

What should OIRA do?

Comments on the role of cost-benefit analysis in regulatory review

Dr. Frank Ackerman
Stockholm Environment Institute-US Center
Tufts University

February 24, 2009

Summary

This is a response to the request for comments on Federal regulatory review, as presented in the White House memorandum of January 30, 2009. My comments address the role of cost-benefit analysis in the regulatory review process.

Conventional cost-benefit analysis is not wrong in its pursuit of quantitative information bearing on costs and benefits; rather, it errs in its final stage of converting non-monetary information into pseudo-prices. Almost everything that occurs before that final stage can be put to better use.

Based on that critique, I offer the following recommendations:

- The danger of over-regulation has been greatly exaggerated. We now face the threat of economic losses from *under-regulation* in areas such as food safety, infrastructure reliability, and export standards. OIRA should identify important areas of under-regulation, and encourage agencies to enact cost-saving new rules.
- When economic analysis of regulations is needed, *holistic analysis of costs and benefits* provides a more coherent alternative to traditional cost-benefit analysis. Costs, typically expressed in dollars, can be directly compared to benefits expressed in natural, typically non-monetary units such as lives saved, illnesses avoided, and environmental resources protected. The comparison is inevitably deliberative – and it is far more transparent and comprehensible than a fully monetized cost-benefit calculation.
- For urgent, high-risk problems such as climate change, regulatory standards are often expressed as absolute physical limits, such as a 450 ppm cap on carbon dioxide concentrations in the atmosphere. Regulatory review should then involve *cost-effectiveness analysis* of the least-cost strategy for compliance with the standard. Cost-effectiveness analysis avoids many of the problems of cost-benefit analysis. Monetization of benefits, the weakest link in the cost-benefit approach, is unnecessary once an absolute standard has been adopted.

1. Introduction

The Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget (OMB) has, in the past, made extensive use of cost-benefit analysis to evaluate proposed Federal regulations. Expressing Presidential priorities, OIRA has often acted as a gatekeeper preventing some agency proposals from advancing. In this role, OIRA has appeared to be guided by two broad assumptions: first, many regulatory proposals are dangerously expensive; second, rigorous cost-benefit analysis is essential to protect the nation from economically unsound agency initiatives.

Neither of these assumptions is valid, as I and others have argued; some of those arguments are summarized in Part 2. In the following parts of these comments, I turn to positive alternatives. Part 3 considers the economic threat of too *little* regulation, in areas such as food safety and export standards, recommending active efforts to promote profitable new regulations. Part 4 recommends two alternative paradigms for decision-making, incorporating most of the information used in cost-benefit analyses into more coherent logical frameworks.

2. Mythical costs and mangled analyses

There are two fundamental points which reveal the need for change in past OIRA attitudes and practices:

- First, the supposed threat of unaffordable regulatory proposals has never materialized.
- Second, cost-benefit analysis does not provide a sensible methodology for making most regulatory decisions.

The notion that health, safety, and environmental regulations could impose huge costs is best understood as a persistent urban legend. Like alligators swimming in the sewers or tainted apples distributed to trick-or-treaters at Halloween, it is discussed again and again, without hard evidence that it has ever actually occurred. The critical literature refuting this notion includes Lisa Heinzerling's classic article, "Regulatory Costs of Mythic Proportions," my own, more recent study, "The Unbearable Lightness of Regulatory Costs," and many others. Two of my recent books, *Priceless* (with Lisa Heinzerling) and *Poisoned for Pennies*, discuss this topic in detail. (See the list of works cited at the end of these comments.)

Briefly, the much-quoted lists of astronomically expensive regulations that have circulated since the Reagan administration are full of elementary mistakes. Many of the most expensive regulations on these lists were never adopted or even proposed. Others were evaluated in a perverse and prejudicial manner, omitting or minimizing their main benefits in the haste to demonstrate their high costs. As I discuss in "Unbearable Lightness," more recent attempts by OIRA to summarize and critique the cost of regulations have been riddled with new as well as old errors, relying on poorly

documented, partisan sources and ignoring basic statistical methods, rather than doing rigorous research on costs.

Meanwhile, the Clean Air Act, the Clean Water Act, and other environmental statutes have not bankrupted the nation or any of its regulated industries. Rather, these laws have “bought” substantial protection of our health and our natural surroundings, at entirely affordable costs. The crisis of regulatory costs is nowhere to be seen.

When detailed economic analysis of regulations is desired, it has become common to assume that cost-benefit analysis is the only alternative. There is a superficial plausibility to the cost-benefit approach: if only we knew the monetary value of every cost and every benefit of a proposed regulation, we could create a balance sheet in which the “bottom line” would be the net benefit of adopting the proposal. The decision rule then seems transparent and objective: adopt the proposal if and only if the net benefits are positive.

The problem, as Heinzerling and I explained in *Priceless*, is that we do not know, and cannot meaningfully measure, the monetary value of the most important benefits of regulation. How many dollars is it worth to save a human life, to allow a child to grow up healthy instead of sick, to protect an endangered species, to preserve a unique, wild habitat? Is an older, poorer person worth less than a younger, richer one? Are animal species more valuable if they look cuddly or furry? Reasonable people outside the professions of law and economics would naturally take these to be rhetorical questions. But cost-benefit analysis practitioners need to fill in every blank with a number, and thus they are compelled to invent precise price tags, meaningful or otherwise, for priceless values. This is a categorical mistake, not a problem that can be solved by more or better research. As Immanuel Kant said in the 18th century, some things have a relative worth, or price, while others have an intrinsic worth, or dignity. Cost-benefit analysis fails because it assigns prices to the dignity of human life and the natural world.

In practice, cost-benefit analysis often finds that the cost side of the balance involves expenditures with well-defined prices. Although there are stubborn problems involved in estimating costs, it is in principle possible to find a meaningful price for many of the costs of regulation. On the benefits side, the most important categories typically do not have meaningful prices, and there is no unique method for inventing pseudo-prices; as a result of this and other uncertainties, there is an extraordinarily wide range of possible estimates. As Cass Sunstein memorably wrote in “The Arithmetic of Arsenic,” cost-benefit analyses at the time (1999-2001) found that EPA’s proposed regulation of arsenic in drinking water would save between 0 and 112 lives annually, and would have net benefits between \$0 (or less) and \$560 million per year. In other words, judged strictly in cost-benefit terms, arsenic regulation was either a really good idea, a really bad idea – or somewhere in between.

In this well-known, extensively argued case, it is difficult to identify any value added by the expensive but indecisive formal process of cost-benefit analysis. Millions of dollars and multiple person-years devoted to the arsenic debate could have been saved by sending someone to the library for an afternoon, to confirm that the World Health

Organization recommended, and most of the developed world had already adopted, the same arsenic standard which EPA proposed and the White House eventually accepted.

3. The high cost of under-regulation

At present, guarding against excessively costly regulation is fighting the wrong battle, facing away from the real conflict of the day. After eight years of resistance from OIRA and others in the administration, most agencies have stopped proposing ambitious new regulations. There is very little in the regulatory pipeline awaiting approval – in fact, too little. The greater threat to the US economy today is that mounting losses will be caused by *under-regulation*.

Would the producers of peanut butter be better or worse off today if they had been subject to stricter health and sanitary regulation of their facilities? Just a few cases of salmonella poisoning were enough to cause a massive slump in sales. Much the same happened to spinach producers not so long ago, and tomato growers before them. Just one case of mad cow disease, a few years ago, lowered US beef exports by about \$2 billion a year for the following two years.

In such cases of actual or threatened food poisoning, the lost sales and long-lasting damage to the reputations of US food producers cost the industry real money – billions of dollars, in the case of beef. The costs of strict food quality and sanitary regulations, preventing these losses, would often be lower. For beef producers, the cost of Japanese-style mad-cow testing, the international gold standard, would have been less than the \$2 billion in annual losses; testing to European standards, which are also far more rigorous than ours, would have cost even less. The cost of testing would add only pennies per pound to the price of beef, a cost that would deter almost no one. If given the choice in the supermarket, who would refuse to pay \$0.04 - 0.07 more per pound for beef that had undergone state-of-the-art testing for mad cow disease? (See my article, “Mad Cows and Computer Models,” for details.)

Food safety may be the most obvious area of economic losses due to under-regulation, but it is not alone. What is the cost of allowing infrastructure to crumble to the point where a highway bridge collapses, as occurred in Minneapolis, killing several people and disrupting transportation throughout a major metropolitan area for months? Or for that matter, we now know all too much about the unconscionable cost of cheap, substandard levees when a major hurricane hits New Orleans. Regulations that require higher standards of inspection and repair of bridges, levees, and other infrastructure will save money, avoiding the losses that result from our now-customary under-regulation.

Yet another area of possible under-regulation concerns environmental standards for exports. Some 30 percent of US exports go to the European Union (EU), Japan, and Korea; another 20 percent go to Canada. For these and a number of other countries, environmental issues are important in trade. That is to say, more than half of our exports are sold to countries where high environmental standards are either required, or can

provide a competitive advantage. While the US was once a world leader in environmental protection, we have now begun to fall behind; the rest of the world did not spend the last eight years debating the fine points of cost-benefit analysis and rolling back regulations. We now may need to catch up with the standards in our export markets.

Indeed, the EU spent the last few years debating and adopting remarkable new chemical safety regulations, electronics standards, and protocols for handling hazardous substances. When the phase-in of the EU chemicals regulation, REACH, is completed, it will be impossible to sell chemicals in Europe unless they meet the new standards. The US chemical industry, and the State Department, lobbied hard against REACH, continuing to oppose it long after European industry had made its peace with the new rules. REACH was nonetheless adopted and, given the size and importance of the European market, it is likely to set new global standards. It would be far more profitable in the long run to be out in front, embracing the emerging global standards for chemical safety and demonstrating that US industry can be one of the first to meet those standards, rather than fighting an unsuccessful rearguard action against them. (See my discussion of the economics of REACH in *Poisoned for Pennies*.) Much the same will be true in electronics and other sensitive areas: success in trade will be based on the race for environmental leadership, not on lobbying against other countries' regulations.

In each of these areas – food safety; infrastructure maintenance; and environmental standards for exports – OIRA could usefully play a new role in identifying the need for cost-saving regulations, urging agencies to act on these topics, and thereby helping to avoid the losses that result from under-regulation. This is an unfamiliar new territory; OIRA should explore its extent, and seek out other opportunities to restore an adequate level of regulation for environmental protection.

4. Two better methods for regulatory evaluation

There are at least two alternative methods of regulatory evaluation that overcome most of the limitations of cost-benefit analysis. Both methods use much of the information that must be gathered for a cost-benefit study, but present it in a more coherent framework. Conventional cost-benefit analysis is not wrong in its pursuit of quantitative information bearing on costs and benefits; rather, it errs in its final stage of converting non-monetary information into pseudo-prices. Almost everything that occurs before that final stage can be put to better use.

4.1. Holistic comparison of costs and benefits

Comparison of the costs of regulation on the one hand, and the benefits on the other, could take on many forms. Cost-benefit analysis typically assumes that non-monetary benefits should be disaggregated into “elementary particles” of value – so many lives saved, so many acres of wetlands protected – and then each particle can be separately monetized. After disaggregation and monetization, the particles of valuable benefits can be reassembled to produce a valuation for the regulation as a whole.

An alternative, holistic comparison can be performed without disaggregation or monetization. Costs as a whole, usually expressed in dollars, can be compared to benefits as a whole, expressed in their natural, usually non-monetary units. The essential comparison is still present, but it is freed from the insoluble problem of monetization of priceless benefits. Since the comparison is no longer strictly numerical, there is an inescapably deliberative element to the process – as there is in most public policy.

This approach would have been helpful in a case on which I commented, the regulation of power plant cooling water intake systems under the Clean Water Act Section 316(b). Fossil fuel and nuclear power plants require huge amounts of cooling water; withdrawal of cooling water from rivers, lakes, and estuaries kills large numbers of fish. It is not difficult to calculate the costs of technologies, such as cooling towers, which would sharply reduce impacts on aquatic life. The benefits of those technologies are reductions in fish deaths.

When this regulation was debated, OIRA insisted that EPA carry out a complete cost-benefit analysis, providing an estimate of monetary value for each fish species. (Only a few of the affected fish species have market prices.) Fish modeling and monetary valuation turned out to be an endless detour away from decision-making; OIRA rejected a first-round national analysis, which was already complicated enough, and insisted on separate, intricate modeling and valuation for each of nine regions of the country. Neither EPA nor any other party to the proceedings had the resources to complete the multi-region research agenda. As a result, the decision was ultimately made without the help of any completed cost-benefit analysis that met OIRA's standards.

A more feasible and understandable alternative would have started by laying out the costs in dollars. Since the costs are imposed on electricity generators, the resulting increase in electric bills would be the relevant measure of costs for most people. The costs could be weighed against the estimated total numbers of each species of fish that would be saved by those costs. Almost no one understood EPA's attempts at cost-benefit analysis of this rule, but almost everyone would understand the alternative, holistic comparison: "Would you be in favor of a regulation that raises electric bills by \$X per household in order to save the following list of fish that are now killed by power plants...?"

The same could be done for many other rules. If a new regulation, with an estimated cost attached, would prevent a certain number of deaths and diseases, do we want to "buy" the package or not? It may be easier to reach understanding and agreement at this level of holistic comparison: citizens and policy-makers might well be clear about whether or not the estimated lists of avoided deaths, diseases, and other benefits are "worth" the estimated costs, without knowing or agreeing on the price per death or illness.

Why would a holistic comparison ever produce different answers than a cost-benefit analysis? After all, valuations of benefits could be inferred from holistic decisions; with enough such decisions, it might seem possible to deduce a set of implicit prices for individual benefit categories. This is not a fatal objection: even if the answers were the

same, the holistic comparison would still be preferable on grounds of simplicity and transparency.

More important, the answers need not be the same. The process of disaggregation of benefits, in the cost-benefit methodology, might overlook or misrepresent some of the values that affect a holistic judgment. For example, two hazards with numerically equal risks of death may involve very different contexts that lead to much greater fears in one case than another. The work of Paul Slovic and his colleagues on the psychology of risk, and of Daniel Kahneman and Amos Tversky on behavioral economics, provide ample explanation for differing, context-dependent responses to numerically equivalent risks.

Of particular relevance to regulation is the differential response to highway safety on the one hand, and food poisoning and other toxic risks on the other hand. Researchers have found that the implicit valuation of life is relatively low in spending on highway safety, up to an order of magnitude less than in other policy areas. In contrast, there appears to be virtually zero tolerance for even low-probability hazards in areas such as food safety, and a very high implicit valuation of life.

What should we make of this difference? It could be simply a mistake, based on a lack of information. In that case, public education might raise awareness of highway risks and increase the demand for change – or, less plausibly in my opinion, education might lead to greater acceptance of low-probability risks to food safety, in order to make food a little cheaper.

The difference between policy areas could, however, be also based on real aspects of the context of risk. Individuals do have greater knowledge and control of risks when driving than when buying food – even though most people also exaggerate their own level of skill and control behind the wheel. In contrast, no one knows anything about potential contamination of the food they buy, or has any illusion of personal control over invisible pathogens. Given such a difference, the appropriate response – in addition to education about real highway risks – surely involves stricter regulation of food safety risks. Insistence on equal regulation of all numerically equal risks would amount to the implausible assertion that the context of risk is known to be irrelevant.

4.2 Cost-effectiveness analysis of absolute standards

For urgent, high-risk policy problems, standards are often expressed as absolute limits, derived with little if any economic analysis. In order to prevent dangerous climate change, it is often said to be crucial to keep temperature increases below 2°C, or to keep atmospheric CO₂ concentrations below 450 (or now, perhaps 350) parts per million. Discussion of this and other urgent health and environmental concerns often invokes a realm of moral absolutes, akin to major provisions of the criminal code, rather than a balancing of costs and benefits.

Cost-benefit analysis of climate policy can easily amount to second-guessing or challenging the emerging policy consensus: William Nordhaus, the best-known economist writing about climate change, calculates that the “optimal” policy would be a carbon tax so small that it would allow greenhouse gas emissions to continue rising throughout this century. (In his latest book, “A Question of Balance,” the optimal scenario leads to modest carbon reductions, measured as reductions from a fast-growing business-as-usual scenario.) This trajectory is radically at variance with the scientific understanding of what is needed for climate protection – so much so that it is hard to take seriously as a proposal for climate policy. On the contrary, it seems like evidence that something big is missing in Nordhaus’ calculations of climate costs and benefits. (For another perspective on climate economics, see my book, *Can We Afford the Future?*)

When, as with climate change, regulatory standards are already clear, and are understood as absolute requirements, it makes more sense to perform a cost-effectiveness analysis. The question is not whether we should try to save the earth’s climate, as opposed to declining to take action because it looks too expensive. Rather, the important economic question is, what is the least-cost strategy for achieving the absolute standards needed for climate protection? With a problem as vast and complex as climate change, this is far from a trivial calculation.

Cost-effectiveness analysis of absolute standards avoids many of the problems of cost-benefit analysis. It is no longer necessary to price the benefits of climate policy (i.e., the climate damages that are avoided by the policy), since the acceptance of the standard pre-empts that calculation. Damages up to the standard are acceptable; damages above that are not. In technical economic terms, the standard amounts to a decision that the shadow price of emissions becomes infinite above that level; the marginal benefits curve turns vertical at that point. All the calculation in a cost-effectiveness analysis is on the cost side, where prices are much better-defined. Problems of discounting intergenerational impacts are lessened, since costs of mitigation occur much sooner, on average, than the benefits.

While climate change is an extremely important case, it is not the only one where policy is expressed in terms of an absolute standard – making cost-effectiveness analysis the appropriate analytical response.

References cited

Frank Ackerman, 2009. *Can We Afford the Future? The Economics of a Warming World*. London: Zed Books.

–, 2008. *Poisoned for Pennies: The Economics of Toxics and Precaution*. Washington DC: Island Press.

–, 2006. “The Unbearable Lightness of Regulatory Costs,” *Fordham Urban Law Journal*, May. Reprinted in *Poisoned for Pennies*.

Frank Ackerman and Lisa Heinzerling, *Priceless: On Knowing the Price of Everything and the Value of Nothing*. New York: The New Press.

Frank Ackerman and Wendy Johncheck, 2008. “Mad Cows and Computer Models,” *New Solutions* vol. 18 no. 2. Reprinted in *Poisoned for Pennies*.

Lisa Heinzerling, 1998. “Regulatory Costs of Mythic Proportions,” *Yale Law Journal* vol. 107.

William Nordhaus, 2008. *A Question of Balance: Weighing the Options on Global Warming Policies*. New Haven: Yale University Press.

Cass Sunstein, 2002. “The Arithmetic of Arsenic,” *Georgetown Law Journal*, July.