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# Distributionally-Weighted Cost Benefit Analysis: Welfare Economics Meets Organizational Design

David A. Weisbach  
dangelolawlib+davidweisbach@gmail.com

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# **Distributionally-Weighted Cost Benefit Analysis: Welfare Economics Meets Organizational Design**

*David A. Weisbach*<sup>†</sup>

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## Abstract

Conventional approaches to cost benefit analysis, derived from social welfare maximization, suggest that it should ideally be adjusted to account for distributional effects. These approaches do not consider how tasks should be assigned within a large institution that includes specialized units such as the numerous agencies in the federal government. This paper considers how optimal distributive systems map onto the assignment of tasks to government agencies in such a system. It concludes that regulatory agencies should not, in general be asked to consider the distributive effects of regulations. The types of distributive adjustments that specialized regulatory agencies are able to make are not consistent with the types of distributive policies that are desirable. As a result, attempts to adjust cost-benefit analysis for distributive effects will likely be more expensive and less effective than other means of improving the distribution of resources. Instead, regulatory agencies, particularly those correcting market failures, should use cost-benefit analysis without taking distributive effects into account.

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<sup>†</sup> Walter J. Blum Professor, The University of Chicago Law School and Senior Fellow, The Computation Institute The University of Chicago and Argonne National Laboratories. I thank Louis Kaplow, Jonathan Masur, Jennifer Nou, and Eric Posner and participants at seminars at the University of Chicago and the American Law and Economics Association 2014 annual meeting for comments.

Since 1981, federal regulatory agencies have been required to use cost-benefit analysis in designing and evaluating regulations.<sup>1</sup> More than thirty years later, this requirement continues to generate controversy with scholars calling for expanding its use while others arguing for abandoning it altogether.<sup>2</sup>

In its most basic form, cost-benefit analysis requires the marginal costs of a project to be set equal to the marginal benefits. By setting marginal costs equal to marginal benefits, CBA generates efficient outcomes. If the last dollar spent on a project such as a park equals the increased benefit to the public from the park, its size and other attributes will be efficient. Additional spending would cost more than the benefits from the spending. A regulation of emissions of a toxin will be efficient if the cost of further reductions in emissions is equal to the additional safety benefits from further reductions.

Although regulations that set marginal costs equal to marginal benefits will be efficient, they may have bad distributive effects or other fairness problems. For example, a regulation that forces factories to reduce pollution may cause the factories to shut down, hurting workers, as well as their families and communities. Regulations that require goods to be safe may make them more expensive, possibly hurting poor people who can no longer afford them. If the distributive effects are bad enough, overall welfare may go down. One of the central questions about the use of CBA, therefore, is whether or under what conditions it should be adjusted to consider distributive effects.

The standard approach to answering this question is to derive CBA directly from a social welfare function. Social welfare functions describe society's preferences about both efficiency – the size of the pie – and the distribution of

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<sup>1</sup> Exec. Order No. 13,563, 76 Federal Register 3821-3823 (January 21, 2011), Section 1(b) (“to the extent permitted by law, each agency must, among other things (1) propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs (recognizing that some benefits and costs are difficult to quantify”). Exec. Order 13,563 incorporates Exec. Order No. 12,866 3 C.F. R. 638 (1992) which provides that “each agency shall assess both the costs and the benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only upon a reasoned determining that the benefits of the intended regulation justify its costs.” Sec. 1(b)(6).

<sup>2</sup> Compare Robert W Hahn & Cass R Sunstein, *New Executive Order for Improving Federal Regulation-Deeper and Wider Cost-Benefit Analysis*, A, 150 U. PA. L. REV. (2001).; and MATTHEW ADLER & ERIC POSNER, *NEW FOUNDATIONS OF COST-BENEFIT ANALYSIS* (Harvard University press. 2006). to Frank Ackerman & Lisa Heinzerling, *Pricing the Priceless: Cost-Benefit Analysis of Environmental Protection*, 150 UNIVERSITY OF PENNSYLVANIA LAW REVIEW (2002).; Henry S Richardson, *The stupidity of the cost-benefit standard*, 29 THE JOURNAL OF LEGAL STUDIES (2000).; and David Driesen, *Is Cost-Benefit Analysis Neutral ?*, 77 U COLORADO L. REV. 335(2006).

resources – who gets what. They can reflect strong preferences for egalitarian outcomes, showing a substantial willingness to sacrifice efficiency for distributional ends. They can alternatively reflect a view that efficiency is central. All social welfare functions, however, reflect some degree of concern about the distribution of income or wealth. Adopting efficient and only efficient policies is not generally consistent with maximizing social welfare.

If we derive CBA directly from a social welfare function, CBA must account for distributive concerns. If CBA does not consider distributive concerns, so that it requires adoption of all efficient policies, it may require adoption of a policy that decreases social welfare because of bad distributive effects. If CBA requires rejection of inefficient policies, it may reject policies that increase social welfare because their good distributive effects. As a result, many commentators believe that CBA should, in an ideal world, consider distributive effects.

This approach, I will argue, is mistaken. We cannot derive the conditions for CBA directly from a social welfare function. CBA is used by agencies pursuing tasks assigned to them in their role as part of a massive institution. CBA is part of the set of instructions to those agencies on how to perform their assigned role. The justification for and the design of CBA has to consider this institutional setting, a setting that is not reflected in approaches that derive CBA directly from a social welfare function.

Social welfare functions tell us the overall goal of the combined set of policies implemented by the government. Casual observation of large institutions tells us that individual parts of an institution need not individually pursue the overall goal of the institution. For example, the overall goal of an automobile company is to make and sell vehicles at a profit, but no single division on its own does exactly that. Design, research, engineering, procurement, legal, accounting, advertising, testing, finance, grounds keeping, sanitation, security, manufacturing, sales, and other tasks are assigned to divisions which pursue their assigned tasks, and do not aim on their own to produce, market, and sell complete vehicles. When these tasks are assigned properly and coordinated, the divisions achieve the overall goal even though none pursue it directly. We cannot go directly from the overall goal, producing and selling automobiles, to the tasks assigned to a particular division without careful consideration of the intermediating institutions.

The same is true for the assignment of tasks to units of the government, such as regulatory agencies using cost-benefit analysis. A social welfare function can be used to determine the overall goals of the government, including how much we

should pursue distributive goals and how we balance that with efficiency. It does not tell us how to pursue that goal within a large institution. Merely because the government should pursue distributive goals does not mean that each and every agency should. If we ask an agency to correct a market failure or manage a public resource, we may not want it to pursue distributive goals at the same time. We may instead want it to focus its expertise on a narrow set of tasks. Knowing the social welfare function does not tell us whether agencies using CBA should consider distributive concerns even though the social welfare function tells us that the government taken as a whole should.

The only way to understand the proper scope distributive adjustments to CBA is to consider the institutional setting in which it is used. The problem is one of assigning tasks to units of government. We need to map policies to agencies.

Mapping distributive policies to agencies requires an initial understanding of what good distributive policies should look like. Welfare economics is the study of this precise question. It helps us understand how to set marginal tax rates and how to best design safety net programs. It also tells us the extent to which we should use particular markets for distributive purposes, for example, by exempting necessities from tax or by imposing additional taxes on luxuries.

A core finding of welfare economics is that distributive policy should consist of a progressive tax on labor income and taxes or subsidies on various goods or services to complement the income tax. For example (as will be discussed below), we want to impose a tax on goods that are substitutes to labor and grant a subsidy to goods that are complements to labor.

A corollary to this result is that we should not make distributional adjustments in individual markets based solely on the view that those adjustments appear to be progressive. The simplest example is a luxury tax. A luxury tax is a tax on goods consumed by the wealthy. It would seem that a luxury tax is a good way of improving the distribution of income or wealth because it is well-targeted and progressive. Only the wealthy can afford to purchase expensive automobiles, large homes, carbon-fiber bicycles, and yachts. Taxing these items would seem to be a good way of targeting the wealthy without increasing overall tax rates. Notwithstanding this intuition, welfare economics shows us that luxury taxes are not good tools for redistributing income. If luxury taxes are well-targeted so that they fall on the rich, they have similar distributive effects to making the income tax more progressive. Unlike making the income tax more progressive, however, luxury taxes distort the choice of which types of goods to buy; the wealthy have

an incentive to avoid luxury taxes by purchasing other types of goods. Simply making the income tax more progressive works better. As a result, welfare economics recommends against luxury and other similar taxes.

When we map these findings to the design of CBA – to the instructions we give agencies – we see that CBA is a poor tool for implementing distributive policy. There are three reasons. First, agencies using CBA do not necessarily regulate markets that are appropriate to use for distributive purposes. The markets where we use CBA are only by chance the markets where it is desirable to intervene for distributive purposes. This means that generic adjustments to CBA to account for distributive effects (such as by regulating more lightly if the effects of a regulation hurt the poor) would not produce a set of policies that are anywhere near what distributive policies should look like.

This is true even if it seems that a particular regulation has substantial distributive effects. We cannot conclude from an observation that a regulation has substantial distributive effects that it is a good market to use for distributive purposes. The reasons are the same as the reasons why a luxury tax is not a good tool for redistribution.

Second, even if we are regulating in a market where it is desirable to consider distributive effects, the size and even the direction of the appropriate adjustments are determined by subtle factors that a regulating agency will not likely be able to determine. The adjustments are not conventionally pro-poor. Instead, their amounts are determined by subtle factors such as complementarity with labor and their interaction with the income tax. They look nothing like the simple weighting that adjusting regulations to be more pro-poor would produce. Specialization by agencies in their central function makes it particularly difficult for agencies to make this sort of determination. An agency that specializes in say, designing and evaluating trials for drug efficacy, nuclear power plant safety, or in forest management, is unlikely to have the expertise to make subtle distributive determinations.

Finally, suppose that we solve or assume away that first two problems and decide that a particular agency should be told to make a distributive adjustment to a policy and that it can determine the direction and size of the appropriate adjustments. The tools available to most agencies are typically tools for regulating the attributes of particular products or markets. For example, an agency specifying a technology or safety feature could require a more effective or less effective technology or safety feature because of distributive concerns.

Adjustments to product attributes of this sort, however, are generally less efficient than a tax or subsidy in the relevant market. For example, if we want to make electric power less expensive to help poor consumers, we are better off directly subsidizing power than making power plants less safe or allowing them to pollute more. Therefore, even if we were regulating in the right market and the regulating agency knew the size and direction of the adjustments to make, we would still not want agencies to adjust their regulatory policy. We would instead prefer a commodity tax or subsidy.

This paper comes in five parts. Part 1 provides background on cost-benefit analysis and may easily be skipped by readers familiar with CBA. Part 2 considers how CBA has been derived from social welfare functions and the problems with that approach. Part 3 is the core of the paper and considers how policies derived from welfare economics should be mapped onto the tasks assigned to agencies. Part 4 considers several extensions of the analysis, such as to the possibility that CBA consider unemployment effects. Part 5 concludes.

## **1. Background on CBA**

CBA requires comparing the costs of a project to its benefits. The goal is choose projects that provide the greatest net benefit. To maximize the net benefits, textbook or classic CBA requires agencies to set the marginal costs of a project equal to the marginal benefits.<sup>3</sup>

To conduct CBA, an analyst must be able to put costs and benefits on a common metric. When markets are complete, this happens automatically through the price system. Individuals are able to compare seemingly diverse goods using money. Any good that is traded in a well-functioning market can be compared to any other traded good. If an apple costs \$1 and bananas are \$0.50, consumers know that they can exchange one apple for two bananas and either of those for a quarter of a gallon of gas, a short cab ride, three hours of watching television, and so forth.

When there is a market failure, however, the price system may not operate to provide the relevant information. Regulatory agencies often regulate in precisely this circumstance, when there is a market failure. As a result, a central problem in

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<sup>3</sup> Exec Order 12866: “in choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits . . .” For a useful summary of cost-benefit analysis, see RICHARD ZERBE & ALLEN BELLAS, *A PRIMER FOR BENEFIT-COST ANALYSIS* (Edward Elgar, 2006). See also ADLER & POSNER, *New Foundations of Cost-Benefit Analysis*. 2006. pp 12-19 for a succinct summary of cost-benefit methodology.

conducting CBA is that agencies often cannot find observable prices for many of the items that they have to value. For example, an agency regulating pollution needs to know the harm that the pollution causes and the costs of reducing the pollution. There will be no price for the harms from pollution which means that we cannot use the existing price system to determine how pollution should be traded off with other goods unlike the way we use the price system to determine the trade-off between televisions and dairy products.

CBA attempts to find usable prices by finding money-equivalent values, known as compensating variations. CV's are the amounts individuals would pay to avoid or obtain something. They are roughly the equivalent of a price. For example, there is no readily observable price for clean air or for the reduction in risk from dirty air. CV's are the equivalent of such a price. They are roughly the amount someone would pay if they could purchase clean air in a market.

By some metrics, the use of CV's favors the wealthy. A wealthy person can afford to pay more to obtain something good or avoid something bad simply because she has more money, not because she intrinsically values it more. The starkest example is life itself. Suppose we are considering a regulation that reduces the chance of death each year by 1/100,000. Over the US population of 300 million, the regulation will save 3,000 lives each year so it has significant benefits. We need to value those benefits. We do so by estimating how much people would pay for the reduced risk. Rich people will systematically pay more for the reduction in risk simply because they can. Rich and poor might pay a similar proportion of their wealth, and in a non-monetary metric, they surely value their lives equally, but CV's are a monetary measure. CV's are how much people will pay, and the rich will pay more because they can. This means that rich lives count more than poor lives in textbook CBA.<sup>4</sup>

By other metrics, the use of CV's does not favor the wealthy because CV's simply mimic the market. In situations where there is no market failure, the wealthy will pay more for various goods including goods that reduce the risk of death. For example, the wealthy might be willing to purchase expensive safety devices for their automobiles that the poor cannot afford. If the metric is whether CV's do anything different than what the market does, then CV's do not favor the wealthy. The market overall may favor the wealthy, but that is a general problem of the distribution of income or wealth, not a problem specific to the use of CV's

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<sup>4</sup> Federal agencies count all lives equally, deviating from strict CBA in this regard. See Circular A-4. (2003).



in regulatory policy. (This question – whether prices estimated by using CVs are different than other types of prices for purposes of distributive policy – is the central question of this paper and the topic of part 3.)

Aside from possible distributive problems, the key problem with CV's is that measuring them is difficult. The measurements are often uncertain and potentially wildly off the mark. Complications abound, and most of the literature on the theory and the practice of CBA focuses on valuation methodologies. We can look to markets similar to the regulated market to try to estimate the equivalent of a price, we can ask people using various elicitation techniques, and so forth. None of these methods is perfect and many have serious flaws.

While the problems with measuring CV's are important, they are not the focus here. Instead, my goal is to examine the underlying normative premises of CBA. I will therefore say little more about measurement issues. Measurement problems, however, are serious, and bad measurements can lead CBA to erroneous results. Moreover, measurements may systematically exclude or undervalue certain types of goods or goods valued by certain people, leading to systematic biases in CBA. Where measurement is sufficiently horrible, perhaps other tools should be used instead of CBA. I do not mean to minimize these issues by focusing elsewhere.<sup>5</sup>

In theory, CBA works for a wide variety of government projects. If the government wishes to spend money to build a park, buy an airplane, or build a road, CBA can inform the choice of how much to spend or exactly how to spend the money. It can apply to the regulation of externalities, such as pollution. And it can apply to cases of imperfect information such as a safety regulation imposed because individuals cannot evaluate the safety of a complex product due to information or rationality constraints.

In practice, CBA at the federal level in the US is limited to significant regulatory actions, which are roughly regulations with more than \$100 million of effects in any one year.<sup>6</sup> It does not apply to spending. Moreover, it does not override specific legal requirements: if an agency is mandated by law to issue regulations where the costs exceed the benefits, it must do so. For example, if an

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<sup>5</sup> For a discussion of these issues and possible cures, See RICHARD REVESZ & MICHAEL LIVERMORE, *RETAKING RATIONALITY, HOW COST-BENEFIT ANALYSIS CAN BETTER PROTECT THE ENVIRONMENT AND OUR HEALTH* (Oxford University Press. 2008).

<sup>6</sup> See Exec. Order 12866 and Regulatory Impact Analysis: Frequently Asked Questions, available at [http://www.whitehouse.gov/sites/default/files/omb/assets/OMB/circulars/a004/a-4\\_FAQ.pdf](http://www.whitehouse.gov/sites/default/files/omb/assets/OMB/circulars/a004/a-4_FAQ.pdf) Exec Order 12866 recommends CBA for all regulations but does not make it mandatory.

agency must, under its legislative mandate, do everything feasible to achieve a goal, it may have to pursue policies that are not cost-justified.

CBA as implemented at the federal level in the United States, also differs from what I have been calling textbook CBA. The requirements have varied depending on the administration. For example, the Clinton administration required agencies to maximize net benefits but allowed them to include distributive impacts and equity in their evaluation.<sup>7</sup> The George W. Bush administration, however, suggested that distributional considerations be analyzed separately from the costs and benefits of a regulation.<sup>8</sup> Distributive concerns under this approach did not alter the CBA calculations. The Obama Administration modified CBA to require or allow agencies to consider equity, human dignity, fairness and distributive impacts in their cost-benefit calculations.<sup>9</sup> Moreover, in some places, the Obama administration suggested that the benefits must merely justify the costs, possibly implying that agencies need not maximize net benefits.<sup>10</sup> I will generally ignore these distinctions because my goal is to consider the underlying normative issues. Parsing through the details of these rules is, however, important because it determines what actions agencies can take.

## **2. The basic distributive argument from welfare economics and why it fails**

The most common way to justify CBA is to argue that it maximizes welfare. In its textbook form, however, CBA is not a command to maximize welfare. It is a command to maximize the net monetary benefits of a regulation as measured by the sum of the CV's. The question commentators ask is whether the two are equivalent or if not, what adjustments to CBA must be made to make them equivalent.

In general, pursuing efficiency is not the same as maximizing welfare. Suppose that person A gains \$11 from a policy change and person B loses \$10. The gains outweigh the losses so the policy is efficient. We cannot know whether the policy change improves social welfare, however, unless we know the distribution of the gains and losses. The loss of \$10 to person B might reduce his

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<sup>7</sup> Exec. Order No. 12,866 3 C.F. R. 638 (1992)

<sup>8</sup> Circular A-4 p. 14.

<sup>9</sup> Exec. Order 13563 and Memorandum for the Heads of Executive Departments and Agencies and of Independent Regulatory Agencies from Cass Sunstein, Feb. 2, 2011.

<sup>10</sup> Exec. Order 13563. But in other places, Exec. Order 13563 says that agencies must maximize net benefits.

utility more than the gain of \$11 to person A increases his utility. As a result, the project may reduce social welfare even though it is efficient.

A classic statement of this concern is found in a series of papers by Robin Boadway.<sup>11</sup> Boadway starts with a social welfare function:

$$W=W(U^1, \dots, U^j, \dots, U^m)$$

where  $U^j$  is the well-being or utility of individual  $j$ . The utility of an individual is a function of income  $Y_j$  which he uses to consume goods  $X_i$  (where factors or expenses are treated as negatives and goods are interpreted broadly to include everything that contributes positively or negatively to a person's welfare).

The social welfare function  $W$  aggregates utilities. For example,  $W$  might be the sum of utilities in which case the social welfare function is known as a utilitarian social welfare function. Utilities of different individuals in this case are weighted equally but because the marginal utility of income declines with wealth, giving a dollar to a wealthy person increases social welfare less than giving a dollar to a poor person.<sup>12</sup> Alternatively,  $W$  might be the product of utilities, which weighs low utilities more than utilitarianism does. If one person's utility is very low, for example, the overall product will be low even if the others' are high. Or it might be equal to the minimum of utilities, reflecting an even stonger weighting toward those with low utility.

To determine the welfare effect of a small change to the quantity of good  $X_i$ , Boadway takes the derivative of  $W$  with respect to a change in  $X_i$ . Differentiating  $W$  with respect to any  $X_i$  produces a term for the change in welfare for a change in utility,  $\partial W/\partial U$ . This term reflects how we value increases in well-being of different people. If  $W$  is egalitarian, it will count increases in the well-being of the less well-off more than of the well-off. This means that  $\partial W/\partial U$  declines with utility.

Differentiating  $W$  also produces a term which reflects the change in utility for a change in income of each individual,  $dU/dY_j$ . If marginal utility declines with income, this term goes down as income goes up.

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<sup>11</sup> Robin Boadway, *The Welfare Foundations of Cost-Benefit Analysis*, 84 THE ECONOMIC JOURNAL 926(1974). Robin W. Boadway, *Cost-Benefit Rules in General Equilibrium*, 42 THE REVIEW OF ECONOMIC STUDIES 361(1975). and Robin Boadway, *Integrating Equity and Efficiency in Applied Welfare Economics*, 90 THE QUARTERLY JOURNAL OF ECONOMICS 541(1976).

<sup>12</sup> Claims that utilitarians do not care about the distribution of goods or of wealth, therefore, are false. Utilitarians care or should care deeply about distributive issues.

These two terms are often combined into a single term, known as the distributional weight. The distributional weight for an individual or class of individuals, the product of  $dW/dU_i$  and  $dU_i/dY_i$ , tells us how much welfare goes up if give that individual or class of individuals another dollar.

When people say that CBA should reflect the distributional effects of a policy, they usually mean something like the costs and benefits should be adjusted by multiplying by the distributional weight for the effected individuals. In the example where A gained \$11 and B lost \$10, we would multiply the \$11 by A's marginal utility of income and by the social marginal welfare of A's utility and the same for B to determine whether the policy passes cost-benefit analysis. This procedure would tell us when the \$11 gain to A increases social welfare by more than the \$10 loss to B.

Boadway shows from these simple equations that for CBA to directly maximize social welfare, it must include distributional weights. Any maximization of  $W$  includes the terms  $\partial W/\partial U_i$ , and  $dU_i/dY_i$ , so the maximization must take distributive issues into account. He develops this point by manipulating the derivative of the social welfare function  $W$  to have a term for the sum of the CVs from a policy change and a term for the distributional weights. The rest of Boadway's argument then proceeds to show that summing the unweighted CVs does not lead to improvements in social welfare because doing so ignores the distributional weights that arise for the reasons just discussed. Giving A \$11 while taking \$10 from B may not increase social welfare.

This set of arguments is now standard wisdom in economics. For example, the Handbook of Public Economics, which represents as close to official surveys as are found in economics, takes precisely this approach. It derives CBA as a procedure to maximize social welfare using the same basic derivation as Boadway.<sup>13</sup> As a result, it concludes that distributional weighting is required in a complete cost-benefit analysis. Widely used textbooks on public economics are similar.<sup>14</sup> Numerous classic papers follow.<sup>15</sup> The key idea is that cost-benefit

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<sup>13</sup> Jean Dreze & Nicholas Stern, *The Theory of Cost-Benefit Analysis*, in HANDBOOK OF PUBLIC ECONOMICS (Alan J Auerbach & Martin Feldstein eds., 1987).

<sup>14</sup> RICHARD W TRESCH, PUBLIC FINANCE, A NORMATIVE THEORY (Adademic Press Second Edition ed. 2002). chapter 27; JOHN CULLIS & PHILIP JONES, PUBLIC FINANCE AND PUBLIC CHOICE (Oxford University Press Second Edition ed. 1998). chapter 6. JONATHAN GRUBER, PUBLIC FINANCE AND PUBLIC POLICY (Worth Publishers. 2005). p. 210. Not all textbooks include a discussion of CBA but of those that do, I found none that did not adopt this approach.

<sup>15</sup> E.g., Arnold Harberger, *Three Basic Postulates for Applied Welfare Economics: An Interpretive Essay*, 9 JOURNAL OF ECONOMIC LITERATURE 785 (1971).

analysis is justified as a procedure that directly maximizes social welfare. Distributional weighting follows almost immediately from this statement of the problem.

Many legal scholars have followed this approach. For example, Matt Adler, in a recent survey on distributional weighting in CBA derives distributional weights for specific social welfare functions.<sup>16</sup> His procedure is effectively identical to Boadway's procedure: he derives distributional weightings by taking the first derivative of the social welfare function and collecting terms. Adler and Eric Posner in their book length treatment of CBA (discussed below) view CBA as a proxy for social welfare and, therefore, implicitly follow the Boadway approach.<sup>17</sup> As a result, they believe that distributional weights are in theory desirable although they question their feasibility.<sup>18</sup> John Bronsteen, Christopher Buccafusco, and Jonathan Masur suggest that CV's be replaced with the results from surveys about people's happiness. They believe that the happiness surveys approximate utility.<sup>19</sup> Using utility for CBA calculations is equivalent to using monetary values weighted by the marginal utility of income. (See discussion in Part 4 for an explanation.) This means that Bronsteen, Buccafusco, and Masur implicitly assume that a version of distributional weighting desirable.

The problem with this approach is it does not account for the institutional setting in which CBA is used by government agencies.<sup>20</sup> The model consists only of a social welfare function. A social welfare function is, by construction, a function only of utilities. Utilities in turn are functions of the goods consumed or factors supplied by individuals. The model does not have markets. It generally does not have firms. It does not have governments or any other sort of institution. The governments that the model does not have do not have subunits or agencies assigned tasks. The approach jumps directly from the raw equation for social

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<sup>16</sup> Matthew Adler, *Cost-Benefit Analysis and Distributional Weight: An Overview* (2013).

<sup>17</sup> We can see the logic in statements such as this: "Cost-benefit analysis is inaccurate . . . by virtue of the fact that it reduces welfare impacts on project winners and loser to dollars – which are in turn differentially productive of welfare in different persons." Adler and Posner p. 142.

<sup>18</sup> p. 152 ("it is unclear whether the basic idea of distributive weighting is itself a feasible one. . . . If distributive weighting is not feasible, then agencies should probably use unadjusted CV's when the distribution of wealth among the winners does not differ much from the distribution among the loser.") and p. 188-189 ("Cost benefit analysis should be a good proxy for overall welfare where the distribution of wealth or income among project winners is not dramatically different from its distribution among project losers.")

<sup>19</sup> John Bronsteen, et al., *Well-Being Analysis vs. Cost-Benefit Analysis*, 62 DUKE LAW JOURNAL 1603(2013).

<sup>20</sup> Note that Adler and Posner do consider the institutional setting and conclude that much of the time, distributional weighting is not desirable. Their institutional arguments are not the same as those considered here. See below.

welfare to instructions for agencies operating in a government which is not in the model regulating firms which are also not in the model operating in markets which are not in the model.

Casual observation of how businesses are organized shows the flaw with this reasoning. They are divided into units, and often none of the individual units pursue the overall goal. As Adler and Posner note, even if we want to maximize some criteria, C, we might want to instruct agencies to use a different decision criteria D. (p. 64). We cannot determine via examination of C what the correct decision criteria D is unless we consider the intermediating institutions.

For example, banking regulators are concerned with the health of the banking system. They develop expertise in these issues and regulate in areas involving banks and their customers. They are not concerned with and know little about workplace safety, endangered species, or automobile manufacturing, all polices which are important for maximizing welfare. Instructing the banking regulators to maximize welfare or use a proxy for maximizing welfare would not account for the specialized nature of their tasks. Justifications for CBA that lack any institutional context, that fail to include in their argument the idea that an agency specializes in a particular set of tasks may lead to wrong conclusions.

I will argue below that a more modern version of welfare economics can and should inform the content of CBA if it is applied in the context of task assignment for government agencies. Before turning to these argument, it is worth reviewing other justifications that have been given for CBA. These tend to be much more focused on the institutional setting in which CBA is used, but none use the task assignment approach considered here.

One of the most influential treatments of CBA was put forth by Adler and Posner. They start from the observation that CBA as traditionally defined does not maximize social welfare. They argue that CBA nonetheless is desirable because it is a reasonable decision criteria given the information and time constraints facing government agencies. It tends to promote welfare even if it is not the same thing as maximizing welfare.<sup>21</sup>

In particular, Adler and Posner want agencies to choose projects that maximize social welfare. They start off in the same place that Boadway and the economists do. They argue, however, that CBA need not be the precise solution to a welfare maximization problem for it to be the best choice to guide agencies. The

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<sup>21</sup> Adler and Posner, p. 64.

reason is that agencies are not in the position to determine the set of policies that maximize social welfare because they lack information and face serious time constraints. Given these constraints, they need a way to issue regulations that tend overall to approach social welfare maximization. Adler and Posner argue that CBA is the best procedure for doing so. It is good enough for government work.

Adler and Posner emphasize decision costs. They highlight three variables that determine whether CBA is a reasonable decision criteria: (1) its decision costs including any costs of delay (2) its accuracy in tracking actual welfare, and (3) agency costs (i.e., how the procedure oppurtunism by the agency).<sup>22</sup> When they compare how CBA performs to how other procedures perform, they conclude that CBA, with some modifications, is the best decision procedure.

While their argument is institutional, Adler and Posner do not consider task assignment and agency specialization. Their second criteria for evaluating a decision criteria is whether it tracks welfare. This is essentially the Boadway criteria. They do not consider the possibility that, say, agency A should perform task A that does not track welfare and agency B should perform task B that also does not track welfare, but that tasks A and B (and C and so forth) taken together track welfare. Their approach, therefore, while complementary to the current effort, is distinct and in many cases may lead to different conclusions. In particular, accuracy in tracking overall welfare may not be a good decision criteria once we consider task assignment. Instead, accuracy in performing the task assigned may be preferable. The overall assignment and coordination of tasks should track welfare, not each individual task.

Cass Sunstein, another prominent defender of CBA, argues that CBA can be justified because it helps agencies make better decisions in some unspecified but pragmatic sense.<sup>23</sup> CBA, he argues, is “best taken as [a] pragmatic instrument, agnostic on the deep issues and designed to assist people in making complex judgments where multiple goods are involved.”<sup>24</sup> The reason it is helpful is that it

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<sup>22</sup> Adler and Posner, p. 62-63.

<sup>23</sup> Cass R Sunstein, *The availability heuristic, intuitive cost-benefit analysis, and climate change*, 77 CLIMATIC CHANGE (2006).; Cass R Sunstein, *Cognition and cost-benefit analysis*, 29 THE JOURNAL OF LEGAL STUDIES (2000).; CASS SUNSTEIN, THE COST-BENEFIT STATE, THE FUTURE OF REGULATORY PROTECTION (American Bar Association. 2002). In some work Sunstein takes a welfarist approach. See e.g., Hahn & Sunstein, U. PA. L. REV., (2001). (CBA is “imperfect but useful and administrable proxy for the inquiry into the social welfare question.”)

<sup>24</sup> Sunstein, *Cognition and cost-benefit analysis*, at 1077. See also *The Cost-Benefit State* at 139: “The best defense of cost-benefit analysis relies not on controversial claims from neoclassical economics, but on a simple appreciation of how we all make mistakes in thinking about risks--- and an understanding that when people error, governments will err too.”

prevents people from making choices based on heuristics or biases. Because it forces agencies to systematize their decisions, it prevents them from ignoring certain costs or benefits and from overstating others. It is a method for disciplining decisions.

Sunstein also argues that CBA has democratic advantages because it promotes transparency.<sup>25</sup> Agencies can be subject to interest group pressure. CBA increases accountability and transparency in the face of such pressure by “allowing people to evaluate agency decisions in an informed way, not clouded by [interest group] evasion of the central issues.”<sup>26</sup>

Sunstein’s approach is not tied to a particular form CBA. Its goals, according to Sunstein, are to prevent heuristics and biases from influencing decision making and to ensure transparency and democratic choice. CBA might best be modified to achieve these goals in ways similar to those that Adler and Posner recommend. For example, Sunstein believes that we should care who pays the costs and who benefits from a regulation,<sup>27</sup> but perhaps not through explicit distributive weighting.<sup>28</sup>

Richard Revesz and Michael Livermore consider how CBA should be conducted through a close examination of the institutional details and actual practice, particularly as enforced by the Office of Information and Regulatory Affairs, which controls the use of CBA in the United States by federal agencies.<sup>29</sup> They defend CBA as a good mechanism for determining how to balance the inevitable trade-offs that come with regulating.<sup>30</sup> Moreover, they follow Sunstein and argue that it is a good way to ensure agency decisions are transparent.<sup>31</sup> Their central concern, however, is not with justifying CBA; instead it is with correcting some of the biases that they believe are built into the institutional practice of CBA. In particular, they are concerned that CBA may systematically undervalue

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<sup>25</sup> SUNSTEIN, *The Cost-Benefit State, The Future of Regulatory Protection*. 2002. pp 27-29; and CASS SUNSTEIN, *RISK AND REASON* (Cambridge University Press. 2002). p. 107

<sup>26</sup> SUNSTEIN, *The Cost-Benefit State, The Future of Regulatory Protection*. 2002. p. 27.

<sup>27</sup> *The Cost-benefit State*, p. 8: “Society should not be taken as some maximizing machine, in which aggregate output is all that matters. In any case, we ought to care about who bears the costs and who receives the benefits.”

<sup>28</sup> Hahn & Sunstein, *U. PA. L. REV.*, (2001). (p. 32 of SSRN version – distribution = soft variable). I will argue below that Sunstein’s hope for a justification for CBA that is agnostic on the deep issues fails; justifications for CBA cannot be agnostic. I defer this discussion until Part 4.

<sup>29</sup> REVESZ & LIVERMORE, *Retaking Rationality, How Cost-Benefit Analysis Can Better Protect the Environment and Our Health*. 2008.

<sup>30</sup> *Id.* at p. 12

<sup>31</sup> *Id.* at p. 12-13



certain types of benefits from regulation or overvalue costs because of how it is used, not because it inherently must.

Others make arguments against CBA, suggesting that the institutional problems cannot be fixed through reform of the practice of CBA. These scholars conclude that because of inherent flaws, CBA should be abandoned.<sup>32</sup> For example, if CBA systematically undervalues certain types of benefits or overestimates certain types of costs, CBA may recommend regulations that are too weak compared to the efficient regulation.<sup>33</sup> Moreover, it may do so in ways that lead to systematic biases, such as a bias against environmental regulation. The history of the adoption of CBA in the US, which was viewed by actors in the Reagan administration as a way of reducing regulation, indicates that CBA can be a façade for an agenda rather than a way to find efficient regulations.<sup>34</sup>

I do not explicitly consider the arguments that CBA should be abandoned. The discussion focuses on the design of CBA conditional on its adoption. Nevertheless, the core argument for its design suggests that it is often the appropriate criteria for an agency to use, namely that it provides the correct test for fixing market failures. I turn to this discussion now.

### **3. Welfare economics in an institutional setting**

My task is to consider how the lessons of welfare economics apply to help determine the appropriate set of instructions to an agency. In light of the major results of welfare economics, what task should we be asking agencies to perform and what role does CBA play in performing those tasks?

There is only a modest literature on how to assign tasks in a large entity. Most of the existing work on the internal structure of institutions focuses on the optimal number of divisions within an institution. The idea, dating back to Adam Smith and the pin factory, is that more specialization promotes efficiency but it also imposes coordination costs.<sup>35</sup> The optimal number of divisions will balance

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<sup>32</sup> See cites in note 2.

<sup>33</sup> See REVESZ & LIVERMORE, *Retaking Rationality, How Cost-Benefit Analysis Can Better Protect the Environment and Our Health*. 2008. They list eight problems with the practice of CBA. Summary quote, p. 145: “Each of these fallacies, individually, would bias the technique against regulation---together they amount to a virtual Berlin Wall blocking good regulations.”

<sup>34</sup> *Id.* at. (history chapters). These actors would argue that existing regulations were inefficient. Their “agenda” was simply to make regulations more efficient rather than to pursue political goals such as helping contributors.

<sup>35</sup> ADAM SMITH, *AN INQUIRY INTO THE NATURE AND CAUSES OF THE WEALTHY OF NATIONS* (Edwin Cannan ed., Random House. 1776).

the increased benefits from specialization and the costs of coordination. These theories do not, however, tell us how to assign tasks to divisions conditional on the number of divisions. We need a theory of how to group tasks.

What limited literature there is on grouping of tasks is based on the intuitive idea that we should group “related” tasks together. There should be some efficiency gain or complementarity from the grouping, such as an economy of scale.<sup>36</sup> In particular, specialized knowledge can be helpful in performing a number of different tasks, in which case it makes sense to put them together. If there is no complementarity between the tasks, it makes no sense to group them together: no offense to IRS agents, but we don’t want them flying fighter jets.

The historian of business Alfred Chandler illustrated the concept by quoting a memo from DuPont concerning a reorganization of its business: “the most efficient results are obtained at least expense when we coordinate related effort and segregate unrelated effort.”<sup>37</sup> Oliver Williamson, the Nobel Laureate economist whose work focused on transaction costs and institutions used a similar principle in proposing the optimal design of an institution.<sup>38</sup> He considered an example of a business that manufactures and sells goods in a number of different markets. His suggested grouping of activities for this business put together activities that implicitly had complementarities. For example, he suggests that the initial stage of production of the good be separated into its own division but that the intermediate and final stages of production be combined into a division with a separate division representing that combination in each market. The assignment of tasks meant to find combinations of tasks where coordination is helpful.

Assignment of tasks to agencies in the federal government generally follows this approach. The EPA, for example, regulates market failures related to the environment. It has experts in environmental science, environmental economics, and environmental law on its staff. It does not regulate securities, the spectrum, or education because its specialized knowledge will not help it perform these tasks. The FDA approves drugs but does not run monetary policy or tax policy. Grouping the approval of different types of drugs together into a single agency makes sense. Grouping drug approval with monetary policy and tax policy does not. In response to the terrorist attacks in 2001, the government regrouped tasks

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<sup>36</sup> For a survey of literature see David Weisbach, A. & Jacob Nussim, *The Integration of Tax and Spending Programs*, 113 YALE LAW JOURNAL (2004).

<sup>37</sup> ALFRED D CHANDLER, *STRATEGY AND STRUCTURE: CHAPTERS IN THE HISTORY OF THE INDUSTRIAL ENTERPRISE* (1962). p. 69.

<sup>38</sup> OLIVER WILLIAMSON, *MARKETS AND HIERARCHIES: ANALYSIS AND ANTITRUST IMPLICATIONS* (1975). p. 136-41.

related to security into a single agency, the Department of Homeland Security based on the idea that there were complementarities among these activities.

Task assignment to agencies in an institution as large as the federal government is, of course, more complex than this simple picture. Similar tasks are assigned to more than one agency, tasks are poorly defined, some tasks are (mis)assigned to agencies with no seeming expertise in the area, and agencies sometimes closely coordinate their actions when single tasks are split across agencies. Tasks may be assigned haphazardly or based on political connections. Agencies may face more than one principal – higher-ups within an agency, Congress, the President, OMB, industry groups, and citizens all act principals some of the time. These complications create opportunities for learning more about the best set of instructions and task assignment for agencies. I will examine a relatively simple setting here, where we consider agencies that are assigned groups of related tasks based on complementarity of the tasks.

I start with a relatively straightforward insight from applying the task assignment approach to welfare economics. CBA is the correct criteria for fixing market failures. Therefore, if or to the extent an agency's task is to correct a market failure, it should use CBA. CBA need not maximize social welfare for this logic to hold. CBA in this case is not the tenth-best criteria given information and time constraints on agencies (e.g., Adler and Posner's argument) or given the need to monitor agencies (e.g., Sunstein's argument). It is the right criteria for fixing market failures. After discussing this justification for CBA, I turn to the more difficult issue of whether CBA should be adjusted to take distributive concerns into account.

#### *A. CBA is the correct instruction for solving market failures*

An important function of regulations is to correct market failures.<sup>39</sup> Circular A-4, the guidance document governing cost-benefit analysis in the federal government highlights this, listing three market failures, externalities, information asymmetries, and monopoly power, as central reasons for regulation.<sup>40</sup> Pollution regulation is a straightforward case of an externality. Much of pollution regulation can be thought of as correcting market failures. Externalities are an important reason for bank regulation. For example, bank runs potentially impose

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<sup>39</sup> For a discussion of the role of government in correcting market failures, see Richard Musgrave, *The Theory of Public Finance: A Study in Public Economy* (1959) (discussing the allocation branch of government).

<sup>40</sup> Office of Management and Budget, Circular A-4. 2003.

externalities on other banks. As a result, markets for deposits can fail without regulation. Other agencies, such as those that focus on health and safety regulation or consumer use of financial instruments, deal with informational asymmetries and, therefore, can also be thought of as correcting market failures. By no means are all regulations aimed at correcting market failures, but many are.

Suppose that an agency's task is to correct a market failure. CBA in its textbook form provides the correct criteria for regulatory action. When a market is functioning, (i.e., there is no market failure), prices and quantities will equilibrate so that marginal costs would equal marginal benefits. If not, there would be a trade that makes both the buyer and seller better off. If we regulate because of a market failure, choosing a policy that sets marginal costs equal to marginal benefits puts the regulated market in the same place as a well-functioning market. Textbook CBA is the correct tool to use. It fixes the problem at hand.

The standard justification for CBA is that it maximizes net benefits. When conceived of as a tool for maximizing net benefits, it is easy to think of CBA the way that Boadway did, as something directly about utility. Benefits after all are things that increase utility. Maximizing benefits might maximize utility. Maximizing net benefits, however, occurs when marginal costs are equal to marginal benefits. A command to maximize net benefits, therefore, can be seen as a command to correct market failures, not as a command to maximize utility.

When we use CBA to correct market failures, monetary values are the right measure of costs and benefits. In well-functioning markets, marginal costs will equal marginal benefits in monetary terms. To fix market failures, CBA should also use monetary values.

In addition, if the task is only to correct a market failure, CBA should not be adjusted to add distributive weights. In a perfect market, actors set marginal costs equal to marginal benefits without regard to distributive concerns. If an agency adjusts CBA to add distributive weights, it would no longer set marginal costs equal to marginal benefits and it would not correct the market failure. (Whether the task given the agency should be limited in this way is taken up below. The only claim here is that if an agency is only trying to solve a market failure and to do nothing else, it should not use distributive weights.)<sup>41</sup>

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<sup>41</sup> Compare Adler and Posner p 142: "Cost-benefit analysis is inaccurate . . . by virtue of the fact that it reduces welfare impacts on project winners and loser to dollars – which are in turn differentially productive of welfare in different persons." In fact, if the goal of an agency is to correct a market failure, this is not an inaccuracy.

To illustrate, (using a somewhat pedantic example taken from a securities case<sup>42</sup>) consider an economy with two assets, fluffy towels and dill pickles. Suppose that the market for fluffy towels functions well and is not regulated. The market will equilibrate so that marginal costs equal marginal benefits measured in monetary terms. Suppose, however, that the dill pickle market fails, say because dill pickles impose externalities or contain hidden dangers. As a result, we might want to regulate dill pickles. If we regulate them so that the marginal cost equals the marginal benefit, they are on the same footing as fluffy towels. The dill pickle market now looks like the fluffy towel market. CBA solves the problem that caused the need for regulation. To the extent that the task of an agency is to fix a market failure, textbook CBA is the correct criteria.

Fixing the dill pickle market requires the use of monetary values. If both markets were perfect, individuals would be able to choose between these goods and trade across markets based on monetary values. Money provides the medium of exchange that ensures that there are not value-enhancing trades across markets. The only way to ensure this condition is met – to fix the dill pickle market so that it operates as if it were a perfect market – is to use monetary values.

The same holds in a more realistic setting. Imagine an agency regulating emissions from a pollutant. Without regulation, polluters may emit too much because they do not take the harms they cause into account. Reducing pollution incrementally generates marginal benefits but also will impose costs on the polluter. If we regulate so that the marginal benefits from additional reductions equal the marginal costs, we will have replicated a functioning market. By instructing an agency to maximize unweighted net gains measured in monetary values, CBA tells the agency to do exactly this.

An important corollary to this argument is that if an agency does not seek to correct a market failure, CBA may not be the correct criteria. If the goal of an agency is to do something other than set marginal costs equal to marginal benefits, CBA will tell the agency to do something other than pursue its goal. For example, Martha Nussbaum asks whether CBA can address whether Amish children should be required to go to public school.<sup>43</sup> CBA likely has little to add to such a question because the agency addressing this question is not seeking to fix a market failure. Similarly, if an agency is given a task of redistributing resources to a favored group, CBA would not provide a good criteria for this task.

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<sup>42</sup> West v. Prudential Securities, 282 F.3d 935 (7<sup>th</sup> Cir. 2002) (Easterbrook).

<sup>43</sup> Martha C. Nussbaum, *The Costs of Tragedy: Some Moral Limits of Cost-Benefit Analysis*, 29 THE JOURNAL OF LEGAL STUDIES 1005-1036(2000). p. 1025

For example, if a regulation is designed to give farmers inefficient subsidies, CBA cannot be used to determine the extent of the subsidies. CBA tells the agency to be efficient while the regulation is, by design, inefficient.

Note, however, that even if social goals are chosen on a basis other than a social welfare function, we should not necessarily reject CBA. CBA might provide a helpful tool for reasons Sunstein has articulated. It may force the provision of information, thereby reducing the extent rent seeking regulations. CBA may also in these cases prevent biases and heuristics. If so, we would have to understand why CBA is the best tool for these goals given that it does not match the task assigned to the agency.

B. *Should agencies addressing market failures also consider distributive concerns?*

The discussion above established that if the sole task of an agency action is to correct a market failure, CBA provides the correct criteria, and if the task is to pursue some unrelated goal, it is unlikely to be the best criteria. It is also clear that a sizable portion but by no means all of what agencies do is correct market failures, so CBA should play some part in how agencies make decisions. The more difficult question is whether an agency correcting a market failure should also consider the distributive consequences. I take up this question here, starting with a motivating example before turning to the detailed analysis.

Consider the dill pickle/fluffy towel economy again, and focus for a minute on the unregulated fluffy towel market. The unregulated fluffy towel market sets marginal costs equal to marginal benefits entirely without regard to the distributive effects. Relative to a hypothetical alternative market for fluffy towels, the actual market may provide enormous benefits to the wealthy. Fluffy towels may be mostly consumed by the wealthy for example, so a well-functioning market may primarily help the wealthy. It may also divert resources to the production of luxury items while the poor suffer. The wealthy have money and the market will supply to them the goods that they demand.

Now suppose we use textbook CBA, unadjusted for distributive concerns, to fix the dill pickle market. After regulation, it looks exactly like the fluffy towel market in that marginal costs will equal marginal benefits. The market failure has been fixed. The distributive effects from the now well-functioning dill pickle market may be better or worse than in the fluffy towel market. Both markets are

now perfect markets – one via the price system and one via regulation – and both may have good or bad distributive consequences.

Because the government, say, wants to maximize social welfare, it may not be satisfied only with fixing the dill pickle market, at least if it follows Boadway's reasoning. Once the dill pickle market is fixed, markets overall will be perfectly efficient. We will be at the Pareto frontier in that no further trades are available that improve welfare. Perfect efficiency, however, does not mean that welfare is maximized. Welfare might be improved if we redistribute resources, which necessarily means deviating from perfect markets.

The goal is to find the best distributive policy. We want to find a way to improve the distribution of resources at the lowest possible cost. Alternatively and roughly equivalently, we want to maximize redistribution for a given cost. The key observation is that there is no reason to believe that the dill pickle market is the best market to use for distributive purposes because it happens to be regulated. The existence of the market failure and being a good market to use for redistribution are unrelated. The best distributive policy might be to make adjustments to both markets, to neither, or to only the fluffy towel market. If CBA is adjusted for distributive consequences, it can only effect the dill pickle market. Thus a claim that CBA should consider distributive consequences necessarily includes a claim that regulated markets, the markets where CBA is used, also happen to be good markets for addressing distributive concerns. Moreover, the agency regulating dill pickles would have to have the tools for making this determination. As we will see when we examine the optimal tax literature to understand how distributive policy should be set, neither is likely.

### 1. Optimal taxation and distributive policies

The branch of welfare economics that most directly deals with redistributive policies is known as optimal taxation.<sup>44</sup> The goal of the optimal taxation literature is to understand the design of distributive policies that make society overall best off. The literature studies how best to redistribute, how much to redistribute, and how to balance the benefits of improving the distribution of income with the efficiency losses from doing so. It answers these questions by positing a social

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<sup>44</sup> See LOUIS KAPLOW, *THE THEORY OF TAXATION AND PUBLIC ECONOMICS* (Princeton University Press. 2008).; BERNARD SALANIE, *THE ECONOMICS OF TAXATION* (MIT press. 2003).; Alan J Auerbach & James R Hines Jr, *Taxation and economic efficiency*, in *HANDBOOK OF PUBLIC ECONOMICS* (Alan J Auerbach & Martin Feldstein eds., 2002).; Joseph Bankman & Thomas Griffith, *Social Welfare and the Rate Structure: A New Look at Progressive Taxation*, 75 CALIFORNIA LAW REVIEW 1905(1987).

welfare function which tells us the gains from improving the distribution of income, wealth or something else of value, and how to evaluate the efficiency losses from more redistribution. We can use the optimal taxation framework among other things to understand what the marginal tax rate structure should look like and what type of social safety-net transfers we should have.

The result from the literature on taxation that is most relevant to the design of cost-benefit analysis comes from a series of papers beginning with a 1976 paper by Anthony Atkinson and Joseph Stiglitz on commodity taxation.<sup>45</sup> In 1979, Aanund Hylland and Richard Zeckhauser extended the argument to the choice of government projects (and, therefore, implicitly, cost-benefit analysis)<sup>46</sup> and in 1994 Louis Kaplow and Steven Shavell applied it in the legal context.<sup>47</sup> The version of the argument found in Kaplow and Shavell is most familiar to legal audiences so I will refer to the argument as the Kaplow and Shavell argument as a shorthand keeping in mind that there is a long line of literature addressing the issue.<sup>48</sup>

The Kaplow and Shavell argument is, I believe, often misinterpreted. Kaplow and Shavell show that under strong assumptions about people's utility function, we should not use legal rules for distributive purposes. The key implications of their argument, however, arise from relaxing the strong assumptions, not a claim that the assumptions are true. The case with strong assumptions is merely a benchmark that helps us understand the more general case, somewhat like the study of frictionless physics helps us understand actual physics. When we relax

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<sup>45</sup> A. B. Atkinson & J. E. Stiglitz, *Design of the Tax Structure -- Direct versus Indirect Taxation*, 6 JOURNAL OF PUBLIC ECONOMICS (1976).

<sup>46</sup> Aanund Hylland and Richard Zeckhauser, *Distributional Objectives Should Affect taxes but not Program Choice of Design*, 81 The Scandinavian Journal of Economics 264 (1979).

<sup>47</sup> Louis Kaplow & Steven Shavell, *Why the legal system is less efficient than the income tax in redistributing income*, 23 J. LEGAL STUD. 821(1994).

<sup>48</sup> Many versions of the argument require that the tax on labor income be set optimally but Kaplow showed that this is not necessary. See Louis Kaplow, *On the Undesirability of Commodity Taxation Even When the Income Tax is Not Optimal*, 90 J. PUB ECON 1235 (2006). The argument used here does not require that the labor income tax be set optimally and therefore relies on Kaplow's 2006 argument not prior versions of the argument. For an extensive discussion of the qualifications to the argument, and the implication of these qualifications, see Louis Kaplow, *The Theory of Taxation and Public Economics* (2008), pp. 135-145. See also Louis Kaplow, *Optimal Policy with Heterogeneous Preferences*, 8 The BE Journal of Economic Analysis and Policy, Issue 1, Document Number 40 (2008); Louis Kaplow, *On the (Ir)Relevance of Distribution and Labor Supply Distortion to Government Policy*, 18 J ECON PERSPECTIVE 159 (2004); Louis Kaplow, *The Optimal Supply of Public Goods and the Distortionary Cost of Taxation*, 49 NATIONAL TAX JOURNAL 513 (1996); and Louis Kaplow, *Optimal control of Externalities in the Presence of Income Taxation*, 53 INTERNATIONAL ECONOMIC REVIEW 487 (2012).



the strong assumptions, we will see that CBA is a poor tool for implementing distributive policies.

Start with the benchmark model. Assume (for now) that people have the same utility function but they differ in their abilities. High income people are similar to a low income people except that the high income people are able to command a higher salary because of their higher ability. Moreover, assume (for now) that utility has a property called weak separability in labor. Weak separability means that all goods are equal complements or substitutes for labor. We can think of weak separability as meaning that people divide the choice of how much to work and earn from the choice of how to spend the earnings. They decide how much to work and earn based on the gains to additional consumption. For a given amount of earnings, they decide which particular goods to consume.

Note that under these assumptions (and in the more general case), an increase in the price of a good affects both work effort and which goods an individual purchases. It will reduce work effort because the amount of stuff that more earnings can purchase has gone down. It will alter what goods are purchased because the relative prices of goods has changed. For example, if we impose a tax on televisions, the gains to an additional hour of work go down so people may work less. In addition, for a given amount of earnings, the price of televisions has gone up relative to other goods, so individuals will reduce television purchases and substitute other items, such as computers. Weak separability means that it does not matter to work effort which goods are taxed. The increase in the prices of televisions reduces work effort because the price of the overall bundle of goods that an individual can buy has gone up not because the price of a particular item has gone up. If an equivalent tax were instead imposed on computers, the effect on work effort would be the same.

Suppose that we have a legal rule (or a government project, or a tax) that aims to redistribute by altering the price of a good or factor or altering a feature of that good or factor. The rule might, for example, make goods used by the poor less expensive or more available, or make goods used by the wealthy more expensive. If the legal rule is implemented via cost-benefit analysis, we might adjust regulations to make them more pro-poor by making regulated goods consumed by poor people less expensive (by say regulating them less).

The legal rule will have the effects noted above. If it increases the price of a good, it will reduce work effort and it will alter which goods individuals purchase.

If it reduces the price of a good, it will increase work effort and it will alter the goods which individuals purchase.

Now suppose we consider a reform that eliminates the legal rule and replaces it with an efficient legal rule, set without regard to the distributive consequences. This change in the legal rule will have distributive consequences. If, for example, the legal rule were progressive, changing the legal rule to be efficient will eliminate that progressivity and vice versa if the legal rule were regressive. Suppose we adjust the labor income tax to offset this effect so that the distribution is kept neutral. For example, if we remove a legal rule that makes goods consumed by the poor less expensive, we would lower taxes on poor people to offer the distributive effects. Similarly, if we remove a legal rule that hurts the rich, we would raise taxes on the rich. The goal of the adjustment to the tax system is to make sure everyone is at least as well off as under the legal rule.

The distributive effects of the proposed reform are, by construction neutral. There are no winners or losers. Moreover, and this is key, the increased progressivity of the tax system does not increase the distortions in work effort because the combination of reforms holds utility constant at each income level. The inefficient legal rule changes work effort exactly like the income tax does. Both alter the amount of stuff people can buy from additional earnings. By construction, the size of this effect under the adjusted income tax is the same as the size of this effect from the inefficient legal rule. The returns to work therefore are the same with and without the reform.

The reform, however, raises revenue. The reason is that without the distortion caused by the legal rule, the system overall is more efficient; product attributes and the choice of products are no longer distorted which raises utility. The distributionally neutral tax adjustment, therefore, can be at a slightly higher rate without reducing anyone's utility, increasing net revenue. Overall, nobody is hurt but the government has more revenue. It can use that revenue to make everyone, or whomever it chooses, better off.

To illustrate, imagine that we have a tax on luxury goods – goods that only people with high earnings consume, such as second homes, fancy automobiles, and yachts. This tax will be progressive so it will improve the distribution of resources. At the same time, because it raises the cost of consuming, it will reduce labor effort. An hour's work buys less so the trade-off between work and leisure is less favorable. The goal of the tax is to make the system more progressive and more progressive taxes will reduce the rewards from earning more. A luxury tax

will also distort what types of goods people buy. They will shift away from luxuries because the price of luxuries is higher.

Now suppose that we adjust the income tax to raise rates on upper-income individuals and repeal the luxury tax. This will have the same effect on work effort – higher tax rates on labor income mean that an hour's more work by the wealthy buys less. The luxury tax, however, is gone, so an hour's work buys more. The two, the removal of the luxury tax and the increase in the income tax, exactly offset, by design, so there is no net effect on work effort. But with the luxury tax gone, individuals can now choose which items to buy without distortions cause by the tax system. We get the same distributive effect at a lower efficiency cost using the income tax than using a luxury tax. The same arguments holds for legal rules designed to be redistributive.

Another example might be a legal rule that makes a particular good less expensive. For example, we may decide that certain types of food should be subsidized so that they are easier for the poor to purchase. If we eliminate that rule and replace it with lower taxes on the poor, we can make everyone better off. The amount of stuff the target population can buy is unchanged and their work effort is unaffected. They now, however, have a freer choice of goods.<sup>49</sup>

The argument relies on a number of assumptions. The most important assumption for our purposes is the assumption that labor and leisure are weakly separable. As noted, a heuristic for thinking about weak separability is to think of it as two-stage budgeting. Individuals decide how much to work given their earnings ability. Given these earnings, individuals decide what items to spend the earnings on. This means that if we tax bowling alleys, beer, or beauty salons, the effect on labor supply is the same. Increasing or decreasing the price of one of the goods that they consume has the same effect on their work effort as if the average price of all goods was increased by an equivalent amount.

As commentators have noted, the assumption of weak separability is unlikely to be, or simply is not, true. Some, therefore, dismiss Kaplow and Shavell's argument as based on false assumptions.<sup>50</sup> If you are allowed to concoct arbitrary

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<sup>49</sup> Programs targeted at the poor, such as Food Stamps (SNAP) and housing vouchers often are restricted to particular goods. There may be good reasons for this targeting (although often there may not be). The set up used up to this point, with a common utility function and weak separability means that those considerations are not present in this simple form of the model.

<sup>50</sup> In the context of CBA, see for example, Adler, *Cost-Benefit Analysis and Distributional Weight: An Overview*. 2013. (dismissing Kaplow and Shavell's analysis as relying on an unrealistic assumption of weak separability).

utility functions, you can probably show just about anything. The key to the argument, however, is what happens when the assumption is relaxed, not a claim that the assumption is true.

Suppose that utility is not weakly separable in labor. This means that some goods are better complements or substitutes for labor than others. The conclusion that we should only use an income tax to redistribute no longer holds. We can and possibly should now have taxes or subsidies on individual commodities that improve the distribution of wealth in ways that a pure income tax cannot. Similarly, we might consider legal rules that alter the price of commodities for distributive purposes.

The reason is subtle but important. If we have a tax on income, people will reduce their work effort. Taxes or subsidies on substitutes or complements to labor can help address this distortion, reducing the costs of the income tax and allowing more direct redistribution via the income tax. For example, consider a good that is a substitute for labor – it is something that you can be happy with if you choose to work less. If this good is widely available, the costs of working less due to the income tax are low. We might want to tax these types of goods so that the income tax distorts labor effort less. If the income tax distorts labor effort less, we can use it to redistribute more because the costs – the distortions in work effort – are lower. The tax on the substitute for labor helps improve the balance between efficiency losses and redistribution, making it cheaper to redistribute more. We want to subsidize complements to labor for similar reasons.

To illustrate, consider different types of food.<sup>51</sup> VATs commonly exempt grocery store food but not restaurants. There appears to be a distributive benefit to this because wealthy people can better afford restaurants than can poor people. Taxing restaurants hurts the rich because restaurant meals are a form of luxury. Exempting groceries similarly helps the poor.

Groceries, however, are an input into the household preparation of meals which takes leisure time. They are a complement to leisure. Restaurant meals cost money which means that they take labor effort. They are a substitute for leisure (the less you work, the fewer restaurant meals you can afford.) Therefore, we should tax food and subsidize restaurants contrary to conventional intuitions about

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<sup>51</sup> Aled Ab Iorwerth & John Whalley, *Efficiency considerations and the exemption of food from sales and value added taxes*, 35 CANADIAN JOURNAL OF ECONOMICS/REVUE CANADIENNE D'ÉCONOMIQUE 166(2002).; LOUIS KAPLOW, *THE THEORY OF TAXATION AND PUBLIC ECONOMICS* (Princeton University Press. 2011). p. 138-9.

how to make distributive adjustments. Conventional “pro-poor” adjustments go in exactly the wrong direction. This result, importantly, is not a function of a restrictive assumption about utility functions. It is general. The restrictive assumption of weak separability is useful because it is a benchmark, not because it is true.

The same considerations hold for luxury taxes. A naïve view might be that they are a good way of targeting the wealthy. We saw that they did not make sense if we assume utility is weakly separable in labor. Perhaps if we drop the assumption of weak separability they become desirable. Luxury taxes, however, are not consistent with optimal distributive policies even in this more general case. Recall that we want to have a labor income tax, taxes on substitutes to labor and subsidies for complements to labor. Luxuries are not substitutes for labor because they take money and, therefore, labor effort, to purchase. They are complements to labor, if anything. The optimal distributive policy would not include a luxury tax and might even include a luxury subsidy.

A second assumption in the benchmark case is that people have the same utility function. They differ in their earnings ability but not otherwise. This, of course, is not true. People vary widely in their tastes and preferences. In most cases, these differences will not matter to the design of distributive policies. If I like rock and roll and you like hip hop, we are equally well off (except for your bad musical tastes), and we could not improve distributive policies by say, taxing hip hop. Suppose, however, that some attribute does make people worse off. Kaplow and Shavell consider the case of coordination.<sup>52</sup> They posit, purely hypothetically, that some rich people are less coordinated than others so that they cause more accidents. These klutzes are less well off than their coordinated peers. In this case, we might want to find a way to redistribute toward the klutzes. For example, we might want to reduce tort damages on rich people. The adjustments to the tort system would be pro-rich. We can tell a similarly fanciful story for the poor in which some are more coordinated than others, in which case we would reduce tort damages imposed on poor people. The adjustments to the tort system would then be pro-poor.<sup>53</sup>

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<sup>52</sup> Louis Kaplow and Steven Shavell, *Should Legal Rules Favor the Poor? Clarifying the Role of Legal Rules and the Income Tax in Redistributing Income*, 29 J. LEGAL STUDIES 821, 828-829 (2000).

<sup>53</sup> Introducing heterogeneity in utility functions generates a number of complexities that are beyond the scope of the present discussion. The design of distributive policies depends on how observable the differences are, among other things. For a discussion, see Louis Kaplow, *Optimal policy with heterogeneous preferences* The BE Journal of Economic Analysis & Policy.; and

The key conclusion is that under the general case – without the restrictive assumptions in the benchmark model – we will want commodity taxes and subsidies. It is desirable to intervene in markets other than the labor market via the labor income tax. We want to tax (or otherwise raise the price of) goods that are substitutes to labor and subsidize (or otherwise lower the price) of goods that are complements to labor. The basic reason is that a tax on labor income causes people to work less and consume more leisure. Taxing substitutes to labor makes that response less valuable so it reduces the distortion from the labor income tax. This in turn allows the labor income tax to be more redistributive than otherwise. We also might want to tax or subsidize behaviors or consumption patterns that indicate higher or lower utility for a given level of earnings. The pattern of adjustments, however, are not conventionally distributive.

Peeking ahead, the (incorrect) intuitive appeal of a luxury tax or raw food exceptions to a VAT is similar to the (similarly incorrect) appeal of adjusting regulations to be pro-poor or anti-rich for distributive concerns. Like with the luxury tax or taxes on food, we cannot determine whether a distributive policy is desirable by looking only at that market without considering the overall distributive system and the set of tools that are available. An agency observing that a regulation helps the rich or hurts the poor cannot infer what the correct distributive adjustment should be from that observation.

Before turning to CBA, I should note that there are numerous other ways to extend the basic model discussed above. The model only considered a single time period and the results might change if we allow individuals to choose labor effort and savings for different time periods.<sup>54</sup> Consumption of particular types of goods might indicate hidden abilities, allowing us to use patterns of consumption to better design the income tax.<sup>55</sup> Inequalities might arise from sources other than the ability to earn labor income, such as differences in the receipt of bequests.<sup>56</sup> The literature is extensive and I cannot review even a small portion here. It is

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Mikhail Golosov, et al., *Preference heterogeneity and optimal capital income taxation*, 97 JOURNAL OF PUBLIC ECONOMICS (2013). For an illustration of how these considerations apply in the context of disability, see, David Weisbach, *Toward a New Approach to Disability Law*, 2009 The University of Chicago Legal Forum 27 (2009). For a discussion of the effects of dropping other assumptions in the model see KAPLOW, *The Theory of Taxation and Public Economics*, 2008.

<sup>54</sup> For a survey of this literature, see, e.g., NARAYANA R KOCHERLAKOTA, *THE NEW DYNAMIC PUBLIC FINANCE* (Princeton University Press, 2010).

<sup>55</sup> See the discussion of indicator goods in Joseph Bankman and David Weisbach, *The Superiority of an Ideal Consumption Tax over an Ideal Income Tax*, 58 STANFORD L. REV. 1413 (2006).

<sup>56</sup> See Thomas Piketty and Emmanuel Saez, *A theory of Optimal Inheritance Taxation*, 81 ECONOMETRICA 1851 (2013).

sufficient to say that the results from extensions to the model are qualitatively similar to the ones just discussed in the sense that we do not end up with simple pro-poor commodity taxes of the sort that are implied by conventional distributive weights. Most often, the adjustments are subtle and go in (initially) unintuitive directions based on interactions with the income tax. In all of the models, the core distributive tool is the labor income tax, complemented by various taxes or subsidies on goods or factors based on subtle interactions with the income tax.

## 2. Applying optimal tax to CBA

The goal is to apply this literature to the design of CBA. While we regulate in numerous markets and for many reasons, I will focus on regulations designed to at least in part correct market failures because, for reasons mentioned, CBA is likely an important decision tool for those regulations. The question I will address is whether an agency using CBA to correct a market failure should adjust CBA for distributive or similar concerns in light of the conclusions from optimal taxation.

There are three problems with using CBA to distribution in this context.

*Wrong Markets.* The first is that the set of markets that we should use for distributive purposes are not necessarily the markets that we regulate. The two are effectively unrelated so cost-benefit analysis in regulated markets will only randomly be able to provide the types of market adjustments that are desirable. Moreover, we cannot make the determination by observing whether the regulation has large distributive effects. In many cases, CBA will be performed in markets where we should not make distributional adjustments even if it appears that there are substantial distributive effects of the regulation. For example, when we relax the assumption weak separability from the benchmark model, we want to intervene in markets where the goods are complements to or substitutes for labor. Whether there is a market failure bears no relationship to whether the good produced in that market a good is a complement or substitute for labor.

To illustrate, return to the dill pickle example discussed above. Recall that in that example, we were regulating dill pickles because of a market failure and we were not regulating the well-functioning fluffy towel market. Suppose now that regulating pickles so that marginal costs equal marginal benefits has large and bad distributive effects. Fixing the market failure might, for example, primarily help the wealthy.

We happen to regulate dill pickles but not fluffy towels. For distributive purposes, we want to impose a tax on markets that are substitutes for labor and

grant a subsidy for markets that are complements to labor. There is no connection between there being a market failure in dill pickles and dill pickles being a substitute or complement to labor. The two are orthogonal. It could be the fluffy towels are better substitutes for labor, and the tax is better imposed in that market. Dill pickle might be complements to labor and therefore need subsidies. Or they could be neither complements nor substitutes for labor and therefore, should be neither taxed nor subsidized.

Moreover, observing that the distributive effects of unweighted CBA in the dill pickle market are large and bad tells us nothing about whether it is desirable to use that market for distributive purposes. Like with the luxury tax and restaurant meals, we cannot know by looking only at distributive effects whether the market is a good one to use for distributive purposes. Even if the distributive effects are large and bad, we may want to subsidize dill pickles because of how that subsidy interacts with the income tax.

One reason that people may view CBA as an appropriate tool for distributive goals is an availability heuristic. An agency issuing a regulation is doing something that people can see. If it has undesirable distributive effects, it is an action some person or agency is taking that seems to be causing those effects. On the surface, we might think that the person or agency should not take that action. If the market causes identical effects, there is no apparent actor and no one to blame. Yet the effects are the same and the tools we use to address them should be the same.

An alternative way to frame the argument is to suppose that CBA should be adjusted for distributive effects and to consider the implications. Unless we think that the best markets to use for distributive purposes happen to be the markets we regulate using CBA, there would be no reason to limit distributionally adjusted CBA to the markets we are already regulating. Systematic use of CBA for distributive purposes would require that agencies regulate for distributive purposes even in perfectly functioning markets because considering distribution is now part of their mandate. Agencies should *create* market failures to improve the distribution of income. In our example, the agency responsible for the perfectly functioning fluffy towel market should consider issuing regulations which create market failures but which have good distributive purposes. This, after all, is the same thing as deviating from CBA when we just so happen to be regulating.

More realistically, consider the EPA and suppose that there is a market where there is no pollution or the optimal amount of pollution, say because it is well



controlled via market mechanisms. The market is akin to the fluffy towel market. If we want the EPA to consider distributional issues, we might want the EPA to *require* pollution if the distributive effects are good. This is identical to asking the EPA to regulate less because of distributional concerns in markets where there is too much pollution.

The availability heuristic – seeing regulations guided by textbook CBA as creating bad distributive effects – is especially apparent when we focus on CVs. CVs seem to favor the wealthy. The wealthy might be willing to pay a lot for some trivial good because it represents a small portion of their wealth. The poor may not be able to pay very much for critical goods simply because they do not have very much money. As a result, an approach that relies on CVs would seem to suggest that trivial goods for the wealthy are worth more than critical goods for the poor. Can it really be the case that some trinket, say a watch or fancy vehicle that sells for tens or hundreds of thousands of dollars, is worth more than medical care, clean water, or schooling for a poor person? CV's would suggest that the answer is yes.

This effect, however, is exactly what happens in the market. The market provides goods based on consumers' willingness to pay for them. It will provide yachts, luxury automobiles, carbon fiber bicycles, expensive clothing, and fancy watches far beyond what many would say is needed. We rely on distributive instruments to reduce inequality and thereby moderate this effect, but markets produce goods for those who can purchase them. Using CVs in cost-benefit analysis does exactly the same thing. It fixes the market failure. If distributive concerns are an issue, they are an issue with functioning markets generally. These effects, to be clear, are not necessarily to be applauded, but they are general effects, not effects limited to regulated markets.

This is most dramatically illustrated for the value of life. Wealthy people can afford to pay more for safety than can poor people. It is not that in some intrinsic sense that they want to live more. They can pay more simply because they have more money. As a result, the market will produce goods and services that reflect a higher value of life for the wealthy than the poor. Expensive cars, for example, may have safety features that cheap cars do not. Wealthy people will pay for these features and poor people will not (because they cannot).

CBA should do the same. We may deplore wealth differentials and do all we can to reduce inequality, but to the extent there is inequality, markets will provide goods and services to those who can pay for them. This includes the value of life.

How to fix such inequalities is a central question of public policy, but it is hard to see why choosing to fix it in markets that happen to be regulated rather than choosing based on effectiveness is the right solution.

*Uncertain size and direction.* The second conclusion from the optimal tax literature is that agencies are not likely to know the size or even the direction of the appropriate adjustments to make to take distributive concerns into account. Under the conventional distributive weights, adjustments are pro-poor. Recall that those weights were a function of the marginal utility of income  $dU_i/dY$  and the social marginal welfare of utility,  $\partial W/\partial U_i$ . They would be pro-poor because marginal utility is declining in income and if the social welfare function is egalitarian, marginal welfare is declining in utility. Even if agencies cannot determine these variables in detail, they at least know the direction: regulations should generally be made more pro-poor to account for distributive concerns.

Distributive weighting consistent with optimal taxation, however, depends on subtle factors such as whether a good is a substitute or complement to labor or an indicator of ability. They would not necessarily be pro-poor and might appear to be pro-rich.<sup>57</sup> The example of restaurant food compared to grocery-store food illustrates. The adjustments – exempting expensive restaurants from tax and having additional taxes on grocery-store food – on their surface appear to be pro-rich. They improve the distribution of income because of how they interact with the income tax: they allow the income tax to increase the level of distribution by lowering the distortions from progressivity. In the dill pickle case, we do not know whether to increase or reduce the price of dill pickles. Observing that a regulation which fixes the market failure is pro-rich does not tell us.

Agencies are not likely to be able to determine even the direction of the adjustments to make in this context. For example, they may have to determine whether a particular type of consumption associated with the regulated market is a complement to labor or a substitute for labor or is an indicator of ability or for some other reason is good to use for distributive purposes. This is a subtle determination and is not one that agencies have any particular ability to evaluate.

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<sup>57</sup> Matt Adler, recognizing that any adjustments to CBA would involve subtle factors such as complementarity with labor argues that these adjustments can still be called distributive weights. Matthew Adler, *Cost-Benefit Analysis and Distributional Weight: An Overview* (2013). While there is no necessarily right or wrong definition of the term “distributive weights”, if adjustments of this sort are called distributive weights, one should be very clear that this is what is intended as it is not how the term is normally understood. Instead, the term normally refers to  $(\partial W/\partial U)(dU/dY)$  as discussed in the text. This is particular true because the weights will not be distributive in the sense that they seem to directly favor the poor.

Crude guesses, such as exempting grocery store food and taxing restaurant food, may be in precisely the wrong direction.

*Wrong tools.* The third conclusion is that, conditional on regulating in the right market and on knowing the direction and possibly the size of the adjustments to market prices to make, agencies will not have the best tools for making the adjustments.<sup>58</sup> The reason is that it is likely to be more efficient to use a price mechanism than a regulatory mechanism. Regulations are related to product attributes. To increase or reduce the price of the good, the regulation would alter the product attributes. A tax or subsidy on a good lets the market determine the right mix of attributes and, therefore, avoids this source of inefficiency.

To illustrate, suppose we are regulating in a market that is an appropriate market for distributive purposes. Suppose also that we know the direction and size of the appropriate adjustment. Consider two alternatives for making the adjustment: adjusting the regulation so that the attributes of the product are changed in a way that makes it more or less expensive in the correct amount and taxing or subsidizing the good and letting the market determine the product attributes. Changing the product attributes adds an additional inefficiency that is not required by distributive concerns; a tax can achieve those concerns without altering the product attributes.

For example, libraries are substitutes for labor and, therefore, are potential markets for intervening for distributive purposes. We could regulate them to increase their price, say by forcing them to carry only unpopular books, having dingy interiors or limiting the hours that they are open. Alternatively, we could impose a fee and let the market determine which books, interiors, and hours are best. The fee can raise the price of libraries in the same amount as the regulation but without the secondary distortion.

Agencies regulating market failures are far more likely to be able to change product attributes than to simply impose a fee or grant a subsidy. If we have an agency regulating in a market, we have assigned it the task of fixing the market failure, which it does most often by changing product attributes. For example, disclosure of safety hazards changes the nature of the product. Deposit insurance changes what it means to deposit money in a bank. Technology mandates change

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<sup>58</sup> Kaplow and Shavell note this argument in their Appendix. See Louis Kaplow and Steven Shavell, *Why the Legal System is Less Efficient than the Income Tax in Redistributing Income*, 23 J LEGAL STUDIES 667, 679-80 (1994).

how goods are produced. We could also give a regulating agency the task of imposing taxes or subsidies if the market they are regulating happens to be a good one for distributive purposes and they are able to calculate the direction and size of the appropriate tax or subsidy. There would, however, seem to be little reason for assigning the task this way. Moreover, even if we wanted to give the task to such an agency, the agency would still want to use unweighted CBA for its core regulatory mission.

To return to the basic framing of the problem of one of task assignment we can ask when it is desirable to assign part of the distributive task to an agency which is otherwise correcting a market failure. The answer will be that most of the time, it will not be appropriate to assign such an agency part of the task of redistributing. The agency would have to be regulating in a market in which it is desirable to adjust the price for distributive purposes; the regulated good would have to be a complement or substitute for labor. The agency would have to know which direction to make the adjustment and could not just make conventionally pro-poor adjustments. And it would have to be better to make the adjustment via regulation than via a tax or subsidy even though the regulation might change product attributes.

It is not impossible that these conditions will be met, so we cannot rule out a version of distributive adjustments to CBA based on a priori reasoning. We can say, however, that it is unlikely that they are met often. Most importantly, we can rule out generic or systematic distributive adjustments to CBA of the sort conventionally discussed.

#### **4. Extensions**

##### *A. Unresponsive tax systems*

One response to the arguments made above is to assert that we cannot rely on the tax and transfer system to make distributional adjustments. Recall that Kaplow and Shavell's argument was that eliminating price distortions in particular commodities markets and making an offsetting adjustment to the labor income tax kept the distribution the same but was more efficient. Getting rid of the luxury tax and adjusting the marginal rate schedule under the income tax retains the distributive benefits of the luxury tax but reduces the resulting inefficiencies. If the tax and transfer system does not respond this way, the argument does not go through. Just getting rid of the luxury tax without adjusting the income tax may

not be desirable. Perhaps in this case we should use conventional distributional weights for CBA.

We can divide versions of concern into what I will call naïve versions and sophisticated versions. The naïve versions have a number of elements. The primary element is an assertion that the tax system does not or is unlikely to change to address distributive concerns.

This claim is flat out contradicted by the facts. Tax systems are constantly changed, most often with great focus on distributional issues.<sup>59</sup> In the United States, the changes are made in fantastic detail to respond to particular groups that are aggrieved. Credits, deductions, elections, alternative tax schedules, and detailed tax rules are changed to ensure that various groups are given the distributive treatment that Congress deems appropriate. For example, in 2008, the National Taxpayer Advocate reported that in the seven years between the start of 2001 and 2008, there were more than 3,250 changes to the tax law and there were more than 500 changes in 2008 alone. Forbes Magazine estimated in 2013 there had been 5000 since 2001.<sup>60</sup> Senator Baucus, Chairman of the Finance Committee, claimed in 2012, that since 1986, we had made more than 15,000 changes to the tax code.<sup>61</sup> Even if only a modest portion of these changes were distributive in nature and even if the counts are exaggerations, the number of adjustments would be high. Blanket assertions that the tax system does not respond to distributional concerns are false.

Moreover, the argument that the tax system does not respond requires a regulator to know this. If the tax code never responded, it would be easy for a regulator to know. If, however, it sometimes responds, as it clearly does, it is hard to see how a regulator would know when the tax system will respond and when it will not. Worse, the tax system cannot respond before a regulator has issued the regulation, so at the time the regulator is considering the regulation, there is no way to make this determination.

Commentators may assert that the tax law does not adjust because the tax law may not respond immediately to a given regulation and the effects of particular regulations are most often not cited in the legislative history of the tax change. We often cannot tie the regulatory change and the tax law change together. We

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<sup>59</sup> Michael Graetz, *Paint-by-Numbers Tax Lawmaking*, 95 COLUMBIA LAW REVIEW 609 (1995) discusses the extent to which the tax legislative process is driven by distributive concerns.

<sup>60</sup> <http://tinyurl.com/p22ok5q>

<sup>61</sup> <http://tinyurl.com/cyrbyj7>

see a regulation with bad distributive effects but cannot easily find the offsetting tax adjustment.

There may, however, be hundreds of regulations which have distributive effects, all of which have to be considered when designing the tax system. The net effect may be very different than the effect of any single regulation. The distributive effects of the tax laws are determined using data on the existing distribution. The net effect of all prior regulations will be reflected in the aggregate data.<sup>62</sup> Congress then considers whether and how to adjust the progressivity of the tax system in light of this information. Failure to find a direct link for a particular regulation is not evidence that the tax law does not reflect the distributive effects of that regulation.<sup>63</sup>

The second element of the naïve version is to assert that if the tax system does not change that a regulator should then be free to make distributive adjustments without making any reference to (1) the allocation of power in a given government and (2) whether the regulator has or is likely to have the relevant information necessary to make the adjustment. That is, the naïve claim is often an acontextual, non-institutional claim that in the absence of adjustments to the tax system, a regulator is free to do as she wishes.

Here is an admirably bald statement of the claim from Matt Adler:

Imagine that a decisionmaker has the power to choose between P and P\*. If the tax code does not change, her morally preferred [social welfare function] favors P over P\*. Although P\* bundled with a change to the tax code is Pareto-superior to P, the decisionmaker does not believe the legislature will make this tax change. She is therefore morally justified in picking P.<sup>64</sup>

The argument is devoid of any theory of government. It makes no reference to which entities or individuals in a particular type of government are allocated which responsibilities. Decisionmakers are instead morally justified in overruling legislative outcomes simply because they disagree. The argument does not even

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<sup>62</sup> See Joint Committee on Taxation, *Methodology and Issues in Measuring Changes in the Distribution of Tax Burdens* (U.S. Government Printing Office, 1993); and Julie Anne Cronin, *U.S. Treasury Distributional Analysis Methodology*, Office of Tax Analysis Paper 85 (1999), available at <http://www.treasury.gov/resource-center/tax-policy/tax-analysis/Documents/ota85.pdf>

<sup>63</sup> Another reason people may make the assertion that the tax system does not adjust is that the tax system may not meet the distributive preferences of an individual commentator or scholar. If this is true, it shows only that the particular commentator's views about redistribution deviate from the equilibrium produced by the electoral process.

<sup>64</sup> Adler, *Cost-Benefit Analysis and Distributional Weight: An Overview*. 2013. p. 28.

make it a requirement that the social welfare function used by the decisionmaker be generally accepted by the population or be morally justified in any particular way other than it be morally preferred by a particular person. It does not require the decisionmaker to have any particular expertise in distributive issues.

The statement supports actions by regulators to make the overall system regressive. A regulator may believe that the legislature redistributes far too much. The regulator, implementing his preferred social welfare function would adjust his regulations to help the rich. Adler would presumably support this action because the regulator is morally justified in picking his preferred social welfare function.

For the statement to be credible, it needs a theory of the allocation of responsibility in a structure of government which allows regulators to overturn legislators. This is not impossible. Some nations possibly including the US might have such a structure.<sup>65</sup> The arguments, however, would have to be institutional and based on claims about the best assignment of tasks to parts of the government given disagreement about the desirable amount of redistribution. (And they would have to actually be made!) I would imagine that the normal course for democracies is for elected legislatures to be allocated the power to make the primary distributive judgments. In a government with separation of powers, perhaps there are arguments that this power is split up among branches. Regardless, one might hope for at least some story or argument or example for the proposed structure that allows conclusions like that quoted above. A blanket statement, devoid of institutional context makes little sense.

The sophisticated version of the “tax system doesn’t respond” argument considers the institutional capacities of different parts of the government. It starts with the task assignment considerations discussed above and then considers the possibility that a particular government at a particular moment in time for a particular policy might have features that cause us to want to deviate from the otherwise desirable assignment. Lee Fennell and Richard McAdams hint at such a possibility in a short essay on the subject but they do not develop the argument in

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<sup>65</sup> One might tell a story about presidential systems like the United States that allows regulators to make distributive judgments. Regulatory agencies report to an elected president. The elected president is entitled to instruct them to reflect his distributive preferences. Congress is free to override those preferences through changes in the tax law. Congress ultimately decides on distributive issues but the President is allow to move first, subject to override. Whether this is true however, would depend on the particular constitutional structure of a given nation.

any detail.<sup>66</sup> The core of the argument is that if a more effective distributive policy is blocked for some reason, it might be worth pursuing a less efficient policy.

To begin a sketch of the argument, imagine that there is a demand for some amount of redistribution among the electorate. Let us say that ideally those demanding redistribution want to satisfy this demand as cheaply as possible because by doing so, they can get more redistribution or otherwise use the saved resources (as compared to pursuing less efficient redistributive policies). Suppose, however, that the political system is such that a blocking coalition can prevent such a policy. Those demanding redistribution might pursue a second or third best policy that cannot be blocked. Overall welfare might be improved conditional on not being able to dislodge the blocking coalition.

Several questions arise from this sketch. An initial and central problem is that if the tax system does not adjust, it does not follow that it is welfare improving to use traditional weighted CBA. Distributional weights comes from a model like Boadway's that does not include any sort of tax system whatsoever. Even if our tax system does not adjust, it exists and it is progressive. To determine the appropriate weights, we need to write down a model that includes the tax system and solve for the welfare-maximizing action for an agency. The sorts of interactions highlighted above such as complementarity with leisure will arise in this model. We cannot go directly from a claim that the tax system does not adjust to a claim that we can therefore use distributional weights without serious (or really any) analysis.

The second question is why the blocking coalition faced with the inevitability of inefficient redistribution would not then bargain to have a like amount of redistribution done efficiently. That is, there is a political version of the Coase theorem in the background, and a model of this type of redistribution has to explain why it fails.<sup>67</sup>

A third question, also arising from a version of a political Coase theorem is whether attempt to use CBA to redistribute are futile. Suppose that we consider an executive branch agency that is subject to different electoral pressures than the legislature and therefore wants more redistribution than the legislature. The

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<sup>66</sup> Lee Anne Fennell & Richard H McAdams, *Introduction*, in *FAIRNESS IN LAW AND ECONOMICS* (Lee Anne Fennell & Richard McAdams eds., 2013).

<sup>67</sup> See Daron Acemoglu, *Why not a political Coase theorem? Social conflict, commitment, and politics*, 31 *JOURNAL OF COMPARATIVE ECONOMICS* (2003).



executive agency cannot change the tax code so it pursues a second best policy of distributionally adjusted CBA. The question is, if the executive pursues this strategy, whether the legislature can undo it by making the tax code less progressive. Said another way, there is some overall demand for redistribution and the ultimate amount is determined via bargaining in the political process. A single actor, such as an executive agency, may not be able to undo that bargain. Or, at a minimum, a claim that an agency can change that outcome needs a story explaining why and how.<sup>68</sup> For example, status quo biases, veto power, and other details of the policy-making process may allow changes to the equilibrium by one actor in the system.

Specifying the exact story and determining when it applies is important. If the executive uses inefficient regulation to pursue distributive goals and the legislature responds with offsetting tax adjustments, we end up with the same overall distribution of income or wealth but have introduced inefficiencies. We regulate pollution, safety, information, and forth too much or too little because of distributive goals but because of the tax adjustment there is no overall distributive effect. Society, possibly including the poor, is overall worse off.

Finally there are a set of very difficult questions about how we overlay normative evaluation on a story that is at its core, political. Once we embed the task assignment arguments in politics, we can no longer claim that the actors are pursuing the maximization of social welfare. Instead, they are responding to some mix of their constituent's demands and their own preferences. We cannot simply posit a welfare maximizing agency using distributionally weighted CBA and a legislature failing to maximize welfare because it, say, is focused on serving its constituents. Given a consistent story about the motivations of the various actors, we might then ask what sort of institutional setup best maximizes welfare.

It is possible that one can put together a convincing story that embeds the task assignment claims in politics and recommends that an agency *should* sometimes use distributional weights and that these weights are the pro-poor weights of the sort conventionally imagined. Any such story, however, would be based on the particular circumstances: a particular type of regulation in a particular political context. It would not support general distributive weights on

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<sup>68</sup> The status quo may change if an agency uses a regulation to redistributive and a presidential veto may enable him to preserve the status quo when he could not otherwise force the legislative to change the prior level of distribution. Some legislative changes, however, may not require a veto. For example, the legislative can refuse to change the law when the economic system changes the level of inequality that it produces.

CBA. For example, if the legislature redistributes too much, the story would flip and regulators should weight regulations to be pro-rich to maximize social welfare. If after the next election the legislature redistributes too little, regulators would have to flip the distributional adjustments. And so on. The “tax system does not respond” argument does not lead to conventional distributional weights.

### *B. Happiness and CBA*

In recent work, John Bronsteen, Christopher Buccafusco, and Jonathan Masur proposed to replace the use of monetary values in CBA with self-reported scores on what is sometimes called happiness or well-being. (Bronsteen et al., 2013)<sup>69</sup> They rename the resulting procedure “well-being analysis” on the theory that the happiness scores represent a good measure of individual well-being. The justification is that regulations should try to improve individual well-being, not the amount of money or money equivalents that people have.

These authors view the claim that regulations should be aimed at promoting well-being as self-evident so they do not spend time analyzing this claim. This assumption is natural given the tradition in economics described above which takes this approach. Viewing CBA as promoting individual well-being means that they view CBA’s use of CV’s and hence monetary values as a surrogate for what it should be measuring. If we believe we can measure well-being, there would be little reason to use the surrogate. This is particularly so given the serious problems with eliciting monetary values for the non-traded goods which are commonly at issue in regulations. Most of their article, therefore, is devoted to working out the practical problems with implementing a version of CBA which uses happiness scores.

Their argument, however, is at its core, argument for using distributionally weighted CBA with the assumption of a utilitarian social welfare function.<sup>70</sup> To see this, note that the change in utility from a small change in consumption is the change in the amount consumed multiplied by the marginal utility of consumption. If we have a utilitarian social welfare function, the distributional weight is just the marginal utility of consumption because  $dW/dU_i$  is uniformly equal to one. Textbook, unweighted CBA measures the change in consumption.

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<sup>69</sup> Bronsteen, et al., DUKE LAW JOURNAL, (2013).

<sup>70</sup> It is also an argument that answers to happiness surveys measure utility, an argument that many will find implausible. Discussion of this issue, however, would lead us astray.

Therefore, directly measuring a change in utility is the same as using textbook CBA and distributional weights assuming a utilitarian social welfare function. We would only want to use happiness measures when and to the extent we want to use distributional weights in CBA of the sort that Boadway recommends. Even if there is a case for sometimes adjusting CBA for distributional concerns (such as because of optimal task assignment or the political story outlined above), we do not want Boadway-style weights and the same is true for a general use of happiness measures.

If there is an argument for using happiness measures it is that we can use these measures as a better estimate of prices when markets do not exist. Recall that a central administrative problem with CBA is measuring CVs. Regulations often deal with market failures so we cannot simply read CVs off of market prices. Instead we rely on measures such as looking at related markets or using surveys which attempt to elicit prices. These methods are highly imperfect. One possibility is that happiness surveys provide more reliable evidence of prices than these other techniques, at least in some circumstances. The idea would be that we unweight the utility measure by dividing by the marginal utility of income to recover prices. Whether this method works needs further exploration.

### *C. Unemployment and CBA*

In a recent piece, Jonathan Masur and Eric Posner argue that CBA should consider unemployment effects.<sup>71</sup> For example, the regulation of pollution from coal may cause unemployment for coal miners. The effects may be highly concentrated and damaging if large numbers of jobs are lost in towns reliant on coal mining. The long term effects of concentrated unemployment can be devastating. Masur and Posner would include the effects of long-term unemployment as a cost of such a regulation for purposes of CBA. They state, “there is no obvious reason for excluding unemployment costs from cost-benefit analysis. These costs are no different analytically from the costs incurred by consumers and shareholders.”

The argument that unemployment should be counted in CBA is a subspecies of the argument that general equilibrium considerations should be part of CBA. Changes in prices in one market will affect other markets, changing the welfare of people who interact in those other markets. The regulation of spectrum used for wireless transmission will affect those who use, build, sell, or buy wired lines.

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<sup>71</sup> Jonathan S Masur & Eric A Posner, *Regulation, Unemployment, and Cost-Benefit Analysis*, 98 VA. L. REV. (2012).

There will be welfare effects in the wired industry from any regulation of the wireless industry, including additional employment, unemployment, scrapping of previously valuable resources, and so forth. Similarly, the regulation of one type of food will affect all other types of food as people adjust eating habits in response to the regulation. Growers, buyers, sellers, and consumers of other types of food will be affected.

If the only market failure were in a regulated market, there would be no reason to consider effects in other markets. Restoring the regulated market so that marginal costs equal marginal benefits would cause the overall market to re-equilibrate, but overall efficiency would be maintained. We would be in the same spot we would be in if there never had been a market failure in the regulated market.

If a second market also has a market failure, however, this will not be true. Fixing the regulated market might make the market failure in the second market more severe. For example, Masur and Posner argue that labor markets do not clear so there are market failures in the labor market that might be made worse by a regulation of say, a pollutant or a safety feature of a product. The newly unemployed coal miners may not be able to relocate and, therefore, may remain unemployed even if there are available jobs elsewhere.

To analyze the problem suppose that there are two markets which have market failures but only the first is regulated. A third market, the rest of the economy, works well and is unregulated. Regulating the first market under traditional CBA so that marginal costs equal marginal benefits, will cause adjustments in the rest of the economy, which we need not worry about. It will also cause adjustments in the second market where there is a market failure. The question is whether CBA for the first market should take the effects in the second market into account.

To be concrete, suppose that an agency is regulating pollution caused by the use of coal and that if the costs of the pollution are fully imposed on the users of the coal, the result will be unemployment of say, coal miners. Suppose that the rest of the economy functions well so that the effects in other markets are not presently before us. The question is whether the agency regulating pollution from coal should adjust its regulation to take the unemployment effects into account.

To answer this question we have to decide whether the agency given the task of correcting the market failure should also be given the task of considering the

unemployment that results from a well-functioning market (i.e., the unemployment caused by CBA that considers only the externality). That is, if the pollution is fully internalized, that market now operates so that marginal costs equal marginal benefits. The labor market for coal miners, however, does not clear, resulting in inefficient unemployment.

The unemployment can be addressed by either the agency regulating pollution or by an agency otherwise tasked with addressing unemployment or other labor market issues generally. While we cannot rule out the possibility, it would seem unlikely that as a general matter we want the pollution control agency to be tasked with addressing unemployment. Its only real tool is to adjust the level of allowable pollution. It does not have the general tools available to an agency who is tasked with regulating labor markets and likely has little expertise in such matters.

We can put the argument in terms of the dill pickles and fluffy towels example used above. Suppose we regulate dill pickles but not fluffy towels, but now add another market, the market for labor, and suppose that that market does not clear, resulting in inefficient unemployment when we regulate dill pickles. There is no reason to think that adjusting the price or other attributes of dill pickles but not fluffy towels is a good approach to solving the problems in the labor market. We should instead think about think about direct approaches to unemployment and if none work, which markets, pickles, towels, both or neither are helpful to solving the problems in the labor market. These issues are largely orthogonal there being a market failure for dill pickles. The well-functioning fluffy towel market might also be causing employment. It would only be by coincidence that the best approach is to adjust some element of the dill pickle market and that CBA is the right tool for making such an adjustment.

Masur and Poser recognize this problem, at least in part. They suggest that a regulator conducting CBA should coordinate with other regulators including those providing unemployment insurance and the central bank (whose actions affect overall employment). We want the overall best set of policies. But this suggestion means that in fact there are no generic adjustments to CBA for unemployment. Most often any such coordination will find that unemployment is being addressed with tools designed for the job by regulators who have expertise in the use of those tools. Or, even if this is not true and sometimes or perhaps often, CBA should be adjusted because of unemployment affects, there is still no overall prescription for changing CBA. A conclusion that “CBA should take unemployment into account” does not follow.

Here is another way to think about the problem with Masur and Posner's argument. New discoveries of natural gas are lowering its price, which results in unemployment in coal towns in Wyoming and West Virginia. (Natural gas is a substitute for coal in the production of electricity so lower prices for natural gas reduces coal use.) Masur and Posner's suggestion would mean that the EPA should consider regulating natural gas to increase its price so that unemployment is reduced in West Virginia, and that it should do so even though it would be bad for the environment. Moreover, there is no reason that the EPA has to be already regulating natural gas for this Masur and Posner to recommend such an approach. It follows from their argument that the EPA should consider opening a new regulatory project with the goal of decreasing unemployment in coal towns by increasing the price of natural gas.

The minimal conclusion from the above discussion is that we do not want agencies including unemployment effects in CBA without further careful consideration and consultation with other agencies tasked with addressing unemployment. There are reasons for excluding unemployment from CBA, if not always, at least much of the time.

#### *D. Sunstein's arguments for CBA*

As noted, Cass Sunstein argues that CBA can be justified on pragmatic grounds. He proposes two. The first is that CBA is a device to prevent agencies from making mistakes due to heuristics or biases that might arise in less formal justifications for regulations. The second is that CBA is a good method for providing transparency and, therefore, allowing the public, superiors in the executive branch, or Congress to monitor agency actions. CBA under this latter approach can be seen as a tool for preventing agency capture. Sunstein hopes that these justifications for CBA can avoid having to address controversial claims about CBA, such as claims that rely on contested views about welfarism.

Suppose that someone who rejects welfarism believes that an agency should perform task T which is different than what CBA in its textbook form would require, say task S. Merely telling the agency to do this, without more, may fail as the agency may be subject to biases and heuristics or may follow its own agenda instead of its instructions.

Sunstein's argument comes down to a claim that requiring the agency subject to these problems to do task S is a good way to get it close to achieving task T. This could be true if T and S are relatively close and it is easier to monitor S than

T. But if the two tasks are not close or if monitoring T directly is possible, it would not seem to be true. The conclusion is that we cannot avoid resolving arguments about the underlying merits of CBA. Someone who believes that agencies should be doing tasks that are not similar to those that CBA requires is unlikely to think that requiring CBA is a good proxy for getting those tasks done.

Sunstein recognizes this problem and addresses it by arguing that the information needed for CBA is relevant for just about any theory of what the government should be doing even if those theories ultimately recommend a different course of action. For example a theory might conclude that everyone's lives should be valued equally, regardless of income or age. Very strictly applied CBA would value lives based on CV rather than assuming that they are all equal. While the equality theory might not use differential values for life, the range of values and the other information needed for CBA would be important. Therefore, requiring an agency to use CBA would not likely be a substantial deviation from such an alternative theory. Moreover, Sunstein would allow CBA to be applied loosely by allowing other considerations to enter the calculation.<sup>72</sup>

These response however is about the substantive merits of various theories of justice. And that is the basic point: to believe CBA is a reasonable procedure, one has to engage in a discussion about the merits. The claim that CBA is a good way to prevent biases and heuristics or that provides the right information for monitoring an agency only works if CBA is a good proxy for the theory of justice that is being pursued. We should not expect people whose theories of justice deviate significantly from welfarism to agree that CBA is a reasonable procedure.

## **5. Conclusion**

My goal was to consider how considerations of task assignments in a large organization affect views about whether cost-benefit analysis should consider the distributive effects of regulations. Task assignment in a complex organization, unfortunately is a complex task. Businesses constantly reorganize in an attempt to find the best way to gain the advantages of expertise and coordination among their parts. The federal government itself reorganizes and reassigns tasks on a regular basis.

Nevertheless, I believe that there are relatively clear conclusions. Once one considers the design of distributive systems, it is difficult to imagine that we

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<sup>72</sup> Note on how equity and other things enter in actual CBA and how it is lose – costs must justify the benefits rather than strict maximization.

would want very many, if any, of the distributive tasks assigned to specialized agencies regulating in particular markets. There is no reason to believe that these agencies are regulating in markets that are good to use for distributive purposes, that these agencies would know the size or even the direction of the appropriate adjustments, or that these agencies would have the right set of tools to use (price mechanisms) to make the adjustments.

Given the flexibility of task assignment and the number of considerations involved, the analysis cannot and does not rule out the possibility that a particular agency working in a particular market at a given point of time should consider distributive concerns. Such examples, however, should not obscure the more general point, which is that there should be any generic adjustments to cost-benefit analysis to account for distributive concerns.