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Two Cheers for Feasible Regulation:
A Modest Response to Masur and Posner

David M. Driesen

Jonathan Masur and Eric Posner's article, *Against Feasibility Analysis*,[1] shows that the question of whether we should analyze regulation's feasibility raises intriguing issues. One way of framing the core normative issue underlying feasibility-based regulation is to ask a seemingly simple question: Suppose we could save a single person from a painful death from cancer by demanding that an industry pay $10 million to reduce exposure to a carcinogen at the work place. Should we do so?

The answer to this question depends on the cost's distribution and one's normative commitments. Suppose, for example, that imposing this $10 million cost causes an industry selling 1 million television sets a year to raise prices by 10 dollars per set. One should consider this $10 million cost insignificant because of its distribution and enact this regulation. This is an example of feasible regulation. Suppose, however, that the $10 million cost causes much of the industry to shut down, creating unemployment for 10,000 workers. One might respond to this case in one of two ways depending on one's normative commitments. One could assert the primacy of human life and insist that this regulation is appropriate, a philosophy seen, to some extent, in health-based standard setting provisions.[2] Alternatively, one could say that an administrative agency should eschew this regulation as infeasible, since the industry cannot implement technological changes to save our cancer victim.[3] Since the industry could meet a fully health protective goal by shutting down,[4] the decision to insist on only feasible regulation rests primarily on a normative judgment that an administrative agency ought not routinely impose the drastic consequence of permanent unemployment upon many workers.[5] My rather modest claim is that both responses are rational.

This claim supports the feasibility principle, the idea that administrative agencies should regulate serious health and environmental hazards as stringently as possible without causing widespread plant shutdowns, not as a perfect ideal for regulation, but as a rational norm among several plausible ones.[6] Although one can make the claim against the feasibility principle stronger by altering my television example, I will show that these changes do not make the demand for feasibility irrational. Moreover, even if one rejects the feasibility principle, feasibility analysis will provide useful information, because it

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[1] 77 U. CHI. L. REV. 657 (2010).
[2] *See, e.g.*, Whitman v. Am. Trucking Ass'ns, 531 U.S. 457, 464-471 (2001) (explaining that EPA must set national ambient air quality standards protecting public health regardless of costs).
[3] *See generally* American Textile Mfrs. Inst. v. Donovan, 452 U.S. 490, 508-509 (1981) (defining feasible regulation as that which is "capable of being done").
[4] *See* Union Electric Co. v. EPA, 427 U.S. 264, 265 n.14 (1976).
[5] *See* David Driesen, *Distributing the Cost of Environmental, Health, and Safety Protection*: *The Feasibility Principle, Cost-Benefit Analysis, and Regulatory Reform*, 32 B.C. ENVTL. 1, 34-38 (2005) (explaining why it is reasonable to eschew regulations producing widespread job loss).
[6] *See* id. at 2-3 (defining the feasibility principle as a "preference for avoiding widespread plant shutdowns" while otherwise maximizing emission reductions).

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identifies regulations distributing costs in atypical ways that produce widespread job losses, a consequence that may be comparable in importance to the serious harms to health that regulation prevents.

Masur and Posner argue that feasibility analysis lacks any normative justification, since it leads to under and over-regulation.[7] They supplement this normative argument with two case studies that reveal various practical difficulties in carrying out feasibility analysis.[8] The case studies and normative argument together create the impression that feasibility analysis is normatively bankrupt and leads to arbitrary regulation. Their analysis responds to my previous article, *Distributing the Cost of Environmental Health, and Safety Regulation: The Feasibility Principle, Cost-Benefit Analysis and Regulatory Reform,*[9] [hereinafter *Feasibility*], which argued that the feasibility principle reasonably addresses concerns about the distribution of costs and benefits and that feasibility analysis offers significant practical advantages over cost-benefit analysis (CBA).

Their normative argument assumes what they try to prove. They define under-regulation primarily as regulation where benefits exceed costs and over-regulation as regulation where costs exceed benefits,[10] thereby resting their attack on feasibility on assumptions about CBA's superiority. Of course, if efficient regulation is better than feasible regulation, then it follows that their conclusions about under and over-regulation are correct. But nowhere do they grapple with the question that the television hypothetical highlights: Is the equation of aggregate costs and benefits at the margin the proper ideal for regulation? In spite of Masur and Posner's promise to "uncover" the normative commitments underlying feasibility analysis,[11] they ultimately fail to confront the key normative arguments about wide distribution of regulatory costs to consumers rendering even high aggregate cost's impacts on each individual trivial or about the nature of the experience of job loss. Accordingly, most of this response will focus on clarifying the normative case for feasibility analysis.

Their neglect of key normative arguments stems in part from a preoccupation with flaws the practice of feasibility analysis.[12] I agree with Masur and Posner's characterization of that practice as less than wholly satisfactory and suggested as much in *Feasibility*.[13] But their conclusion that the practical flaws justify rejecting feasibility analysis in favor of CBA depends heavily upon comparing flawed real world feasibility analysis to an idealized and utterly unrealistic portrait of CBA. It is easy to show that all of the significant flaws they associate with feasibility analysis exist in CBA and that CBA

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[7] Masur & Posner, *supra* note 1 at 657 (finding that feasibility analysis "leads to both under- and overregulation).
[8] *See* id. at 670-87.
[9] Driesen, *supra* note 5.
[10] Masur & Posner, *supra* note 1, at 697-98 (defining overregulation and underregulation as deviations from economic optimality and criticizing feasibility analysis for promoting such deviations).
[11] *See* id. at 661.
[12] *See* id. at 675-81, 684-87 (discussing various anomalies and incomplete explanations in one OSHA and one EPA rulemaking).
[13] Driesen, *supra* note 5, at 19-22 (referring to the "vagaries of implementation" and suggesting that agencies have not consistently adhered to the feasibility principle).

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maximizes decision costs. Although Masur and Posner deserve praise for their effort to delve into the details of some case studies, their analysis assumes too glibly that every anomaly they see arises only under feasibility analysis and has nothing to do with CBA.

The core practical argument offered here, that technical problems Masur and Posner find in feasibility analysis also infect CBA, has not been explicitly made before. Normatively, this article includes a new argument showing that the lack of correlation between consumption and happiness supports the feasibility principle.

The analysis offered in this reply has broad implications for the regulatory reform debate: Maximizing the number of variables that an agency considers does not lower decision-making costs or clarify normative commitments. Instead, it increases the complexity of analysis and minimizes clarity. Any attempt to clarify normative commitments and reduce decision costs by limiting the number of variables considered will, by making some normative choice, leave other plausible normative choices out.

Part I of this article develops a little vocabulary that will help clarify the debate and provides a brief summary of their position exposing some of the vagueness at the heart of their normative argument. Part II shows that significant normative arguments support feasibility analysis' focus on job loss, even if it does not focus on it perfectly. Part III shows that CBA suffers from the same practical defects that they find in feasibility analysis. Finally, Part IV puts this debate in institutional context and defends the feasibility principle as reasonable, in spite of the validity of some of their criticisms.

I. Analysis, Criterion, and Norms

A. *Feasibility Analysis and the Feasibility Principle*

Feasibility analysis focuses on the question of whether a regulated industry possesses the capacity to make a significant health or environmental improvement.[14] It evaluates technologies (defined broadly to include a variety of techniques, including pollution prevention) that might make the improvement possible.[15] It also compares the costs of these technologies to the facility owners' financial capabilities or the profits associated with particular facilities to evaluate whether establishing a particular pollution reduction requirement would produce shutdowns of facilities rather than desired technological changes.[16] This analysis would be necessary, however awkward and

[14] *See* American Textile Mfrs. Inst. v. Donovan, 452 U.S. 490, 508-09 (1981) (defining feasibility in terms of what one is capable of doing).

[15] *See, e.g.,* AFL-CIO v. OSHA, 965 F.2d 962, 981 (11th Cir. 1992) (evaluating an agency claim that "existing engineering controls are available" to meet OSHA standards for air contaminants);FMC Corp. v. Train, 539 F.2d 973, 982 (4th Cir. 1976) (reviewing an EPA conclusion that technology is available when EPA has test results from only a single plant); National Lime Ass'n v. EPA, 627 F.2d 416 (D.C. Cir. 1980) (providing detailed review of EPA's claim that existing technologies made limits on air pollutants from lime kilns achievable).

[16] *See, e.g.,* Alaska Dep't of Envtl. Conservation v. EPA, 540 U.S. 461, 496-501 (2004); NRDC v. EPA, 863 F.2d 1420, 1426 (9th Cir. 1988); Am. Iron & Steel Inst. v. EPA, 568 F.2d 284, 297 (3d Cir. 1977)

conceptually difficult, for any regulatory decision that treated plant closings and associated job loss as potentially relevant.

In practice, government agencies often carry out feasibility analysis to inform decisions about what level of protection the best available technology can achieve. I have argued for understanding requirements to base standards on the best available technology (and similar expressions found in various environmental, health, and safety statutes) as a presumptive demand to maximize environmental protection up until the point where "widespread plant shutdowns" occur.[17] I refer to the normative principle that government agencies should maximize protection from serious environmental or health hazards up to the point where widespread plant closings occur as the "feasibility principle."[18]

B. *Cost-Benefit Analysis and Cost-Benefit Criteria*

CBA seeks to delineate the costs and benefits of a regulation reducing harms to health and the environment. One can think of costs as simply the dollar amount that industry must pay to implement technological improvements necessary to reduce environmental or occupational harms.[19] Or one can think of them as a very broad assessment of the consequences of imposing those costs.[20] If one means for CBA to include the latter, then it includes feasibility analysis. Let us refer to the first type of CBA as "narrow" CBA and the second as "broad" CBA.

Regulations' benefits consist largely of diminished harm to health and the environment, such as the life saved from cancer in my example.[21] CBA requires the regulator to estimate the number of lives saved, the number and type of serious illnesses avoided, and the extent of ecological damage ameliorated, among other things, through quantitative risk assessment.[22] Scholars agree that regulators cannot quantify many significant effects, and Masur and Posner's case studies exemplify that.[23] Furthermore, where quantification proves possible, it requires a set of fairly arbitrary assumptions to extrapolate from limited data.[24] The analyst must then convert the quantified benefits

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[17] *See* Driesen, *supra* note 5, at 9.
[18] Id.
[19] *See* Frank Ackerman & Lisa Heinzerling, *Pricing the Priceless: Cost-Benefit Analysis of Environmental Protection,* 150 PENN. L. REV. 1553, 1557 (2002) (describing cost estimation in these terms and characterizing it as "straightforward" in theory).
[20] *See, e.g.,* Robert W. Hahn & Cass R. Sunstein, *A New Executive Order for Improving Federal Regulation? Deeper and Wider Cost-Benefit Analysis,* 150 U. PA. L. REV. 1489, 1498 (2002) (defining CBA as a "full" qualitative and quantitative "accounting of the consequences of an action.").
[21] *See* Driesen, *supra* note 5, at 51.
[22] *See* id.; Thomas O. McGarity, *A Cost-Benefit State,* 50 ADMIN. L. REV. 7, 12 (1998) (describing CBA as beginning with quantitative risk assessment).
[23] *See* Id. at 13 (describing the lack of testing vehicles for ecological or health risks); Masur & Posner, *supra* note 1, at 671, 674, 682 (discussing the agencies' inability to quantify non-cancer health risks in the rules they used for their case studies); Ellen K. Silbergeld, *This Risks of Comparing Risks,* 3 N.Y.U. ENVTL. L. J. 405, 413-14 (1995).
[24] Oliver A. Houck, *Of BAT, Birds, and B-A-T: The Convergent Evolution of Environmental Law,* 63 MISS. L. REV. 403, 415 (1994) (describing the process of estimating risks to human's based on animal studies as

into dollar amounts in order to facilitate comparison of costs and benefits and figure out what to do about the nonquantified benefits.[25]

Monetization, the conversion of risk assessment numbers to dollar values, requires controversial assumptions, as Masur and Posner seem to acknowledge.[26] Regulatory agencies employing CBA would likely find a single death from cancer of less value than a $10 million compliance expenditure, because they derive the value of life from controversial estimates of "risk premiums" reflecting differentials between the wages workers are willing to accept in high risk occupations and the wages they are willing to accept in certain low risk occupations.[27] Risk premium studies produce a wide range of values, but $10 million is above the range regulatory agencies typically employ.[28]

The decision about what action to take after completing a CBA depends upon a criterion for regulation.[29] The economically correct criterion is that costs should match benefits at the margin.[30] Call this the "efficiency criterion." Employing this criterion, the $10 million expenditure clearly exceeds the benefit of saving one life under standard assumptions. Cass Sunstein, the current head of the Office of Information of Regulatory Affairs in the Office of Management and Budget (OMB), and many others instead favor a more flexible rule that costs should not grossly exceed benefits.[31] Call this the "proportionality criterion." Under this criterion, a regulator must make an arbitrary decision about whether the $10 million regulation grossly exceeds the benefit of saving one life or just modestly exceeds that benefit. A third criterion simply requires that

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involving "more guesswork than a television game show"); Donald T. Hornstein, *Reclaiming Environmental Law: A Normative Critique of Comparative Risk Analysis*, 92 COLUM. L. REV. 562, 572 (1992) (noting that the National Academy of Sciences has identified fifty "inference options" where a policy decision must be made to create a risk assessment from limited data); Wendy E. Wagner, *The Science Charade in Toxic Risk Regulation*, 95 COLUM. L. REV. 1613, 1625 (1995) (discussing the problem of extrapolating estimates of human health effects from high-dose animal experiments).

[25] Eric A. Posner, *Controlling Agencies with Cost-Benefit Analysis*, 68 U. CHI. L. REV. 1137, 1144 (2001) (explaining that CBA reduces the advantages and disadvantages of a decision to a "numerical metric").

[26] Masur & Posner, *supra* note 1, at 701 (noting that CBA's critics find CBA arbitrary and describing the question of how to value avoided deaths as a "vexed question.").

[27] *See* FRANK ACKERMAN & LISA HEINZERLING, PRICELESS: ON KNOWING THE PRICE OF EVERYTHING AND THE VALUE OF NOTHING 75-76, 83 (2004) (describing the risk premium methodology and presenting the values agencies obtain from them).

[28] *See* ID. at 80-84 (describing some the disparate values obtained in studies of risk premiums and suggesting that the numbers chosen appear arbitrary and certainly vary among agencies).

[29] *See* David M. Driesen, *Is Cost-Benefit Analysis Neutral*, 72 U. COLO. L. REV. 335, 387 (2006) (pointing out that a cost-benefit criterion should influence the stringency of standards in theoretically predictable ways).

[30] *See* WILLIAM J. BAUMOL & WALLACE E. OATES, THE THEORY OF ENVIRONMENTAL POLICY 23 (1975) (describing charging a price equal to the social costs as correcting a misallocation of resources); 1 HANDBOOK OF ENVIRONMENTAL ECONOMICS: ENVIRONMENTAL DEGRADATION AND INSTITUTIONAL RESPONSES 253-54 (Karl-Goran Maler & Jeffrey R. Vincent eds. 2003) (defining a socially optimum regulation or tax as one the equates marginal abatement cost to marginal damage); HORST SIEBERT, ECONOMICS OF THE ENVIRONMENT: THEORY AND POLICY 65 (5th rev. ed. 1998) (defining maximizing net benefits as marginal costs equaling marginal benefits).

[31] *See* CASS R. SUNSTEIN, RISK AND REASON: SAFETY, LAW, AND THE ENVIRONMENT 119-120 (2002).

benefits must exceed costs.[32] Call this the "no excess cost criterion."[33] My hypothetical violates the no excess cost criterion," but a large number of laxer regulations may satisfy it.

C. *Masur amd Posner's Analysis*

In *Feasibility*, I developed a concentration principle: Widely distributed costs almost always have minor effects, while concentrated costs (or harms, if you'd prefer) can have devastating impacts.[34] Environmental insults often visit serious harms on some unfortunate individuals, such as cancer, neurological disorders, or exacerbated asthma, while leaving other relatively untouched.[35] By contrast, firms usually disperse regulation's cost widely among consumers, thereby produce a de minimis effect.[36] In cases where regulations might produce widespread plant closures, however, the costs have importance comparable to serious harms to public health, since plant closures concentrate costs' effects on a discrete group of workers.[37] I argued that this concentration principle justifies maximizing reductions up to the point where plant closures become widespread.[38]

Masur and Posner, as I indicated, argue that "feasibility analysis" lacks any normative justification. Analysis does not require normative justification, as an analysis is not a decision or principle, so this argument should be understood as an attack on the feasibility principle. They argue that the feasibility principle both permits regulation when costs exceed benefits and forbids regulation in cases where benefits exceed costs. Thus, they implicitly argue that some sort of cost-benefit test must govern regulation and that anything else is normatively bankrupt.

Masur and Posner's defense of this assertion has significant gaps because of their failure to distinguish between analysis and criterion and to be clear about the criterion they are employing in imagining that an efficiency criterion must be normatively superior and analytically clearer than the feasibility principle. At the outset, they explicitly embrace the no excess cost criterion.[39] Later, however, they criticize OSHA for not selecting the option that might assure the greatest "net benefits" under one of several possible sets of assumptions.[40] But an option with greatest net benefits is just one of many options a regulator could choose under a no excess cost criterion. Their endorsement of maximization of net benefits implies a different normative criterion than the one they explicitly endorse, namely the efficiency criterion. In fairness, *Against*

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[32] *See* Exec. Order No. 12,291, 3 C.F.R. 127, 1288 (1980-1982), *reprinted in* 5 U.S.C. § 601 (2000) (requiring that, to the extent permitted by law, the costs of regulation not exceed its benefits).
[33] *See* Driesen, *supra* note 29, at 387-90 (discussing this "no excess cost requirement").
[34] *See* Driesen, *supra* note 5, at 35.
[35] Id. at 38.
[36] *See* id. at 36-38 (supporting this point).
[37] *See* id. at 37 (explaining this point).
[38] Id. at 41.
[39] *See* Masur & Posner, *supra* note 1, at 657 (claiming that "a regulation satisfies CBA if it produces benefits . . . greater than the cost of compliance.")
[40] Id. at 679-680.

Feasibility Analysis relies on a concept of "overall well-being", which Eric Posner developed in his work with Matthew Adler, as a framework for resolving CBA's normative difficulties.[41] *Against Feasibility Analysis*, however, does not show how such an abstract moral philosophical concept would resolve the issues posed by hypothetical $10 million regulations of carcinogens from television manufacturing or any other case. The failure to consistently specify a cost-benefit criterion allows them to attack a fairly clear feasibility principle without assuming the difficult burden of defending a reasonably clear alternative criterion, such as the efficiency criterion.

They also suggest that the feasibility principle's focus on job loss has no normative justification. They point out that job loss from an economist's perspective is inconsequential, since it does not necessarily impact consumer welfare.[42] They also attack feasibility analysis for neglecting other regulatory costs, thereby leaving out consideration of regulation's impact on other aspects of welfare, such as entertainment, food consumption, transportation, and the costs of raising children.[43]

In spite of their doubts about job loss' relevance, Masur and Posner leave open the possibility that CBA might take job loss into account (i.e. that they endorse broad CBA).[44] If it does, (and it certainly seems relevant to overall well-being) then it would have to include a feasibility analysis with all of its difficulties.

Against Feasibility Analysis contains a vast array of technical objections to feasibility analysis. Masur and Posner point out that government agencies must define the industry regulated for purposes of creating any particular regulation, and that they can manipulate the outcome of a feasibility analysis by manipulating the industry definition.[45] They also criticize feasibility analysis for its focus on available technology, rather than on technology forcing.[46] This focus, they say, leaves regulators with a choice between banning pollutants and using "available" technologies, which may have significant limitations.[47] Finally, they articulate a number of concerns about how to determine whether regulations are economically feasible. The most fundamental objection to the feasibility principle made in this context involves a claim that plant shutdowns may not signify job loss, as workers might be transferred.[48] This argument is conceptually important, because it attempts to sever the link between the feasibility principle's focus on plant shutdowns and its normative justification rooted in concern about job loss. They also point out that job losses can occur outside the plant shutdown context.[49] They

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[41] *See* MATTHEW D. ADLER AND ERIC A. POSNER, NEW FOUNDATIONS OF COST-BENEFIT ANALYSIS (2006).
[42] *See* Masur & Posner, *supra* note 1 at 704-05.
[43] *See* id. at 704.
[44] *See* id. at 705 ("if it's appropriate to take into account the hardship costs to workers who lose their jobs- then cost-benefit analysis can easily accommodate these costs.")
[45] *See* id. at 688-91.
[46] *See* id. at 691-93.
[47] *See* id. at 692 (claiming that agencies employing a feasibility principle "must choose between mandating safety precautions that already exist and banning the substance altogether").
[48] *See* id. at 695 (stating that plant closures "could have no effect on job losses if firms just reassign workers" to open plants).
[49] *See* id. (pointing out that regulations could "cause firms to fire workers while keeping plants open")

therefore urge that agencies, if job loss is a concern, should measure job losses "directly" rather than through an analysis of likely plant closures.[50] They also argue that problems of "path dependence" and "time inconsistency" arise under the feasibility principle, since the economic feasibility of a proposed regulatory requirement can depend on how much regulatory cost regulated firms already bear under prior regulation.[51]

They infer from their technical analysis that CBA provides clearer guidance than the feasibility principle.[52] They also suggest that CBA generates lower decision costs than feasibility analysis by asserting that "cost-benefit analysis minimizes decision costs through the magic of quantification."[53] Thus, their argument recognizes that finding technical flaws in feasibility analysis does not suffice; rather they must show that these flaws create more significant problems than those arising under available analytical alternatives.

II. A Normative Case for the Feasibility Principle

Although Masur and Posner identify me as the "leading defender of feasibility analysis,"[54] they oddly overlook many of the arguments I made for such analysis in a review of Eric Posner's recent book with Matthew Adler, *New Foundations of Cost-Benefit Analysis*.[55] Loss of work constitutes a crisis for many people for reasons well recognized by moral philosophers, economists, and psychologists. Martha Nussbaum and many others have argued, with strong empirical support, that affiliation with others, avoidance of emotional loss, and a feeling of control over one's environment constitute critical aspects of well-being.[56] Job loss, as I have explained, implicates all of these dimensions.[57] Most people develop a set of stable relationships with their colleagues and derive some of their sense of identity from their place of employment. If they are fired, they suddenly lose a set of vital affiliations. They experience a profound emotional loss. Losing a job involuntarily is a shock.[58] Moreover, in a reasonably stable work situation people feel that they have some control over their environment. Most employees believe that working hard can allow them to hold onto their jobs, and many may believe that their efforts make advancement likely. Although workers do not have complete control over their employment, they often feel that they have some influence over the environment that surrounds them for 40 hours or more a week. Being fired destroys the feeling that one has some control over one's environment and makes workers feel that

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[50] Id. at 696.
[51] *See* id. at 696-97.
[52] *See* id. at 705-707 (arguing that CBA's "ambiguities can be resolved" by keeping its proper purpose in mind, but that feasibility is "indefinite" and arbitrary").
[53] *See* id. at 700.
[54] Id.
[55] (2006). *See* Amy Sinden, Douglas A. Kysar, and David M. Driesen, *Cost-Benefit Analysis: New Foundations on Shifting Sands*, 3 REG. & GOVERNANCE 48 (2009).
[56] *See* ADLER & POSNER, *supra* note 41, at 74-75.
[57] *See* Sinden, Kysar, & Driesen, *supra* note 55, at 65.
[58] Michael Luo & Megan Thee-Brenan, *Poll Reveals Depth and Trauma of Joblessness in U.S.: Emotional Havoc Wreaked on Workers and Family*, N.Y. TIMES A1 (December 15, 2009) (describing job loss as causing "financial and emotional havoc").

they are at the mercy of larger forces that they are powerless to effect. As one worker fired during the recent financial crisis put it:

> We grow up with the impression there's a correlation between effort and the fruits of your labor. To be honest with you, I have very little confidence I'm going to able to turn this around. It just feels completely out of my control.[59]

Thus, job loss involves an injury that dollar estimates of costs do not measure.

Ironically, CBA proponents have made even more of the job loss' importance. They link job loss potentially resulting from costly regulation to suicide, and therefore argue that costs have health impacts comparable in importance to the benefits counted in CBA.[60] Although CBA cannot predict the suicide rate among those losing jobs or measure the intensity of other emotional or health losses, feasibility analysis implicitly gives weight to these consequences.

Masur and Posner rather breezily suggest that job loss is only important if it proves permanent.[61] But all of these consequences can occur whether the job loss is permanent or not. Indeed, studies show that job loss produces a decrease in the terminated's feeling of well-being even after employment resumes.[62] Moreover, a temporary loss of employment for a year or two can deliver quite a blow to a family trying to build savings to pay for college and support children well. And displaced workers experience this as a financial loss not merely as a lack of opportunity to purchase more things.[63] The economics literature recognizes that people experience losses of what they already have more keenly than the disappearance of an opportunity for gain.[64]

Of course, blue collar industries have shed a lot of permanent jobs in recent years.[65] Happily, environmental regulation on the whole has modestly increased employment, perhaps because of the feasibility principle's influence.[66] But if

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[59] Michael Luo, *For Many, Uncertainty, Fear and Shame Often Follow Pink Slips*, N.Y. TIMES A26 (December 15, 2009).

[60] Scott A. Moss & Peter H. Huang, *How the New Economics Can Improve Employment Discrimination Law, and How Economics Can Survive the Demise of the Rational Actor*, 51 WILLIAM & MARY L. REV. 183, 215 & n. 125 (2009) (summarizing results of studies of unemployment's affect on mental and physical health).

[61] *See* Masur & Posner, *supra* note 1, at 704 (stating the cost of job loss to workers "if there is one, is transitional only").

[62] Moss & Huang, *supra* note 60, at 214-16 (discussing findings that unemployment causes permanent emotional "scarring", creating insecurity that "decreases happiness").

[63] *See* id. at 205 (explaining that because of the endowment effect, a terminated employee "suffers a greater loss than somebody . . . not hired") (emphasis omitted).

[64] *See* id. at 205-14 (reviewing evidence of the endowment effect).

[65] *See* ACKERMAN & HEINZERLING, supra note 27, at 85 (stating that overall industrial employment has fallen since the 1970s)

[66] *See* EBAN GOODSTEIN, THE TRADE-OFF MYTH FACT AND FICTION ABOUT JOBS AND THE ENVIRONMENT 171 (1999) (stating that environmental protection supports blue collar jobs); Richard D. Morgenstern et al., *Jobs Versus the Environment: An Industry-Level Perspective*, 43 J. ENVTL. ECON. MGMT. 412 (2002). *Cf.*

government regulators start producing a lot of infeasible regulation, we may expect more job loss.

Because job loss constitutes such a heavy blow, it may make sense to allow relatively lax regulation of an industry contributing to serious damage to the environment or public health to avoid widespread plant closings from strict regulation. While this outcome appears troubling, so does the alternative of widespread plant shutdowns. Many health and environmental problems that regulation addresses are cumulative, the result of lots of industries' activities. In these cases, when regulation of one contributing industry becomes lax because of strict regulation's infeasibility, regulators can often make up for it with strict regulation of industries that can afford the cost.

By contrast, it makes no sense to give even large costs any weight if regulated parties will disperse those costs widely so as not to seriously harm any individual (as in the television price increase example). Proposed environmental regulations not producing widespread plant closures generally lead to agency predictions of modest price increases. Prices go up and down all of the time in our economy and for the most part people adjust, often without noticing the impact. Costs having no discernable impact on individuals would not significantly affect "overall well-being," the moral philosophical underpinning of Masur and Posner's critique. Moreover, predicted price rises often fail to materialize, because producers innovate in ways that bring down the prices that might otherwise have risen because of regulation.[67] Many opportunities for price-rise avoiding innovation can arise, because not only innovation in environmental technology, but also any innovation in process, materials use or extraction, or labor organization that reduces cost can make up for a price increase stemming from regulation. Even if some consequences exist, when costs are widely distributed, they simply deserve no weight compared to the concentrated harms that individual victims of pollution experience, such as hospitalization for asthma or death from cancer.

I pointed out in *Feasibility* that most regulations distribute costs quite widely.[68] There is a big difference between a regulation raising television prices by $10 per set and a regulation of identical total costs that shuts down facilities employing thousands of people. Treating the two the same, as CBA usually does, is arbitrary.

I do not deny that entertainment, food consumption, transportation, or the costs of raising children matter.[69] My argument is that the likelihood of any particular regulation having a significant impact on these things is so low, because firms distribute costs so

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Masur & Posner, *supra* note 1, at 704-05 (claiming, incorrectly, that economists "traditionally ignored the effect of regulation on employment").

[67] *See* Nicholas A. Ashford, *Compliance Costs: The Neglected Issue*, *in* MAGAZINE OF THE EUROPEAN AGENCY FOR SAFETY AND HEALTH AT WORK, 30-33 (1999) (arguing that innovation in response to stringent OSHA regulation led to reduced costs); David M. Driesen, *Does Emissions Trading Encourage Innovation?*, 33 ENVT'L L. REP. (Envtl. L. Inst.) 10,094, 10,103-04 (2003) (providing detailed examples of innovative responses to stringent regulation).

[68] *See* Driesen, *supra* note 5, at 36 (explaining why costs tend to be distributed widely and citing examples).

[69] *Cf.* Masur & Posner, *supra* note 1, at 704 (criticizing the feasibility test for ignoring these sorts of things).

widely, often compete with less regulated firms, and employ cost saving innovation from time to time, that agencies can safely choose to ignore them, when the alternative involves the extraordinarily burdensome and controversial procedure of quantifying costs and benefits.[70] Masur and Posner duck, rather than address, my argument that widely distributed costs have de minimis impacts on consumers when they criticize feasibility analysis' neglect of consumer welfare. Retrospective analysis of entire regulatory programs (not individual regulations) to evaluate actual (rather than predicted) cumulative costs, however, may usefully inform major legislative decisions.

Furthermore, I am not aware of a single CBA that takes any of the impacts of rules on any of these welfare effects into account. Instead, a CBA typically focuses on the dollar costs of implementing technological changes and does not distinguish between regulation influencing food prices and regulation raising the cost of an entertainment option. Feasibility analysis offers the advantage of reflecting elected representatives' qualitative judgment about what is important.

The television example highlights another problem with Masur and Posner's assumption that CBA advances overall well-being. People spend money according to their preferences, but, as Posner has pointed out repeatedly (along with Matthew Adler), their preferences can be either welfare decreasing or welfare enhancing.[71] Loss of an opportunity to buy a television provides an example of a debatable case. Perhaps losing television provides a benefit, freeing people addicted to television for pursuits creating more long-term satisfaction. Perhaps not. But money saved from reducing regulatory costs might be spent on something as important as life saving surgery or as detrimental as addictive recreational drugs. Hence, there are still more grounds for being dubious about CBA's connection to overall well-being. By contrast, we know that health impairment and job loss usually constitute serious setbacks for people, substantially impairing welfare.

A broader point about value may further account for some of the differences between my normative perspective and that of Masur and Posner. Masur and Posner have, perhaps reflexively, adopted the economists' habit of focusing exclusively on consumer welfare.[72] This focus on consumer welfare proves extremely useful for economic modeling employed to describe a well functioning market. But if one is interested, as Masur and Posner are, in overall well-being, a focus on consumption proves odd. We have little evidence that increased consumption breeds happiness. Therefore, people's preferences in the purchase of consumer goods (as opposed to vital things like employment and health) may weakly correlate with their well-being. This critique has been advanced in the economics literature at least since John Kenneth

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[70] Driesen, *supra* note 5, at 36 (discussing cost spreading and avoidanceand citing illustrative examples, which are typical of many cases studied in preparing *Feasibility*).
[71] *See* ADLER & POSNER, *supra* note 41, at 33-34 (describing the problem of "nonideal" preferences).
[72] *See* Masur & Posner, *supra* note 1, at 704-05 (sympathetically explaining that economists "traditionally ignored the effect of regulation on employment," because they are transitory and considered "small relative to the benefits and costs to consumers").

Galbraith's work in the 1950s.[73] The psychological literature shows that well-being depends upon one's health and affiliations with family, friends and colleagues at work, but tends to refute the idea that more consumption, beyond a certain minimum, generally increases welfare.[74] In other words, people derive their most important satisfactions (and dissatisfactions) not from their consumption, but from their work and their families.

That said, the emphasis on plant shutdowns takes consumer welfare seriously where it most likely merits attention. Although regulation almost always produces (or is modeled to produce) minor price rises having little effect even on preference satisfaction, plant shutdowns may signal a more serious disruption of markets. If regulation bankrupts an entire industry, then a good may disappear altogether. And if regulation bankrupts a significant segment of an industry, it may lessen competition and therefore stimulate price increases greater than and longer lasting than those typically associated with regulation, even though economists probably cannot reliably predict the extent of a changed market structure's effect on prices.

In a pure free market treating price increases, even small ones, as a minor matter would occasionally prove erroneous. Suppose, for example, that a small price increase applied to a life saving medicine made it impossible for a poor person to pay for it. If we had a complete laissez-faire market, this sort of thing could kill somebody. Fortunately, however, for essential goods we have safety nets; food stamps, health insurance, and state programs to help the poor with heating bills. If safety nets become full of holes, we should mend them. For all kinds of things have the capacity to make essential goods or services become too expensive; taxes, patents and other forms of monopoly power, raw material shortages, unanticipated demand, and runaway executive compensation come immediately to mind.[75] Many of these factors dwarf regulation in their significance. Once one concedes, as the information at hand should lead one to do, that the typical impact of regulation is minor price increases, the dramatic example of a marginal case for an essential good probably should not drive policy at all, and certainly not for most cases.

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[73] *See* E. Diener and R. Biswas Diener, *Will Money Increase Subjective Well Being: A Literature Review and Guide to Needed Research,* 57 SOC. INDIC. RES. 119 (2002); R. Easterlin, *Will Raising the Incomes of All Increase the Happiness of All,* 27 J. ECON. BEHAV. ORG. 35 (1995); RH FRANK, LUXURY FEVER: WHY MONEY FAILS TO SATISFY IN AN ERA OF SUCCESS 6 (1999) (after a certain threshold has been reach increases in material wealth do not correlate with increases in subjective well-being) JOHN KENNETH GALBRAITH, THE AFFLUENT SOCIETY 131, 145 (1960) (questioning the link between increased production and consumption and increased welfare).

[74] See Stephanie M. Stern, *Residential Protectionism and the Legal Mythology of Home,* 107 MICH. L. REV. 1093, 1119-1121 (2009) (finding that physical health and social relationships are much stronger predictors of "life satisfaction" than home ownership); Ethan J. Leib, *Friendship and the Law,* 54 UCLA L. REV. 631, 655 (2007) (explaining that friendship generates self-esteem, which is critical to happiness and avoidance of depression); Norval D. Glenn & Charles N. Weaver, *The Contribution of Marital Happiness to Global Happiness,* 43 J. MARRIAGE & FAM. 161, 163-64 (1981). *Cf.* L. van Boven & T. Gilovich, *To do or to Have? That is the Question,* 85 J. PERS. SOC PSYCHOL. 1193 (2003) (finding that experiences rather than possessions bring happiness).

[75] *Cf.* McGarity, *supra* note 22, at 49 (pointing out that taking the richer is safer idea seriously "would give new meaning to the complaint: 'These taxes are killing me'")

The problem with Masur and Posner's argument is that they simply take no position on whether the distribution of cost or job loss in particular should matter, at least not in this piece. Saying distribution does not matter is arbitrary, given some of the ways distribution can render costs of trivial significance to people's lives or concentrate costs' effects to deprive people of something as central to well-being as gainful employment.

So much for the argument that feasibility analysis lacks some normative support.

Amazingly, *Against Feasibility Analysis* tries to disassociate plant closure from job loss. Masur and Posner point out that plant closure may not track job loss, because an employer might transfer workers when a plant shuts down. They argue, therefore, that rather than tracking shutdowns, agencies should count job loss "directly." Their transfer argument applies to any job loss, not just to those associated with plant closure; a firm can transfer a fired worker at a still running plant. And it's a very weak argument. Plant closures do cause job losses, accounting for nearly half of all displacement of long-term employees in recent years.[76] Masur and Posner do not show that job transfers occur often; transfers cannot help workers who cannot or will not move; and they would prove exceedingly difficult to predict. Any consequence of regulation might not occur because of some *deus ex machina*, but if we are to engage in any analysis of welfare effects at all we must distinguish from likely and unlikely palliatives. The argument for measuring jobs directly proves extremely misleading. Any agency measuring job loss "directly" would include an analysis of whether the costs imposed would lead to plant closures, as feasibility analysis demands. Agencies do this all of the time with bankruptcy models and other tools, as Masur and Posner acknowledge.[77] Messy as it may be, no more direct way of analyzing the question of whether plant closures leading to unemployment might occur exists.

Masur and Posner stand on more solid ground when they point out that some job loss can occur outside the context of plant closures.[78] Agencies' tools for predicting these job losses, however, are no more direct and more error prone than their tools for predicting plant closures. They involve figuring out whether cost increases would lead to consumers simply paying higher prices or instead whether price rises would instead reduce consumption. If raising prices would reduce consumption, modelers sometimes predict that regulated firms would fire workers, but they might instead reduce wages, reduce profits, lower benefits, or lower dividends to shareholders. Although predicting job loss through plant closures is not completely reliable either, it is a much safer bet that if costs bankrupt an owner or make facilities unprofitable, plants will close.

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[76] *See* Bureau of Census for the Bureau of Labor Statistics. Bureau of Labor Statistics, *Worker Displacement* 2005-2007 (2008) , http://www.bls.gov/news.release/pdf/disp.pdf. (plant closure produced 45.3% of all job loss); Bureau of Labor Statistics, *Worker Displacement 2003-2005* (2006), http://www.bls.gov/news.release/archives/disp_08172006.pdf (plant closure produced 49% of all job loss); Bureau of Labor Statistics, *Worker Displacement 2001-2003* (2004), http://www.bls.gov/news.release /archives/disp_07302004.pdf (plant closure produced 43% of all job loss).

[77] *See, e.g.*, Masur & Posner, *supra* note 1, at 685 (describing agency employment of a bankruptcy model).

[78] *See* id. at 703 (noting that job losses can occur without plant closings).

A combination of practical and theoretical considerations can justify a focus on shutdowns. First, it might make sense to focus on the most predictable job losses, those likely to occur when plants shut down. Second, plant shutdowns are much more likely to cause widespread job losses than measures that do not shutdown plants. Third, widespread plant shutdowns are much more likely to produce permanent unemployment in a significant number of cases, since subsequently increasing production at an open facility that has terminated some employees is much easier than starting a new plant once one has shut down the old one. Fourth, industry predicts job losses all the time, yet they rarely materialize.[79] Their lobbying on this politically sensitive point produces great potential for agency error, especially as the industry controls much of the relevant information about cost, market structure, substitute products and so on. Confining agencies to feasibility analysis, at least for regulations governed by the feasibility principle, may reduce error costs.

In any event, Masur and Posner's observation that feasibility analysis is underinclusive with respect to job loss does not justify rejecting feasibility analysis, it only justifies supplementing it with efforts to predict job losses outside the shutdown context. In practice, agencies usually estimate both types of job loss and take them into account in promulgating technology-based regulations.

Nor can the underinclusiveness argument help justify their preferred alternative, CBA.[80] CBA is likewise underinclusive, and in a more significant way. It has no way of counting job loss' impact on welfare, because factors such as affiliation and a feeling of control over one's environment defy quantification. Also, on the benefits side, CBA tends to overlook the many significant health and environmental benefits that scientists cannot quantify. In short the underinclusion argument does not provide an argument for choosing CBA over feasibility analysis, but an argument, and not an airtight one, for a modification of the feasibility principle to make it conform better to agency practice.

This argument hopefully has already suggested a broader point about regulatory reform. No magic numbers offer an escape from difficult normative judgments.[81]

III. Technical and Practical Comparison

This section will look at some of the technical and practical flaws Masur and Posner see in feasibility analysis. It will show that CBA suffers from the same problems. Hence, the differences in our normative judgments seem to relate more to how seriously we take distributional concerns than to technique.

A. *Clarity of Guidance*

[79] *See* Morgenstern, *supra* note 66, at 412 (describing industry claims of regulations reducing employment as a "mantra" and arguing that the data generally do not support these claims).

[80] Throughout their article, they compare feasibility to CBA and find feasibility wanting. At one point, they disclaim a goal of defending CBA, only to go on in same paragraph to defend CBA as consistent with "a range of reasonable conceptions of well-being." Masur & Posner, *supra* note 1, at 709.

[81] *See generally* DOUGLAS KYSAR, REGULATING FROM NOWHERE: ENVIRONMENTAL LAW AND THE SEARCH FOR OBJECTIVITY (2010) (faulting CBA for pushing normative engagement to the side).

Masur and Posner, to their credit, recognize that CBA suffers from some vagueness and ambiguity.[82] But they assume that feasibility analysis provides "no theoretical way" to determine the correct balance and CBA does.[83] No form of analysis provides a "theoretical way" to determine balances. Normative criteria sometimes associated with various forms of analysis, however, may do that. Their argument's proper target, therefore, is not feasibility analysis, but the feasibility principle. Their implicit claim that the feasibility principle provides less guidance than CBA appears baffling given the vagueness of their normative commitments.

The feasibility principle demands maximization of environmental and health benefits up to the point where plant closings begin to occur. Masur and Posner may not like this criterion, but it's quite clear in principle about the level of stringency required in the many cases where contemplated technologies do not lead to any shut downs of facilities at all.[84] They make this clarity appear to disappear by selecting cases for study where agencies predict some plant closures.[85] This selection works well as a method for highlighting the feasibility principle's weaknesses in hard cases, thereby facilitating a normative debate, but it does slight its capacity to resolve many cases with relative ease.

I admitted in *feasibility* that the admonishment to avoid "widespread plant" shutdowns required some interpretation when agencies predict some plant closures. But they acknowledge that all verbal formulas are a little vague, including those associated with CBA.[86]

To make the strongest possible case for CBA's relative clarity, assume that Masur and Posner adopt the efficiency criterion, costs should equal benefits at the margin. This criterion, although not clear in practice (as we shall see), is very clear in theory. It achieves this clarity by leaving out all consideration of distributional equity, in other words, through very significant neglect of important aspects of overall well-being, Masur and Posner's normative touchstone. To achieve a comparable degree of precision, one would have to translate the "widespread plant" shutdowns into a similar mathematical expression, for example, permitting no more than 10% of plants to shutdown. Although Masur and Posner condemn this rule as arbitrary, it does not seem any more arbitrary than decisions establishing a speed limit at 55 miles per hour instead of 65 miles per hour. Legislative decision-making establishing clear rules probably requires some fairly arbitrary judgments. This relates to a larger point suggested at the outset, any clear rule will fit some cases poorly, as the poor fit between the rule that costs should not exceed benefits and my first television example (minor price rises in a lot of sets) illustrates. But if clear guidance is a paramount consideration, one can obtain that by refining, rather than abandoning, the feasibility principle.

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[82] *See* Masur & Posner, *supra* note 1, at 705 (describing CBA as using "vague terms' and requiring "relatively arbitrary" choices).
[83] *See* id. at 705-06.
[84] *See* Driesen, *supra* note 5, at 43 (pointing out that often agencies predict no plant closures).
[85] *See* Masur & Posner, *supra* note 1, at 670-87 (providing a case study of OSHA's regulation of hexavalent chromium and EPA's regulation of pollution from pulp and paper plants)
[86] *See* id. at 705.

They criticize the feasibility principle for failing to tell agencies how far to go. But their own examples demonstrate that CBA provides even less guidance, even if one employs an "efficiency criterion." For example, an exposure limit of 1 ug/m^3 for hexavalent chrome produces total costs of $552-570 million and a benefits range between $53 million and $1.382 *billion* dollars.[87] It is impossible to determine whether this regulation equalizes costs and benefits. Nor for that matter, can one tell whether costs exceed benefits or not. The same is true for five of the six regulatory options OSHA considered, because all five produce costs within the plausible range of benefits numbers:

OSHA Hexavalent Chromium CBA in Millions of Dollars[88]

Exposure Limit	.25µg/m^3	.5 µg/m^3	1 µg/m^3	5 µg/m^3	10 µg/m^3	20 µg/m^3
Monetized Benefits	$60-1,587	$57-1,496	$53-1,382	$36-896	$25-584	$13-288
Costs	$1,762-1,815	$996-1,033	$552-570	$273-282	$165-170	$109-112

No normative criterion associated with CBA tells the regulatory whether to choose .5 µg/m^3, 1 µg/m^3 (a limit 2 times as high), 5 µg/m^3 (a limit 10 times higher than .5), 10 µg/m^3 (20 times higher than .5), or 20 µg/m^3 (40 times .5).[89]

OSHA tried to circumvent that difficulty by providing median net benefit numbers.[90] But in 3 of the 5 cases those medians provide a range of net benefits between positive and negative, thus leaving a hapless OSHA, if its statute permitted it to follow the efficiency criterion, with a choice between a standard of 1 ug/m^3 and limits 10 or 20 times as lax.[91] Even Masur and Posner concede that CBA only narrows the range to a choice between levels of 1 µg/m^3 and permitting 10 times that amount of exposure.[92]

Although Masur and Posner bury this fact, OSHA's completed feasibility analysis gave OSHA clear guidance about which level to choose under the feasibility principle.

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[87] *See* id. at 673

[88] I derived this Table from Table 1 in Masur and Posner's article. *See* id. The ranges of values given include the difference between assuming a 3% and 7% discount rate.

[89] Indeed, the one option that CBA appears to eliminate, .25 ug/m^3, may remain on the table if one either uses the proportionality criterion or gives unquantified benefits substantial weight, since on "a plausible set of assumptions" costs exceed monetized benefits by just $175 million. *See* id. (showing that at a 3% discount rate costs are $1,762 and monetized benefit as high as $1,587).

[90] *See* id.

[91] Moreover, this use of statistics to eliminate some choices is highly suspect. There is no reason to think the median numbers are correct, and in this context medians represent scientific gibberish, because often some of the numbers within the range usually have a basis in plausible scientific assumptions, which the median does not. This amounts to an arbitrary preference for the middle.

[92] *See* id. at 674 (claiming that the "socially optimal exposure limit . . . likely lies somewhere with the range of 1 µg/m^3 to 10 µg/m^3"). Furthermore, Masur and Posner concede that a .5 µg/m^3 limit would be "cost-benefit justified" under "optimistic assumptions." Id.

OSHA concluded that at levels more stringent than 5 $\mu g/m^3$ its regulation would destroy at least one industry, but at 5 $\mu g/m^3$ few if any plant closures would occur.[93] Therefore, the feasibility principle pointed rather clearly to regulation at 5 $\mu g/m^3$.

Similarly, the combined costs of the Clean Air and Water Act rule fell within the range of plausible benefits for all three options.[94] No criterion associated with CBA could tell the regulator which option to choose without making a choice among plausible benefits estimates or accepting some kind of dubious averaging procedure and then ignoring the non-quantified benefits.

This case, however, illustrates something that we all agree on, that the concept of widespread plant closure has some ambiguity that will often matter in the minority of cases where some plant closure is predicted. In this case, EPA chose an option with 2 closures (out of 158 mills regulated) over options generating 4 closures, or 9 closures.[95] Masur and Posner are right to say that this choice required some judgment, and that the fact that the job loss numbers increased exponentially if EPA chose the stricter options might have been influenced its decision. One might charitably interpret this as keeping norms underlying the feasibility principle in mind as the agency resolves its ambiguities, but Masur and Posner reserve that sort of charity for CBA alone. Of course, if one specified a percentage of plant closures in advance, then one would have clear guidance available given these facts.

Although Masur and Posner are right that the feasibility principle provides only ambiguous guidance in some cases, they fail to recognize that even in their chosen examples, narrow CBA provides even less guidance. The amount of guidance given would further diminish if we employed broad CBA and/or more flexible criteria, such as the no excess cost criterion Masur and Posner explicitly endorse.

Masur and Posner miss CBA's lack of ability to provide magic solutions, because they delve into the unattractive details of how agencies estimate the numbers for plant closures, while applying no scrutiny at all to how they arrive at their estimates of costs and benefits, making the numbers in CBA appear magically from nowhere. They acknowledge CBA's "ambiguities" in the abstract, but blithely assume that agencies keeping the overall goal of promotion of public well-being in mind can somehow resolve these.[96] First of all, overall well-being does nothing to resolve the risk assessment problems generating potentially huge variability in benefits estimates. And they have no plausible explanation as to how this goal can guide the agencies with respect to the many choices that these rules illustrate remained for agency resolution, even assuming that all the numbers are reasonably accurate (a very heroic assumption). One would think that

[93] *See* id. at 680 (indicating that OSHA abandoned the 1 $\mu g/m^3$ limit because "feasibility analysis indicated" that this level threatened the survival of "at least one industry.").
[94] *See* id. at 684.
[95] *See* id. at 686. These figures are for rules like the one ultimately promulgated, which regulated both air and water pollution.
[96] Id. at 705.

people with varying normative commitments might have different views of overall well-being, even if they all accept Posner and Adler's description of it.

B. *Generating Numbers for Feasibility Analysis: A Comparative Approach*

Any case of legislative rulemaking will demand tough judgment calls and therefore produce less than completely satisfactory reasoning, regardless of the type of analysis employed. The pragmatic question though is not whether feasibility analysis is perfect, it is whether it presents more or less difficulty than an available alternative, like CBA.

It should be obvious that broad CBA is more complicated and difficult than feasibility analysis. Broad CBA includes a feasibility analysis, analysis of other costs, and quantification of benefits. Feasibility analysis simply requires analysis of costs, the number of plant closures, and the number of plants regulated.

To make their case for CBA's superiority to feasibility analysis in reducing the need for arbitrary technical judgments and presenting intractable difficulties even colorable, one must assume that they mean to focus only on narrow CBA, quantifying the costs and benefits without analyzing job loss. But alas, even this effort to help their case proves unavailing, for CBA still replicates, rather than circumvents, the key difficulties they see in feasibility analysis.

1. *Industry Definition*

Masur and Posner point out that agencies must define the industry in order to carry out a feasibility analysis.[97] And an analyst can subdivide any industry into subcategories.[98] The definition of the industry can influence conclusions about whether an industry faces widespread plant shutdowns, since the determination of widespread plant closures depends on a comparison of the number of plant shutdowns to the number of plants in an industry. Therefore, Masur and Posner claim that agencies "tinker[] with industry classifications on an ad hoc basis."[99] The court reviewing the hexavalent chrome rule they use to illustrate this problem held that OSHA's industry classification was not arbitrary, partly because of a consistent practice of setting a uniform permitted exposure level for the entire regulated universe as a whole, rather than subdividing industry.[100] Still, Masur and Posner are correct that the agency has discretion in defining an industry, so that *ad hoc* industry definition in theory can occur.[101]

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[97] Id. at 688.
[98] Id. at 689 (noting that an "industry can be subdivided indefinitely").
[99] Id. at 691.
[100] *See* Public Citizen Health Research v. U.S. Dep't of Labor, 557 F.3d 165, 182-84 (3rd Cir. 2009) (rejecting environmentalist plea to subdivide industry in part because of consistent use of uniform standards). *Cf.* Masur & Posner, *supra* note 1, at 24 n. 122 (citing OSHA's use of groups using control technologies for the hexavalent chrome rule as an example of "ad hoc" industry definition).
[101] *See Public Citizen*, 557 F.3d at 183 (declaring OSHA's decision to use a uniform standard rather than tailoring it to particular industries or sub-industries is a "legislative policy decision" that the court will uphold if it is "reasonably drawn from the record.")

But the problem of industry classification influencing results and therefore inducing tinkering exists with CBA as well. A good example of this problem comes from the 5th Circuit's decision overturning EPA's phase-out of asbestos in *Corrosion Proof Fitting v. EPA.*[102] In its introduction to the case, the court explains that the rule will save between 202 and 148 lives at $450-800 million, about $2 to $4 million per life, putting it within the range most CBA proponents find acceptable.[103] Yet, in explaining why the rule is "arbitrary and capricious," the court accuses EPA of spending $43-76 million per life saved.[104] What happened? The introduction refers to the entire industry making asbestos products,[105] while the passage claiming excessive costs focuses on a subcategory of that industry, the manufacturers of asbestos pipe[106]. In other words, the results of CBA hinge upon the definition of the industry under analysis. Although *Corrosion Proof Fittings* involves judicial *ad hoc* tinkering, agencies can do the same under CBA.

2. *Existing versus Future Technology*

Similarly, the problem of having to decide whether to base a rule on existing technology or on technology not yet fully developed arises for any analysis of cost, not just for feasibility analysis. The cost of meeting any level of environmental protection equals the cost of making the technological changes (broadly defined) needed to meet that level.[107] A good example of the problem of CBA varying depending upon whether one embraces technology forcing or not comes from the CBA of climate disruption. Different analysts come up with widely varying conclusions about the costs of abating greenhouse gas emissions.[108] One of the most significant causes of these disparities in CBA's results arises from choices about how to treat the possibility of technological advancement. [109] Some analysts base their cost estimates on existing technologies or past experience, whilst others come to very different conclusions because they assume that abatement policies will produce technological advances lowering costs.[110]

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[102] 947 F.2d 1201 (5th Cir. 1991).
[103] Id. at 1208.
[104] *See* id. at 1219 (noting parenthetically that $128-227 million of contemplated compliance expenditures to save three lives implies $43-76 million per life saved).
[105] Id. at 1207-08 (associating the $2-4 million per life saved figure with EPA's "rule" phasing out "most asbestos-containing products").
[106] Id. at 1219 (associating the $43-76 million per life saved figure with EPA's "ban of asbestos pipe").
[107] *See* Driesen, *supra* note 5, at 11. *See, e.g.,* Posner, *supra* note 25, at 1145 (noting that mark data on scrubbers costs would be used to estimate the costs of regulations dependent on scrubber technology).
[108] *See* Terry Barker *et al., Avoiding Dangerous Climate Change by Inducing Technological Progress: Scenarios Using a Large-Scale Econometric Model, in* AVOIDING DANGEROUS CLIMATE CHANGE 362-64 (Hans Joachim Schellnhuber *et al.* eds. 2006) (discussing the wide divergence in abatement cost estimates in economic models of climate change).
[109] *See* NICHOLAS STERN, THE ECONOMICS OF CLIMATE CHANGE: THE STERN REVIEW 262 (2006) (pointing out that innovation rates "make a large difference" in cost estimation).
[110] *See, e.g.,* Patrick Matschoss & Heinz Welsch, *International Emissions Trading and Induced Carbon-Saving Technological Change: Effects of Restricting the Trade in Carbon Rights,* 33 ENVTL. & RESOURCE ECON. 169 (2006).

Masur and Posner point out that courts have placed a heavy burden on agencies trying to justify technology forcing regulation, thereby making it difficult to use feasibility analysis to advance technology.[111] There is no reason to expect CBA to lead to abatement of this problem. Indeed, by emphasizing the notion that all regulation must be cost justified CBA, if subject to judicial review, will likely exacerbate judicial tendencies to expect a better justification than agencies can produce for reliance on future technologies. It will no longer be enough to show that reasons exist to expect the technology to be technically feasible and not so expensive as to bankrupt anybody. Instead, the agency would have to show that it has a reasonable basis for estimating the precise cost, a difficult task with a technology not yet developed.

3. *Path Dependence and Time Inconsistency*

Masur and Posner show that "path dependence" and "time inconsistency" cause feasibility analysis' results to depend on agencies' prior regulatory actions with respect to the regulated industry.[112] This means that a regulation's viability might depend on when the agency chooses to promulgate it. In CBA, this path dependence problem usually becomes broader, as regulations' acceptability can become dependent not just on the timing of regulation for a particular industry, but on all regulation influencing the environmental conditions that the regulation under analysis addresses. A good example of this comes from the Clean Water Act, which aims to restore heavily damaged ecosystems through a program of regulating water intake from large industrial facilities and effluent. The water intake kills billions fish and other aquatic organisms, thereby harming ecosystems.[113] Suppose that EPA regulates water intake early in the Clean Water Act's life, when aquatic ecosystems are seriously degraded. The proposed regulation costs $100 million and, because a degraded ecosystem currently supports little aquatic life, saves only 5 million fish, each fish worth $10.00. This $50 million dollar benefit cannot justify the $100 million cost. So, CBA (or more precisely, the no excess cost criterion) would prohibit regulation, precisely because of ecosystem degradation, which one might otherwise treat as an indication of a need for aggressive regulation aimed at ecological recovery. Suppose now that EPA proposes the same $100 million regulation after twenty years of successful regulation of effluent. Now thriving aquatic ecosystems make regulation less important. But the thriving ecosystem has boosted the commercial fish population so that water intake now kills 20 million fish, worth $200 million. Because the agency promulgates this regulation after other regulations, its benefits justify the cost. CBA not only proves path dependent and time inconsistent, but, at times, utterly perverse from the standpoint of key environmental values.[114]

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[111] *See* Masur & Posner, *supra* note 1, at 691-92 (noting that although "some commentators believe that agencies may issue technology-forcing regulations," agencies rarely issue them" because of burdens imposed by the courts).
[112] *See* id. at 696-97.
[113] 69 Fed. Reg. 41,575, 41,586 (July 9, 2004) (estimating water intakes kill at 3.4 billion aquatic organisms per year).
[114] *See* Douglas A. Kysar, *Fish Tales, in* REFORMING REGULATORY IMPACT ANALYSIS 209 (Winston Harrington *et al.* eds., 2009) [hereinafter RIA].

Moreover, this sort of path dependence invites *ad hoc* tinkering in the analysis itself. A good example comes from EPA's recent regulation of mercury emissions from power plants. Since the technologies used to reduce mercury from power plants also reduce particulate, which is associated with tens of thousands of annual deaths, a promptly implemented mercury rule evaluated on its own would likely produce enormous benefit predictions.[115] Since the Bush Administration EPA chose to implement a rule aimed at particulate and other criteria pollutants before the mercury rule,[116] its assessment of the mercury rule's benefits counted only the incremental mercury benefits realized after the criteria pollutant rule was implemented.[117] Hence, the agency, by manipulating the timing of the regulation, could manipulate the outcome of the CBA. The CBA of the mercury rule exhibits temporal inconsistency and path dependence,[118] illustrating that yet another problem Masur and Posner imagine arising under feasibility has arisen under CBA.

Masur and Posner complain that agencies use feasibility analysis in an *ad hoc* manner.[119] They admit that agency uses of CBA are "not perfect, either."[120] The literature they cite to justify this modest concession includes the mercury and water intake examples above and shows that agencies use CBA in an *ad hoc* manner as well.[121] And the unavoidable problems they find in feasibility analysis generally exist even for narrow CBA. CBA multiplies the number of variables contained in the analysis, which multiplies opportunities for *ad hoc* judgment. All analysis offers opportunities for *ad hoc* judgment, but feasibility analysis lessens the number of opportunities provided.

C. *Decision-Making Costs: CBA and Feasibility Compared*

Masur and Posner blithely assure us that CBA minimizes "decision-making costs through the magic of quantification," thereby suggesting that it has lower costs than feasibility analysis.[122] But CBA requires analysis of technology and its costs, just as feasibility analysis does. And CBA requires very difficult quantification of environmental harms, something that feasibility analysis does not require. Since the outcome of CBA depends on the choice of which benefits to quantify and what values to attach to them, these variables regularly become matters of dispute between the Office of Management and Budget and EPA, often leading costly interagency debates and delays. If the cost of conducting and debating analysis is part of decision-making (and it's hard to see how it could not be), then CBA maximizes decision costs.

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[115] *See* Catherine A. O'Neill, *The Mathematics of Mercury*, *in* RIA, *supra* note 109, at 115 (describing a promptly implemented mercury rule as generating particulate "co-benefits").
[116] Id. at 111 (describing the timing of the mercury rule).
[117] Id. at 113 (stating that this approach allowed EPA to avoid attributing "a sizeable category of benefits" to the mercury rule).
[118] *See* Alan J. Krupnick, *The CAMR: An Economist's Perspective*, *in* RIA, *supra* note 109, at 144-145 (agreeing that the choice of timing influenced the baseline and therefore the estimates of costs and benefits).
[119] *See* Masur & Posner, *supra* note 1, at 706.
[120] Id.
[121] *See* RIA, *supra* note 109.
[122] Masur & Posner, supra note 1, at 700. *Cf.* id. at 701 (recognizing the feasibility analysis has the advantage of not requiring quantification of benefits).

Perhaps Masur and Posner have in mind the costs of making decisions after the government has completed and agreed upon an analysis under the efficiency criterion, which after all, takes the form of a mathematical equation. Even then, however, it remains hard to see how CBA "minimizes" decision costs. As Masur and Posner's case studies illustrate, the agency must always decide upon the weight to be given non-quantifiable environmental benefits, since some significant benefits always defy quantification.[123] If the CBA is scientifically honest, then they must also debate which points in the various overlapping quantified benefit ranges to choose, as previously shown.[124]

By contrast, the feasibility principle makes many decisions easy once the analysis is complete, because, many regulations produce no plant closures. Under those circumstances agencies just choose the most stringent technological option. Of course, things get dicier, as they point out, when agencies predict some plant closures. But they have not begun to support the notion that choosing a point at which plant closures are widespread is harder than choosing which regulation maximizes net benefits when the wide range of benefits estimates and the nonquantifiables are considered.

Masur and Posner concede that it might make sense to eschew CBA if it exacerbates any agency tendencies to under-regulate, but suggest that we need a great deal of "empirical work" to overcome "one's natural skepticism" about the idea that CBA constitutes a drag on regulation.[125] In saying this, they fail to engage an enormous scholarly literature, including some by CBA proponents, showing that OMB has used CBA to slow and throttle rules in every administration and that the processes involved have killed off at least one entire regulatory program and slowed others down enormously.[126] Do they have some empirical evidence to refute scholars' assertions after a judicial decision demanding CBA of every option in a section 6 rulemaking under the Toxics Substances Control Act EPA gave up any substantial use of section 6, the principle regulatory authority EPA has for limiting the use of toxic substances?[127] Do they seriously doubt the assertion that quantitative risk assessment, a procedure at the

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[123] *Cf.* Jody Freeman & Andrew Guzman, *Climate Change and U.S. Interests*, 109 COLUM. L. REV. 1531, 1556-60 (2009) (showing that valuation of biodiversity losses from climate change have been left out of most economic models and are deeply problematic in the models that attempt it).

[124] *See, e.g.*, id. at 1548 (pointing out that estimates of GDP losses range from 0-3% of GDP when global temperatures rise between 2 and 3º, but that the losses rise to 5-10% of GDP if temperatures are assumed to increase by 5-6º C).

[125] *See* Masur & Posner, *supra* note 1, at 711.

[126] *See* RICHARD L. REVESZ & MICHAEL A. LIVERMORE, RETAKING RATIONALITY: HOW COST-BENEFIT ANALYSIS CAN BETTER PROTECT THE ENVIRONMENT AND OUR HEALTH 11, 151-61 (reviewing CBA's role in slowing, defeating, and weakening rules and concluding that it "generally serves an anti-regulatory purpose," but supporting it with reforms designed to overcome this problem)

[127] *See* David M. Driesen, *supra* note 29, at 347 (pointing out that EPA has not banned a single chemical since the Fifth Circuit subjected such actions to ac cost-benefit test); Thomas O. McGarity, *Professor Sunstein's Fuzzy Math*, 90 GEO. L. J. 2341, 2342 (2002) (describing CBA as having "throttled" regulation under TSCA & FIFRA). ECONOMIC ANALYSIS AT EPA 199 (Richard Morgenstern ed. 1997) (describing the regulation of PCBs as the only action EPA ever took under TSCA § 6 in the wake of the *Corrosion Proof Fittings* decision). But PCB's were banned long before then.

heart of CBA, doomed EPA's pesticide program to a state of perpetual slow motion?[128] Do they doubt leading scholars' assertions that linking specific reductions of pollutants to specific results in the receiving medium, which CBA requires, has never worked well in any medium, land, air, and water?[129] We do not know, because Masur and Posner have substituted their "natural skepticism" of the idea that a comprehensive quantitative analysis of all regulatory consequences might create serious burdens on regulatory programs for serious engagement with a consensus view of most of the countries' leading environmental law scholars. Although my work has distinctively emphasized a normative justification for the feasibility principle, a large literature mostly preceding my work has supported feasibility analysis as necessary to avoid the well-known decision-making costs that CBA and quantitative risk assessment create.[130]

IV. **Two Cheers or Three?**

The foregoing establishes the following points:

1) Important normative values support feasibility analysis' focus on plant closures;
2) Broad CBA requires, rather than avoids, feasibility analysis;
3) Narrow CBA arbitrarily ignores very important distributional consequences;
4) CBA generates much greater decision costs and more opportunities for *ad hoc* judgment than feasibility analysis;
5) The feasibility principle is extremely likely to generate the proper result in the many cases where no technological option leads to plant closures, because those cases generally distribute costs so widely among consumers that they have no significant impact on well-being.

Yet, a decision about whether to allow a large number of plant closures for the sake of preventing a cancer death (or similarly serious consequences) remains difficult in the few cases where the agency predicts some plant closures. Masur and Posner correctly suggest that the concentration principle I developed in *Feasibility* (opposing foregoing widely disbursed costs to address concentrated harms devastating individuals) does not

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[128] *See* Donald T. Hornstein, *Lessons from Federal Pesticide Regulation on the Paradigms and Politics of Federal Regulatory Reform*, 10 YALE J. REG. 369, 437 (1993)

[129] *See* OLIVER A. HOUCK, THE CLEAN WATER ACT TMDL PROGRAM: LAW, POLICY, AND IMPLEMENTATION 136, 165, 194–97 (2d ed. 2002) (making this assertion and providing examples); Adam Babich, *Too Much Science in Environmental Law*, 28 COLUM. J. ENVTL. L. 119, 133–35 (2003) (finding that "[t]he most common criticism of risk-based standards is that they do not work," and providing examples of where they failed); *see also* Weyerhaeuser Co. v. Costle, 590 F.2d 1011, 1042–43 (D.C. Cir. 1978) (recognizing that Congress adopted a technology-based approach in 1972 in reaction to the failed effort to "use receiving water quality as a basis for setting effluent pollution standards"); *cf.* Amy Sinden, *In Defense of Absolutes: Combating the Politics of Power in Environmental Law*, 90 IOWA L. REV. 1405, 1487–88 (2005) (arguing that the strict effects-based approach in the Endangered Species Act produces results "closer to where we want to be" than a balancing approach would).

[130] *See, e.g.*, Babich, *supra* note 124; Houck, *supra* note 124; Wendy Wagner, *The Triumph of Technology-Based Standard Setting*, 2000 U. ILLINOIS L. REV. 83; Sidney A. Shapiro & Thomas O. McGarity, *Not So Paradoxical: The Rationale for Technology-Based Regulation*, 1991 DUKE L. J. 729; Christopher H. Schroeder, *In The Regulation of Manmade Carcinogens, If Feasibility Analysis is the Answer, What is the Question?*, 88 MICH. L. REV. 1483 (1990).

justify a choice between avoiding widespread plant closures and fully protecting life or health.[131] That decision remains difficult.

For that reason, I specifically avoided making the claim that the "feasibility principle offers a perfect ideal for regulation."[132] Instead, I argued that the principle represents a "reasonable Congressional judgment about how *agencies* should address the cost of environmental regulation."[133] I shared Masur and Posner's concern that under this principle agencies might sometimes allow extremely harmful substances to go underregulated, but pointed out that "Congress . . . may choose more demanding requirements for particular substances than the feasibility principle might induce."[134] That is a major reason why I only muster "two cheers" for the feasibility principle, not three. Yet, the alternative they offer, CBA, does not merit even two cheers.

Narrow CBA fails to give any weight to the concentrated harms plant closures produce. For that reason, it is normatively unacceptable and lacks a strong connection to overall well-being.

If Masur and Posner would like to argue for broad CBA then they would have to abandon their opposition to feasibility analysis and admit that they endorse it with all of its technical difficulties. "Against Feasibility Analysis" would become "Three Cheers for Feasibility Analysis/Against the Feasibility Principle."

But calling for increasing the scope of analysis does not resolve the normative conundrum about what to do about a situation presenting a tradeoff between life and health on the one hand and the large numbers of job losses associated with widespread plant closures on the other. Take my opening hypothetical, one painful cancer death versus 10,000 permanent job losses. Masur and Posner have not shown what resolution the concept of overall well-being points to in this case. That concept represents a very carefully thought out abstract philosophical position, but I do not see how it is capable of providing an uncontroversial answer to a question like this.

An analyst employing CBA would choose a dollar value for the death and the lost wages involved in the job losses, thereby ignoring the pain involved in the cancer death and the emotional damages inflicted through the job loss. But putting dollar values upon consequences disguises normative judgments, rather than avoids them. Standard economic methods ask what would a worker be willing to pay to avoid a risk of death, generating a wide range of values.[135] Still, the numbers government agencies use generally represent averages lumping together disparate studies, most of them outdated, of different populations.[136] If they used wage premium studies of non-unionized workers, they could justify dropping this number to $2.6 million, and if they relied upon studies of

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[131] *See* Masur & Posner, *supra* note 1, at 703.
[132] *See* Driesen, *supra* note 1, at 47.
[133] Id. (emphasis added).
[134] Id. at 47-48.
[135] *See* ACKERMAN & HEINZERLING, *supra* note 27, at 79.
[136] ID. at 81-83.

unionized female workers they could justify raising the value to $42.3 million.[137] The choice about what dollar value to assign to a human life depends upon a value judgment, even if one takes standard economic methodologies as a given.

But if one employed a different premise in the valuation, say assuming that the person about to die of cancer from an unregulated hazard knows who she is and would be asked how much money she is willing to accept in order to consent to her own painful death, the answer may be she is not willing to die for any price. This would justify a conclusion that life has infinite value. In other words, a different, albeit unconventional, methodological choice in CBA could justify a wholly health protective outcome, although another choice might demand that one reject a regulation saving her. So, putting a dollar value on each consequence takes normative choices away from democratic processes and gives them to economists pretending not to make them while devaluing everything defying quantification. Dollar values paper over, rather than resolve, normative dilemmas.

This raises the possibility that maybe even the feasibility principle, with all of its imperfections, deserves three cheers. It is reasonable to say that generally we value protecting people's lives, their health, and their environment over minor and often temporary price changes, but when health and environmental protection causes many more people to risk financial and emotional devastation through job loss, we hesitate. We recognize that the tradeoffs in that case are difficult enough that we may not be comfortable delegating them to agencies without some default, bearing in mind that Congress might have to make a contrary choice directly. So, we direct agencies to presume that widespread plant shutdowns are not acceptable.

The feasibility principle at least provides evidence of sensible normative engagement in the relevant questions and a democratic legislative decision about how to presumptively resolve them. Congress decided to allow some plant closures to occur as part of the price we must pay to deal with serious environmental problems, but often created a presumption against widespread plant closures.[138] Civic debate should help formulate and articulate public values and decisions about how and whether to balance them.[139] One can see the feasibility principle's presence in numerous statutes as an articulation of public values favoring public health and environmental protection, but expressing concern about job loss. It may be appropriate for a democracy to develop and

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[137] *See* ID. at 79.

[138] CONG. RESEARCH SERVICE, 93d Cong., 1st Sess., 1 A LEGISLATIVE HISTORY OF THE WATER POLLUTION CONTROL ACT AMENDMENTS OF 1972 170 (EPA need not determine economic impact of a plant upon a single community or plant) (Comm. Print 1973); Pac. Fisheries, 615 F.2d at 818 (Congress contemplated the closure of some marginal plants under BAT standards); E.I. du Pont de Nemours & Co. v. Train, 430 U.S. 112, 127 n. 17 (1977) (effluent limitations under section 301(b) of the Clean Water Act may go beyond limits within an individual owner's economic capability); Industrial Union Dep't, AFL-CIO v. Hodgson, 499 F.2d 467, 478 (D.C. Cir. 1974) (Occupational Safety and Health Act does not "guarantee the existence of individual employers"); United Steelworkers of America v. Marshall, 647 F.2d 1189, 1272 (D.C. Cir. 1980) (showing of technological infeasibility for a few operators will not defeat a standard).

embody public values in law, rather than to pretend that the "magic of quantification" obviates the need for value choices.

Conclusion

Against Feasibility Analysis assumes what it sets out to prove when it sets up the efficiency criterion as the implicit baseline for measuring under and over-regulation. The feasibility principle has a good, albeit imperfect, normative justification and a very good institutional justification. Masur and Posner show that feasibility raises some difficult practical issues, but fail to acknowledge that CBA confronts the same difficulties, in addition to the more familiar problem of benefits that defy reasonably reliable quantification. Although one might wish for a clearer normative position from them, especially respecting cost-benefit criteria and the importance of distributional consequences, they deserve credit for diving into the details of some real regulations and deepening a continuing dialogue over the relative merits of both competing normative values and forms of analysis.

[139] My thanks to Douglas Kysar for suggesting some emphasis on the role of articulating public values.