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POLICY BRIEF

Equity or Efficiency? The Battle for the Soul of Benefit-Cost Analysis

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Since the early 1980s, benefit-cost analysis (BCA) has been an integral part of the US federal regulatory process. All economically significant regulations, those executive branch rules expected to have an impact of $100 million or more in a single year, are required to have a regulatory impact analysis conducted as part of the rulemaking process. A critical component of regulatory impact analysis is BCA, which weighs the pros and cons expected from a regulation to assess whether on balance the rule is likely to be economically sound.

BCA has come to be widely accepted across the political spectrum. Academic journals and societies are devoted to its practice. Yet despite this consensus in the corridors of power and in institutions of higher learning, certain foundational issues have yet to be resolved with BCA. Many might be surprised to learn, for example, that the measure of human welfare underpinning BCA is disputed. Strangely, disagreements about what BCA should measure take place as highly technical discussions about the appropriate "social discount rate" (SDR) used in analysis. While these discussions have the appearance of being scientific and authoritative, they are driven by underlying disagreements about values and form part of a broader debate about what the aims and goals of public policy should be.

Without coherent and agreed-upon goals, there will never be agreement about what the correct discount rate in analysis is. As a result, BCAs of public programs could face skepticism, and their conclusions will be open to the critique of being arbitrary or, worse, misleading.

WHAT IS THE SOCIAL DISCOUNT RATE?

The SDR is an interest rate used in BCA to calculate the present value of a benefit or cost that will occur in the future. Because benefits and costs of projects do not all arrive at the same moment in time, adjustments are made to compare outcomes that arrive at different times. The social discount rate, then, is a tool to convert all costs and benefits to a single grand total, thus permitting comparisons of projects with different time profiles.

The SDR turns out to be one of the most critical inputs in analysis. In some cases, nearly every other part of an analysis is of secondary importance to the discount rate. Take for example the social cost of carbon (SCC), an estimate of the present value of damages associated with emitting an additional ton of carbon dioxide into the atmosphere. Because most of the damages from climate change can be expected to occur in a distant future, small adjustments to the discount rate lead to large swings in the SCC. For example, estimates produced late in President Obama's administration ranged between $12 a ton and $62 a ton (in 2007 dollars) depending on the discount rate used.[1]

The discount rate is like a critical knob in the BCA machinery that, when adjusted, can determine whether a policy is estimated to have benefits that exceed costs or, vice versa, costs that exceed benefits. The sensitivity of calculations to the discount rate used is caused by the power of compound interest, which is most profound when considering long time horizons. For example, a benefit worth $10 trillion in 500 years is worth just 2 cents today at a 7 percent discount rate. Furthermore, the SDR is applied to more than just money—it is used to discount the lives and well-being of future citizens. However, because health, welfare, and life itself cannot be invested in an account in the same way as money, the rationale for discounting in BCA is less clear than when discounting cash flows as part of an analysis of financial investments.

There is consensus neither about what number is the appropriate SDR nor about the role the SDR plays in analysis. Some economists think its role is to account for the opportunity cost of capital, since capital is both created and displaced by government projects. Meanwhile, other economists see the SDR as representing a rate of time preference for society. The logic here is that society prefers to consume sooner rather than later.

In principle, the opportunity cost of capital and the social rate of time preference might be equal in an efficient economy, devoid of distortions like taxes or externalities. In the real world, however, markets are imperfect, and the social rate of time preference and the opportunity cost of capital will not be the same.

As a result, the battle over discounting often includes discussions about how impatient society is and how much less weight should be placed on the consumption and welfare of future citizens relative to present citizens. These seem to be debates about the technical inputs of BCA, but in reality they are really debates about values, which in turn are debates about what goals public policy should aim to achieve.

COMPETING GOALS AND THE ILLUSION OF SCIENCE

Historically, many economists have thought BCA should measure economic efficiency. Efficiency is a state of the world where all resources end up allocated such that overall wealth is maximized.

This is a broad conception of wealth, beyond just financial wealth, that takes into account any form of capital (human, natural, or physical) that generates utility for citizens (for example, the natural environment comprises a part of society's wealth). The pursuit of efficiency thus raises questions of how fast the economic pie can realistically grow. When analyzing efficiency, there is no concern for the way the pie is distributed, only for the overall amount of wealth. This is not to say that distribution is unimportant—far from it—but many economists want the analysis of efficiency and the analysis of distribution to be kept entirely separate.

Other economists, however, are most concerned with an equitable distribution of wealth. They think policy should aim primarily to achieve some form of equity through wealth redistribution. They are not satisfied with the notion of efficiency because efficiency depends, in part, on the initial distribution of wealth, which they see as inherently unfair.

Strangely, in BCA this concern for the distribution of wealth in society is centered primarily around intergenerational equity across time, rather than the distribution of wealth within a time period. In other words, the SDR is at the center of a debate about what role equity and fairness across time should play in BCA. Some economists want fairness evaluated separately from BCA, while others want BCA to take fairness into account, and their disagreement is playing out as a disagreement about the discount rate.

To give just one example of how values inject themselves into analysis, one parameter that is often used in the process of selecting the discount rate is the "rate of intergenerational inequality aversion." In ordinary language, this rate describes how strong society's preference is for an equitable distribution of wealth across generations. It should be clear that this number depends on one's values. Therefore, it cannot be a single statistic or number because there is no true objective fact that can be so measured; rather, it is a normative view that varies widely from person to person.

Unfortunately, academic articles and books about discounting are often highly complex, technical, and full of mathematics. This gives the appearance that the estimation of the discount rate is precise and purely objective and, by extension, that the net benefit estimates pumped out by analysts are scientific. It turns out that this is merely an appearance.

MISSING TRANSPARENCY

Those who want analysis to measure some form of equity have a high hurdle to overcome. Equity is likely to mean something different to every person, especially with respect to equity across time.

People in the future can be expected to be richer than people today, owing to economic growth. Is it equitable to slow the rate of growth to consume more today, which would come at an enormous cost to our children and grandchildren? The answer is not so clear.

Economists are trying to answer these questions of equity across generations using the discount rate. The discount rate can be thought of as a system of welfare weights that converts raw cost and benefit values into units of welfare. But it is unlikely that economists, let alone everyone else, will ever agree on the appropriate weights to assign to costs and benefits for this purpose. Welfare cannot be directly measured, so any weighting system will be arbitrary.

It is also troubling that these debates about values take place as part of battles between experts, without input from ordinary citizens. Any intergenerational weighting scheme is a value judgment, even if the weights are derived from some observable phenomenon. Ordinary citizens' opinions are likely to be no less valid than experts' on this matter.

In turn, those who want analysis to measure efficiency should prefer that costs and benefits be presented without weights (or, put differently, with equal weights) and let decision makers who are democratically accountable to the public—not analysts—make a judgment as to whether a particular allocation of resources is equitable or not. In practice, however, even those economists who claim to care about efficiency can't resist the temptation to inject their own values into the discount rate.

BCA reports that present estimated benefits and costs for each period, without any further weighting, will be most transparent. Discounting, rather than bringing clarity to the evaluation of a public program, is obfuscating the conclusions. When analysts discount benefits and costs of future periods, their conclusions are laden with a layer of values (that is, with their preferences for intergenerational equity), and this normative bias cannot be easily discerned from their reported figures.

I am not suggesting that analysis can be purified from values. Whatever BCA ends up measuring is a matter of values (built into the assumptions). What I am suggesting is that discounting adds a layer of values that clouds the conclusions of analysis beyond what is reasonable.

ACCOUNTING FOR THE UNSEEN

There is an additional, related problem with current BCA practices. Analysis is not properly accounting for capital that is created and displaced by government policies. As mentioned earlier, many economists want to address the opportunity cost of capital using a discount rate. But a discount rate is not appropriate for this purpose—save for a few exceptions. Rather, the proper way to account for how the returns to capital would evolve through time is using a "shadow price."

Shadow pricing is a technique in economics for estimating the value of a resource without a market price or with a price that does not reflect the true value people place on it. For example, many aspects of the natural environment are highly valued despite having no price at all in the market.

In the case of capital, economists have long known that its market price does not fully account for its value. By estimating its value as the sum of a stream of returns the asset generates, analysts can shadow-price capital much like a financial analyst would price a stock or a bond. These returns are not seen by the analyst, but they are no less real than the more easily measurable costs or benefits that policies deliver.

In practice, however, the government almost never uses shadow prices, and the unseen consequences of policy go largely ignored. The practical consequence is that consumption is given too much weight relative to capital and investment in analysis.

CONCLUDING THOUGHTS

BCA analysis gives greater weight to present consumption than to future consumption by discounting the value of benefits and costs as they extend out in time. BCA also favors spending on consumption over investment because without a shadow price, returns to capital, which would compound in value as they extend into the future, are treated as if they are equivalent to fleeting, temporary consumption.

Perhaps most troublesome is that BCA is not evaluating economic efficiency, which is properly assessed based on the assumption of equal welfare weights.[2] Rather, when BCA uses a social discount rate, it is evaluating some normative preference—usually the preference of the analyst—for some form of intergenerational equity.

What, then, is BCA measuring? Perhaps BCA measures some form of equity, but if that is the case, it should be made explicit. Furthermore, there is a case to be made that pursuing efficiency is the equitable thing to do. In the current time period, redistribution sounds reasonable—like Robin Hood, the government takes from the rich and gives to the poor. But redistribution across time from rich to poor means that the present generation consumes at the expense of future generations. In other words, by discounting, Robin Hood takes from future generations for the present generation's benefit.

There is a need to revisit the foundations of BCA, starting with first principles. What measure of welfare is to be evaluated? Should analysts discount? How can analysts ensure that the unseen consequences of policy are accounted for? Taking a closer look at the foundations of BCA reveals a complex machinery that advances certain values, by accident or by design. This machinery and the equations that define its operation conceal value judgements. In the future, perhaps experts

and nonexperts alike can have a fruitful discussion about what policy should aim to achieve and why. For now, analysts can start by being more forthcoming about the values built into their standard tools of policy analysis.

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NOTES

1. These are estimates of the social cost of carbon in 2020. See *Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12866* (Washington, DC: Interagency Working Group on Social Cost of Greenhouse Gases, United States Government, August 2016), 4.
2. James Broughel, "The Unsettled Matter of Discounting the Future" (Mercatus Symposium, Mercatus Center at George Mason University, Arlington, VA, 2018).