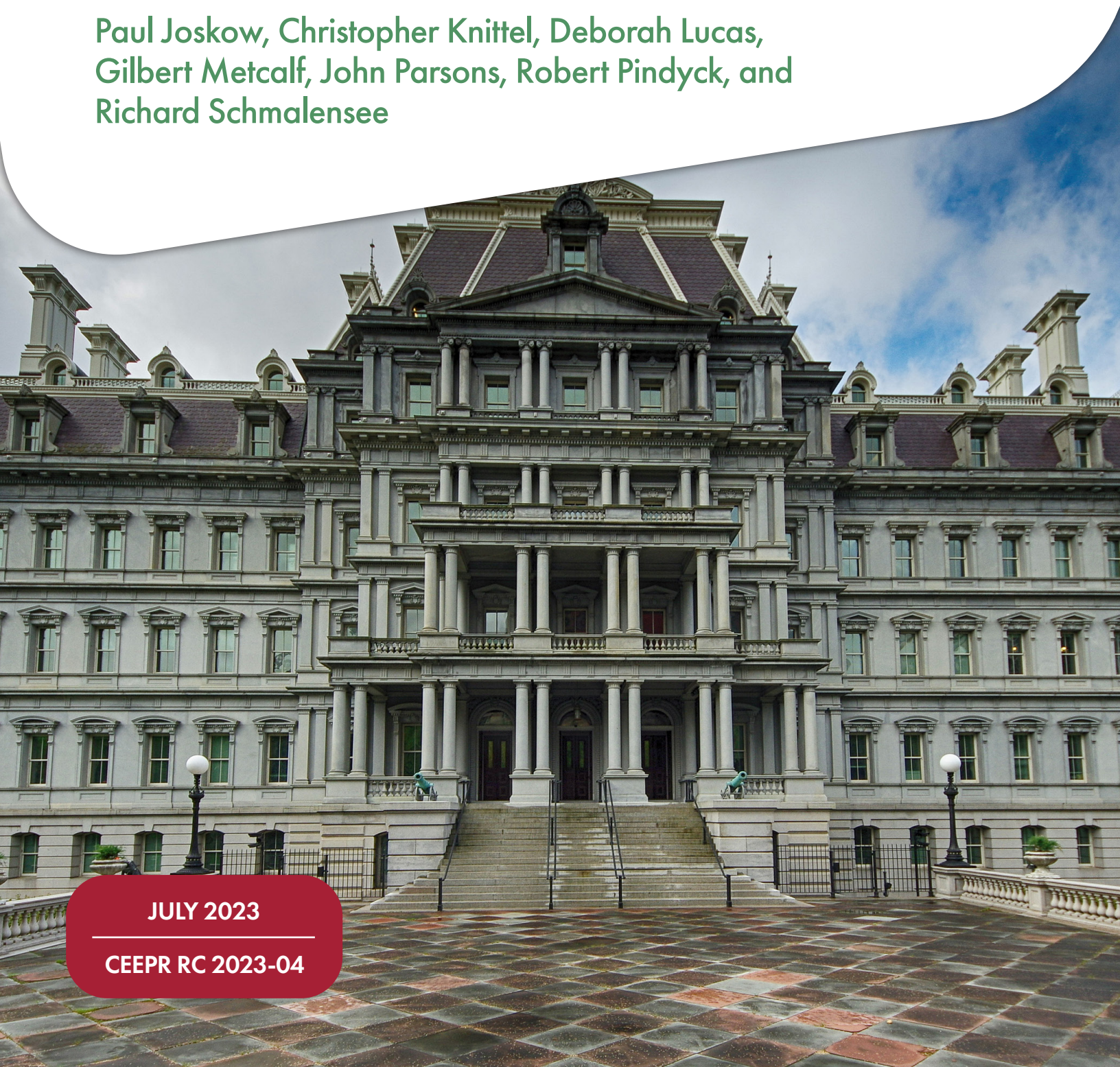
MIT Center for Energy and Environmental Policy Research

Research Commentary

Comments on Draft Revisions to OMB Circulars A-4 and A-94

Paul Joskow, Christopher Knittel, Deborah Lucas, Gilbert Metcalf, John Parsons, Robert Pindyck, and Richard Schmalensee



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RC-2023-04
Commentary

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I. Background

With the promulgation of Executive Order 12291 in 1981, President Ronald Reagan introduced the requirement that any major proposed regulation require a benefit-cost analysis and that "[r]egulatory action shall not be undertaken unless the potential benefits to society for the regulation outweigh the potential costs to society". As further elaborated in President Bill Clinton's 1993 Executive Order 12866, "In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. [...] Further, in choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach." Within the Executive branch, the Office of Information and Regulatory Affairs (OIRA) was tasked with overseeing the review of regulatory impact analyses (RIAs) by federal agencies.

Quantification of costs, and sometimes of benefits, is also required for other federal activities. Circular A-94, which was originally written in 1972 and updated in 1992, was drafted to provide guidance on benefit-cost analysis and cost effectiveness analysis of Federal spending programs, and to provide specific guidance on the discount rates to be used in evaluating Federal programs whose benefits and costs are distributed over time.

In 2003, Circular A-4 was drafted to serve as the set of instructions for agencies carrying out RIAs. For the past twenty years, the circular has been unchanged despite significant shifts in the economy and advances in the economics profession's understanding of best practices for benefit-cost analyses (BCAs). One concern is that because the Circular prescribed the level of discount rates, analyses became less reliable as market rates diverged from those assumed rates. Another issue has been the rising importance of climate change in policy analysis and a growing belief that the guidelines laid out in the 2003 circular were not well suited to this global externality with damages lasting, perhaps, for centuries.

The two circulars cover many similar issues, especially related to discounting future benefits and costs. Circular A-4 has perhaps received more attention among environmental and energy economists, especially given the importance of discounting for benefits and costs occurring far in the future (as is the case, for example, with climate change policies).

In 2023, OMB released drafts of updated Circulars A-4 and A-94 for public comment.[1] The new A-4 draft was a significant revision of the original circular. It is also much more detailed: while the original circular was 48 pages long, the new draft is 91 pages long. The new A-94 draft includes updated guidance on the choice of discount rates that is consistent with the A-4 proposal. In response to the call for public input, the following comments were submitted by the authors along with additional signatories.

II. Submitted Comments on Circular A-4[2]

We are writing to express our support for OMB's initiative to revise Circular A-4 in order to improve the benefit-cost analyses (BCAs) that underpin regulatory rule-makings by federal agencies. A revision that provides greater clarity and detail, that incorporates more recent theoretical, methodological, and empirical insights, and that better reflects fundamental valuation principles, is long overdue. The potential for improving the quality of regulatory decision-making and thereby increasing social welfare cannot be overstated, and you are to be commended for this ambitious undertaking.

We also appreciate the opportunity to comment on the specifics of the proposal. As discussed in our comments below, we support allowing a broader scope for included costs and benefits when deemed appropriate. We also agree that encouraging greater use of distributional analyses would be highly beneficial for better informing policy decisions and the public. However, we do not support prescribing the form of distributional weights nor requiring their use. On the related issues of assessing the costs of risk and discounting, the proposed methodology neglects the cost to individuals and society of systematic or aggregate risk. We suggest that the Circular be revised to require that the costs of aggregate risk be incorporated via the use of risk-adjusted discount rates or related methods where appropriate, with rates selected based on standard economic valuation principles and best practices in the private sector. With regard to the time period used to determine reference rates for discounting, in accordance with standard valuation principles and practices, we recommend using forward-looking estimates of future interest rates rather than rates based on long-run historical averages. Finally, we agree with the proposal to adjust long-run discount rates based on the logic that uncertainty imparts a downward slope to long-term discount rates, but we caution against detailed guidance that might suggest false precision about the size of those effects.

Looking to the future, because knowledge and views on best practices will continue to evolve, we encourage OMB to consider developing a systematic process for reviewing and periodically updating the Circular. While we are wary of frequent changes to the Circular that might inject politics into the process, we see merit in reviewing and updating the document more frequently than every twenty years.

Our focus in our comments is on three areas in particular: 1) scope of analysis; 2) distributional concerns; and 3) treatment of risk and discounting.

Scope of Analysis: The current A-4 states that an analysis "should focus on benefits and costs that accrue to citizens and residents of the United States. Where you choose to evaluate a regulation that is likely to have effects beyond the borders of the United States, these effects should be reported separately" (p. 15). The draft revision, in our view, looks less like a change than an elaboration of the current guidance. The elaboration, however, is helpful in making the case for using a global measure of benefits and costs in certain circumstances and avoiding too narrow a measure of the geographic scope of costs and benefits. While this elaboration is certainly important given the international negotiations under the UN

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[1] The request for public comments was posted in the Federal Register at 88 FR 20915, April 7, 2023.

[2] In addition to the authors, signatories to the letter were Profs. Leonid Kogan, Andrew Lo, Robert Merton, Jonathan Parker, and Antoinette Schoar. The submitted comments may be found online at https://www.regulations.gov/comment/OMB-2022-0014-0096.

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Conference of the Parties to address climate change, it could also be important for other global pollutants where multilateral efforts are underway to address the problem.

Distribution: We applaud OMB's focus on encouraging greater incorporation of distributional analysis into regulatory impact analyses. We particularly like the language on page 64 of the draft circular stating that "when distributional effects are relevant to the agency's decision, you should summarize your results and describe your analysis in a manner that supports transparency and comprehensibility for policymakers and the public." Providing distributional tables similar to those provided by the Joint Committee on Taxation when assessing the impacts of revisions to the tax code, for example, is a clear and transparent way to illustrate how a policy can impact different groups differentially (whether the groups are classified by income, wealth, geography, demographics, or labor force status, for example).

We do not support the routine use of distributional weights as discussed in section 10.e. on pp. 65-66. This approach involves a number of assumptions that are not transparent and on which there is not general agreement. First, there is a long-standing literature on the problems associated with using income to rank households according to their well-being. Wealth or some measure of lifetime income is a preferable measure, especially when looking at policies that affect the young or old. Moreover, it may be more relevant to focus on characteristics other than income or wealth when considering distributional outcomes. Distributional weights cannot be used in such cases. Second, even if one wants to use income as a measure of well-being, the use of distributional weights assumes, among other things, a social welfare function that is the same for all demographic and income groups (except for the level of income). There is no support in welfare economics for this assumption. Thus, the four questions posed on page 16 of the preamble are the wrong questions, in our view. Rather than try to refine estimates of the elasticity of marginal utility, we encourage OMB to focus attention on how best to report differential impacts of proposed regulations on different affected groups in a transparent and easily understood fashion.

Risk and Discounting: The draft Circular generally treats risk and discounting as separate issues, although in some essential respects they are not. It recommends adjusting for the effects of uninsured or uninsurable risk on individuals' welfare through the use of "certainty equivalents" that assign a cost to a specific risk exposure based on a measure of its disutility. Expected costs and benefits, inclusive of any certainty equivalent adjustments, are then discounted at a proxy for the social rate of time preference, which is usually taken to be a Treasury rate. This recommended procedure deviates from economic principles and standard practice in the private sector because it neglects the effect of aggregate or systematic risk on value (see, for example, the discussions in Lucas (2014) and Cherbonnier and Gollier (2022)). It is important for the Circular to recognize that aggregate risk affects value, and to provide guidance on how analysts should incorporate its effects. Whereas it can be appropriate to discount future cash flows at Treasury rates when the associated risk is uncorrelated with future aggregate economic outcomes, when the risk is correlated some sort of risk-adjustment is necessary. We recommend the use of risk-adjusted discount rates, which can be identified using well-established fair value standards.[3] This approach would also be consistent with the observation on pg. 32 of the proposed Circular that "Economists ordinarily consider market prices as the most accurate measure of the marginal value of goods and services to society."

An example may clarify the issues involved. Consider a proposed environmental regulation that would require installing pollution control equipment at oil refineries. The equipment would reduce annual production capacity and would reduce the incidence of some hypothetical non-fatal disease over a decade. The lost revenue to the refiner is systematically risky because demand for oil is positively related to the strength of the economy. The recommended approach would recognize

[3] It is possible to incorporate an adjustment for the cost of systematic risk into the calculation of a certainty equivalent, and then to discount the resulting certainty equivalent at a Treasury rate. When done correctly, the resulting valuation will be the same as if risk-adjusted discount rates had been directly applied to projected costs and benefits. While this theoretical equivalence is noted in finance textbooks, certainty equivalents adjusted for the cost of systematic risk are almost never used in practice, and the revised Circular does not require or even suggest such adjustments. Considerations of transparency and auditability suggest that the government should use a procedure, such as using risk-adjusted discount rates, that is in keeping with standard practices.

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that the lost revenues in future years are a cost to the private sector. However, discounting the average of those costs at a Treasury rate would neglect the effect on their value of the aggregate or systematic risk involved. The private sector would instead discount the expected future costs at a rate that includes a risk premium. Thus, in this case, the procedure recommended in the draft Circular would overstate the present value of losses to the refiner, and therefore overstate the cost of the regulation relative to its benefits.

Continuing with the oil refinery example, the benefits of this hypothetical regulation would include both medical treatment costs avoided and pain and suffering avoided resulting from the hypothetical non-fatal disease. An important question is how the presence or absence of insurance should affect the valuation of costs and benefits. For example, it is not generally possible to insure against pain and suffering, and individuals' benefits from reductions in the probabilities of pain and suffering will necessarily reflect their risk preferences. In this case, it is appropriate to adjust the expected total benefit from reduced pain and suffering to take into account the benefits of reducing individuals' risks, as is accomplished with the proposed guidance for finding certainty equivalents and adding them to costs or benefits. However, the appropriate discount rate is generally unaffected by whether or not individuals can insure against particular harm. If the cost of a harm is uncorrelated with the aggregate economy, it is appropriate to discount the adjusted totals at the proxy rate for the social rate of time preference.

Turning to another matter related to discounting, the draft Circular uses data on past Treasury interest rates, smoothed, to reach its recommended proxy for the social rate of time preference. It is not at all obvious why past rates rather than expected future rates should be applied to the projected future costs and benefits that affect regulatory decisions. We recommend development of forward-looking procedures for determining recommended discount rates. We believe the issue of smoothing deserves further attention. While smoothing can avoid short-term fluctuations in recommended discount rates that introduce noise, it hides the fact that the costs and benefits of introducing a regulation at any particular time may depend importantly on the state of the economy at that time, which will be reflected in expected future interest rates.

Finally, we support the proposal to adjust long-run discount rates based on the logic that uncertainty imparts a downward slope to long-term discount rates. We do caution, however, against detailed guidance that suggests false precision about the size of those effects as, for example, is suggested by the eight discount rates included in the table on page 30 of the Preamble document.

Summary: While we have focused on just a few issues in the draft A-4, we note in passing a number of changes we support and commend. The discussion of transfers (section 9) is useful, as is the acknowledgment of the potential role of general equilibrium modeling (section 7.h.). We also support the additional language recognizing the need for federal regulatory action (section 5.a.) that accounts for network effects as well as market power that manifests in non-price ways.

In closing, we applaud OMB for their work in putting forward a much clearer and detailed Circular A-4 draft. While we take issue with certain aspects of the revised circular, we believe that, once revisions have been made taking into account the points that we have raised, the final version should be invaluable in guiding federal agencies in conducting high-quality BCAs as part of the regulatory rule-making process. We appreciate the opportunity to review this document and look forward to the final version.

III. Submitted Comments on Circular A-94[4]

We are writing in support OMB's efforts to improve the benefit-cost analyses (BCAs) that underpin agency decisions on

[4] In addition to the authors, signatories to the letter were Profs. Leonid Kogan, Andrew Lo, Robert Merton, and Antoinette Schoar. The submitted comments may be found online at https://www.regulations.gov/comment/OMB-2023-0011-0026.

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federal policies whose benefits and costs are distributed over time. The potential to improve social welfare by adopting decision rules that incorporate up-to-date theoretical, methodological, and empirical insights, and that better reflect fundamental valuation principles, cannot be overstated.

We also appreciate the opportunity to comment on the specifics of the proposal. Our focus here is on the related issues of assessing the government's cost of capital and discounting.[5] The proposed methodology would perpetuate the long-standing practice of using Treasury rates for discounting in most instances, which has serious shortcomings. It neglects the cost to individuals and society of systematic or aggregate risk; mistakes the government's cost of capital for its borrowing rate; and introduces avoidable biases into BCAs. We suggest that the Circular be revised to require that the price of aggregate risk be routinely incorporated into the base case valuation of costs and benefits when feasible. That could be accomplished via the use of risk-adjusted discount rates, or with alternative methods that are also consistent with standard economic valuation principles and best practices in the private sector.

To elaborate, economic principles, and standard valuation practices in the private sector, both recognize the importance of the effect on value of aggregate or systematic risk. The relevance of those principles to government valuations are discussed at length, for example, in Lucas (2014) and Cherbonnier and Gollier (2022). Recent survey evidence suggests that most economists believe that governments should incorporate risk-adjustment into valuation procedures (see Christian Gollier, Frederick van der Ploeg and Jiakun Zheng, (2022)).

The logic behind approximating the government's cost of capital with that of the private sector, rather than equating it to Treasury rates, rests on several observations. First, the aggregate or systematic risks associated with an activity is generally similar, whether it is undertaken by the private or public sector. Second, like the private sector, the government cannot eliminate systematic risk through diversification. Rather, the risk eventually has to be absorbed by some combination of tax and spending changes. Hence taxpayers and other government stakeholders function as equity holders in risky government activities. Using risk-free Treasury rates for discounting treats the imposition of aggregate risk on taxpayers and government stakeholders as having no cost to society. That assumption is inconsistent with the preferences revealed by the substantial payments that individuals demand—in the form of higher return—for bearing systematic risk.

Discounting at Treasury rates creates practical as well as conceptual problems. The treatment of asset sales is one such example. Because the private sector generally discounts the net cashflows from an asset at a higher rate than the Treasury rate, it typically places less value on assets than does the government. The more systematic the associated risk, the larger the valuation gap and the larger the bias in favor of government ownership. That discrepancy also creates budgetary arbitrage opportunities: The government will appear to profit when it buys risky assets from the private sector that it funds by issuing safe debt.[6] There is a budgetary gain even when the change in asset ownership has no material economic or distributional effects. The discrepancy also has the effect of inhibiting asset sales by the government that could improve efficiency when the private sector has an operational advantage. The draft Circular recognizes this as a potential problem and allows for discounting at private sector rates in such instances. However, it is hard to justify that work-around when the maintained assumption elsewhere is that Treasury rates represent the government's true cost of capital.

Using Treasury rates for lease-purchase analysis creates a related bias against leasing. As a first approximation and assuming leasing provides no additional services, the present value of lease payments that are discounted at market

[5] Most of the signatories to this letter have submitted a related set of comments on Circular A-4 [contained in Section II above]. We would refer OMB to the comments made there on other aspects of proposed changes that are relevant to Circular A-94 and Circular A-4, including the scope of the analysis and distributional impacts.

[6] This occurred, for example, during the 2008 financial crisis when budgetary gains were recorded from market purchases of mortgage-backed securities by Treasury.

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rates should equal the market price of the leased asset. When the government discounts the same lease payments at lower Treasury rates, leasing appears to be more expensive than buying. This highlights a more general phenomenon: Whenever the government makes a purchase from the private sector, the price paid is inclusive of associated private sector capital costs. It is only in situations involving explicit discounting of future government cash flows that an artificial wedge is introduced between government and private sector valuations.

The draft Circular leaves the door open for risk-adjustment in some cases, and suggests that analysts use the "certainty equivalent" approach as described in the draft Circular A-4. The Circular A-4 guidance directs analysts to assign a cost to a specific risk exposure based on a measure of its disutility. Expected costs and benefits, inclusive of any certainty equivalent adjustments, are then discounted at Treasury rates that proxy for the social rate of time preference. Theoretically, it is possible to incorporate an adjustment for the price of systematic risk into the calculation of a certainty equivalent. That adjustment will generally require making inferences based on market prices or rates. When done correctly, the resulting valuation will be the same as if a risk-adjusted discount rate had been directly applied to projected costs and benefits. However, while this theoretical equivalence is noted in finance textbooks, certainty equivalents adjusted for the cost of systematic risk are almost never used in practice. The draft Circular A-4 does not suggest that the price of systematic risk should be incorporated into certainty equivalents, nor does it offer any guidance on how to do so. Considerations of transparency and auditability suggest that the government should favor procedures—such as risk-adjusting discount rate—that are in keeping with standard valuation practices.

An implication of recognizing the price of aggregate risk is that the appropriate discount rate will vary across projects and policies with different exposures to aggregate risk. The need to select policy or program-specific discount rates would entail additional costs for agencies, especially during a transition period during which analysts would need additional training and procedures were being established. However, the approach we favor for most applications—risk-adjusting discount rates using well-established fair value principles—could be implemented in a way that entails modest additional costs to the government, and that results in estimates that are more disciplined, transparent, and auditable than those produced using Treasury rates for discounting.[7] Agencies could draw on the professional expertise that has developed to support valuations in the private sector. Alternatively, OMB could centralize the process, selecting and periodically updating a schedule of risk-adjusted rates, just as it does now for real and nominal Treasury term structures.

In closing, we appreciate the effort that has gone into improving the clarity of the guidance on how the costs and benefits of federal policies whose benefits and costs are distributed over time should be assessed, and the care that is taken to offer guidance that in most respects closely conforms with economic principles and best practices. We believe that a revision that also brings the selection of discount rates in line with economic principles and best practice would greatly improve government decision-making. We appreciate the opportunity to have reviewed this document and look forward to the final version.

[7] For very long horizon policies, the issues surrounding the choice of discount rates are more complex and we do not comment on those here.

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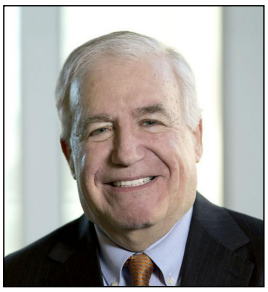
About the Authors



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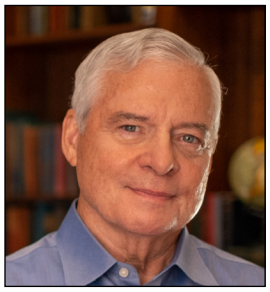
Robert Pindyck is the Bank of Tokyo-Mitsubishi Ltd. Professor in Finance and Economics and a Professor of Applied Economics at the MIT Sloan School of Management. Pindyck's most recent research focuses on economic policies related to rare disasters, such as those that would severely affect the entire U.S. or world economies. Examples include possible but low-probability catastrophic outcomes from global warming or nuclear terrorism. At issue is how such low-probability but extreme outcomes should affect current policy, for example, in reducing greenhouse gas (GHG) emissions. He also has continued to work on irreversible investment decisions, the role of network effects in market structure, and the behavior of commodity prices. Pindyck holds an S.B. in electrical engineering and physics, an S.M. in electrical engineering, and a Ph.D. from MIT.



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