

## Energy Policy and the Social Discount Rate

J. Paul Kelleher

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Recent debates over the economics of climate change underscore the importance of what at first blush is a narrow technical issue in welfare economics and cost-benefit analysis (CBA). Yet even before the need to study the economics of climate change, debate over both nuclear energy policy and water resource policy highlighted the fateful role that social discount rates play in policy prescriptions (Lind 1982, p. 2). In each of these spheres (and in many others as well), the social discount rate influences the degree of concern society displays about a policy's effects on individuals in the future. This commentary aims to provide a non-technical introduction to some of the key ethical issues and arguments surrounding the choice of social discount rates.

### 1. Time Discount Rates, Cost-Benefit Analysis, and Efficiency

The social discount rate typically functions as a parameter in cost-benefit analyses of policies that have long-term impacts. Confusingly, it is not unusual for one social discount rate to actually be a composite of several different parameters reflecting theoretical choices about issues as diverse as (1) the relative importance of *future* benefits, (2) the proper attitudes toward *risk*, (3) the *uncertainty* about what the future holds, and (4) the potential *inequality* between members of current generations and future ones (Dasgupta 2008). This commentary focuses on the first of these issues, and I will henceforth use “social discount rate” to refer to the rate at which future benefits and costs decline in moral importance by virtue of occurring in the future.

It is also useful at the outset to stress that CBA (and the brand of welfare economics it embodies) is a framework for analyzing the relative *efficiency* of different policies and projects. Efficiency as an intuitive concept connotes optimizing the overall ratio of gains to losses—regardless of distribution—and the conception of efficiency used by CBA is that of *potential Pareto efficiency*: an allocation of goods is potentially Pareto efficient if “it would be possible to compensate those who bear costs sufficiently so that no one is made worse off and at least one person is better off” (Boardman et al. 2010, p. 31). Crucially, an allocation of goods (or a policy that allocates goods) can be efficient in CBA's sense *even if no compensation is paid*. Some find

this problematic. But so long as one does not assume that efficiency is all there is to morality, there seems little danger in acknowledging the surely morally relevant fact that a certain policy would maximize net gains.

In order to know if a policy is efficient in CBA's sense, one must know what it means to make a person better off. Here CBA tends to focus exclusively on individual well-being, construed as preference-satisfaction (i.e. "utility"). This focus on preferences is customary in welfare economics, where it is often viewed as a kind of anti-paternalism. That is, economists hope to avoid reliance on controversial theories of human well-being by defining it in terms of the seemingly uncontroversial good thing of getting what one wants.

## 2. The Time Preference Approach to Discounting

One of the most forceful positive arguments for discounting the value of future well-being (as well as the disvalue of future bads) stems from the economist's rationale for focusing on preferences. In response to Nicholas Stern's *a priori* defense of a discount rate very close to zero, Martin Weitzman (2007, p. 712) replies:

An enormously important part of the "discipline" of economics is supposed to be that economists understand the difference between their own personal preferences for apples over oranges and the preferences of others for apples over oranges. Inferring society's revealed preference value of [the discount rate] is not an easy task in any event...but at least a good-faith effort at such an inference might have gone some way towards convincing the public that the economists doing the studies are not drawing conclusions primarily from imposing their own value judgments on the rest of the world.

Weitzman's own approach holds that the rate at which the value of well-being declines through time ought to be determined by prevailing market interest rates. The thought is that if social policy should be predicated upon people's preferences, and if people prefer to enjoy present well-being to future well-being, then social policy should reflect this. Moreover, people *do* seem to hold this time preference: by demanding a positive return on savings, individuals reveal that they'd prefer to derive well-being from their resources today, but will tolerate delay so long as they are compensated through interest payments. According to Weitzman, a view like Stern's is "paternalistic" since it altogether ignores the "preferences for present over future

utility that people seem to exhibit in their everyday savings and investment behavior” (p. 707). Since the social discount rate just is the rate at which CBA discounts the value of future well-being, Weitzman seems to suggest that market interest rates have intrinsic ethical relevance and tell policy makers a good deal of what they need to know.

Stern’s response, echoed by many others, is simple and, I believe, decisive: “as this borrowing and lending take place through private decisions...this does not necessarily answer the relevant question...namely, how do we, acting together, evaluate our responsibilities to future generations” (2010, p. 51). Weitzman is surely correct that prevailing interest rates reveal ethically relevant information. But it is information about how individuals, acting *as* individuals and largely in their own interests, weight present versus future well-being. However, the *social* discount rate should reflect explicitly moral, other-regarding judgments about the relative importance of well-being that exists far into the future. It is by no means clear that individuals’ self-regarding behavior yields any insight whatsoever about what even *those same individuals* believe we owe to future generations.

### 3. The Opportunity Cost Approach to “Discounting”

There is a second approach to the social discount rate that also sees prevailing interest rates as ethically relevant, but not because they reveal individuals’ ethical convictions. According to William Nordhaus, “As this approach relates to discounting, it requires that we look carefully at the returns on alternative investments—at the *real* real interest rate—as the benchmark for climatic investments” (Nordhaus 2007, p. 692). The driving claim here is that interest rates represent the *opportunity costs* of undertaking various public projects, and that opportunity costs should guide the choice of public projects intended to promote future well-being. Some present the Opportunity Cost approach as a rival to Stern’s, but (as Nordhaus notes) it is not really an approach to discounting future *well-being*. Rather, it holds that a society should not invest in a non-financial project unless it delivers future benefits that are worth at least as much as the project’s cost would be worth if it were instead invested financially at prevailing market interest rates. It therefore guides comparative judgments about which projects most efficiently deliver a desired improvement in well-being at some target point in time. It does not purport to solve the question of how important it is to deliver that level of well-being in the first place. Since this approach neither endorses nor rejects discounting future well-

being, I follow Roser (2009) in using scare quotes to refer to the form of “discounting” it does endorse.

So how does “discounting” work? To illustrate, suppose our society does not discount future well-being at all and determines that it ought to make a significant investment to promote the overall well-being of those who will be alive in 2150. Again, the Opportunity Cost approach holds that the decision to promote future well-being to a specific degree should be made *before* society chooses any *particular* project that will deliver that degree of future benefit. Once society has determined the magnitude of the “legacy” it should leave to the future, it can identify the projects that deliver this legacy in the most efficient way (Weisbach and Sunstein 2009). Prevailing interest rates enter because they represent one project that the current generation could choose: it could choose to invest cash now in order to deliver cash later. To know whether this is the most efficient project, analysts compare the amount that must be invested with the cost of alternative non-financial projects that would yield future benefits of the same magnitude. “Discounting” enters when analysts reduce the monetary value of the legacy owed to future generations at the present rate of interest in order to determine how much society would have to invest *today* to deliver that legacy to future generations. This establishes Nordhaus’s benchmark: it is the most society should be willing to pay *now* to deliver the morally required legacy in the future. Any project that would cost current generations more than that to deliver an equivalent benefit “leaves resources on the table, as it were” (Weisbach and Sunstein 2009, p. 456). By choosing policies with the smallest opportunity costs, current generations fulfill their moral obligation to future generations without shooting themselves in the foot (to use another metaphor).

A fundamental problem for the Opportunity Cost approach stems from the assumption it shares with CBA: efficient projects are those that would leave the “winners” in a position to compensate the “losers.” To see the problem, consider an example adapted from Weisbach and Sunstein. Suppose we could produce a benefit worth \$400 billion in 100 years by investing \$100 billion now in a nuclear waste management project. This represents an annual rate of return of 1.4%. Suppose also that instead of the \$100 billion waste management project, current generations could invest \$5 billion at prevailing market interests rates (e.g. 5.5%) and deliver \$1 trillion in cash to the population living 100 years in the future. Clearly there is a sense in which this second option is more efficient; if chosen, “Everyone would be better off; the current generation would have \$95 billion more than otherwise, and the future ones would have \$600 billion more than otherwise” (Weisbach and Sunstein 2009,

pp. 442-443). The problem with this line of argument is that it individuates the relevant populations in very abstract terms. In particular, the Opportunity Cost argument seems to ignore the fact that different projects will lead to different people being alive or dead in the future. For example, it is possible that the only policy that will prevent the untimely deaths of many persons is the less efficient waste management policy. But if one thinks of “future generations” as *whoever is alive* in the future, then it may well be true that the market investment will leave future generations better off than the waste management project would have. But this way of conceiving of future generations masks the fact that the enjoyments of those who live cannot possibly compensate those who die as a result of neglecting nuclear waste (Parfit 1984, p. 483). If efficiency in the context of welfare economics is tied to the test of *possible* compensation by the winners to the losers, it is not at all clear that the Opportunity Cost approach’s method of project choice passes that test. Alternatively, if it *does* pass the efficiency test, this is reason again to insist that policymakers treat efficiency as just one moral value among others, since the efficient policy is also the one that may let many die from the effects of nuclear waste.

#### 4. The No-Discounting Approach to Discounting

The third approach to discounting is the one that most philosophers endorse. This approach largely ignores prevailing interest rates and maintains that present and future well-being should be valued equally.

The main argument for the No-Discounting view is simply that it is hard to justify using a higher discount rate *at least from the perspective of efficiency*. If the goal is to identify policies that maximize net gains regardless of distribution, why should a life saved in 2015 be worth more a life saved in 2050?

A great many economists answer this question by noting that the No-Discounting approach “gives rise to some rather tough conclusions” (Le Grand et al. 2008, p. 146). In particular, it is said to result “in very high rates of savings being required of current (or even of every) generation. [Kenneth Arrow] demonstrates that...the current generation could be required to save approximately two-thirds of its income!” (Moore et al. 2004, p. 804). Influenced by this line of thinking, many economists conclude that the discount rate simply *must* be greater than zero, since “the logical implication of zero discounting is the impoverishment of the current generation” for the sake of boosting well-being that will occur in the indefinite future (Pearce et al. 2003, p. 125; see also Nordhaus 2007, p. 696). If this duty of poverty

appears unreasonable, it seems there is no other choice but to eliminate the tyranny of future well-being by discounting its moral importance.

This is not a good argument against the No-Discounting view. The reason is simple and familiar. CBA is, once again, an account of efficiency only. But the objections just presented against the No-Discounting view implicitly assume that society's ultimate duty is to pursue efficiency singlemindedly. If there are other moral values that can hem in the demands of efficiency, then there is no basis for concluding that an approach to efficiency that does not discount future well-being *logically entails* the demanding final duty that worries Arrow, Le Grand et al., Moore et al., Pearce et al., Nordhaus, and many other economists. Although philosophers have presented this counterargument repeatedly in the literature (Rawls 1971, pp. 297-8; Parfit 1984, p. 484; Broome 1992, p. 106; Roser 2009, p. 15), it is unfortunate that so few economists take note of it.

## 5. Conclusion

I have offered reasons to question two arguments for discounting future well-being and one approach to project-choice that “discounts” the size of our legacy to future generations at market interest rates. My conclusion is that economists and policymakers would do well to treat efficiency as but one moral consideration among others. If they do this, they will see that a 0% discount rate cannot *itself* generate the excessive demands that trouble so many economists. For no single moral value issues decisive policy prescriptions all on its own. Many of the missteps I have ascribed to economists could be averted if they used welfare economics to do the work it was designed to do, and no more.

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