

The Social Discount Rate

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by John Broome (2012)

The Future vs. The Present

The process of climate change is long drawn out, and so will be humanity's response to it. Both will take centuries. We can slow the rate of global warming by reducing our emissions of greenhouse gas now and in the near future: we can insulate our houses, build wind farms or nuclear power stations, make our cars more efficient, and so on. We can prepare for the inevitable warming by raising sea walls, working to develop drought-resistant crops, and other adaptive measures. These actions have some costs, which will be borne by the current generation. Their benefits will be brought by lower temperatures in the future, and by better protection from the effects of higher temperatures. These benefits will emerge slowly over decades, and they will continue to be delivered for hundreds of years. ...

[T]he current generation ... will be sacrificing some of its own well-being for the sake of greater well-being that will come to people far in the future. Is the sacrifice worthwhile? Does it improve the world on balance? This is a question of weighing: How do increases in future well-being weigh against sacrifices of present well-being? It is just the question an economist asks when she does a cost-benefit analysis of a particular project such as a wind farm, or a particular policy such as imposing heavy taxes on transport. Economists have techniques for answering it. This chapter evaluates one of their techniques.

Democracy

... The discount rate plays a pivotal role in the economics of climate change. When future people's benefits are weighed against costs borne by present people, the discount rate sets the weight they are given. When the discount rate is 5 percent per year, say, material goods produced one year from now are assigned 5 percent less value in a cost-benefit analysis than the same goods produced today. If a cost-benefit analysis uses a high discount rate, it discounts future benefits to a high degree, which means that it gives little weight to the interests of future people. A low discount rate gives much more weight to the future. The conclusions that emerge from a cost-benefit analysis are very seriously affected by the discount rate that is used. ...

In practice, different people have different preferences between apples and oranges. However, we can infer something about the preferences of all of them from the relative price of apples and oranges in the shops (economists say "in the market"). Suppose one orange sells for the same price as two apples. ... In general, at the margin, the relative values people attach to commodities are the same as the relative prices they pay for them. Economists say that the market prices of commodities "reveal" people's preferences ...

For that reason, economists think that market prices are generally an appropriate basis for values in cost-benefit analysis. ... [T]he broad idea that values should be based on people's preferences is almost universal among economists. Its motivation is democratic ...

Economists want people to determine the relative value of things, rather than have a value imposed from elsewhere. They assume that the preferences people reveal in the market show accurately what value they place on different goods. They treat the market as a democratic mechanism that expresses people's values. Metaphorically, they think of people as voting when they buy things, by handing over money for them; they speak of "dollar votes."

In the case of fruit, it seems obviously true that values should be based on preferences revealed in the market. When people are willing to pay more for oranges, it would be wrong for an economist to put a higher value on apples in a cost-benefit analysis, just because she herself likes apples. It would lead to orange groves' being felled and replaced with apple orchards, when the people want oranges. That would be undemocratic.

Weitzman extends the same democratic idea to the discount rate, which sets the relative value of future and present goods. There is a market that seems to reveal people's preferences about this relative value. It is what is called the "money market," where people borrow and lend money at interest. When the interest rate is 5 percent per year, you can in effect exchange \$100 today for \$105 in one year's time. If you borrow some money at this rate, but less than you could have borrowed, or if you lend some money at this rate, but less than you could have lent, you reveal that you are indifferent at the margin between \$100 today and \$105 in one year's time. Weitzman argues that the rate of interest in the money market should set the discount rate that is used in cost-benefit analysis. This is to treat the discount rate in the same way as he treats the relative value of apples and oranges.

The idea that values should be based on preferences as they are revealed in the market cannot be extended so easily from fruit to the discount rate. The discount rate raises special difficulties. One is that the money market does not accurately reflect the preferences of everyone who is affected. Most obviously, although the discount rate greatly affects the interests of people who are not yet born, none of those people participates in the present money market. ...

Here I shall raise a wider difficulty with the idea that democracy requires people's preferences to prevail. This is at best only a partial truth about democracy. In matters of taste, such as the value of fruit, it is enough of the truth to go on. Weitzman treats the discount rate as a matter of taste, but it is not. The discount rate is a matter of the value of future people's benefits compared to our own. More than anything else, it determines what sacrifices the present generation should make for the sake of the future. This is a moral matter and not a matter of taste.

In moral matters, the proper working of democracy requires that people's judgments should be well-informed and founded on proper deliberation. This is why democracy requires newspapers, campaigns, and debates as well as voting. It is one reason why decisions are delegated to representatives, rather than directly decided on the basis of people's unconsidered preferences.

The moral question of the discount rate and what we should sacrifice for future generations is complex. ... We are dealing with ethical questions. What should we do now to reduce

the harm done by climate change now and in the future? The answers to this question have to rest on ethical grounds. If Weitzman thinks otherwise, it must be because his own ethical assumptions seem so obviously true to him that he forgets they are ethical. Even his broad commitment to democracy is ethical, after all. Much more questionable is his specific ethical view that all values in cost-benefit analysis, including the discount rate, should be derived from the preferences people reveal in the market. That is by no means obviously true when future people do not participate in the market, and when people's choices in the market may not be well-informed and founded on proper deliberation. Weitzman makes judgments that are not only ethical but also contentious. ...

Take a person who is now living a life of a particular quality, and compare her with someone who will live a life of exactly the same quality a century from now. For example, imagine that some remote part of the world is magically insulated from the effects of global warming and all the other coming changes. In this remote spot, imagine someone in the next century lives a life that is just like the life of someone living now. Should we attach less value to the future life than the present one, just because it is in the future? If, somehow, there was a choice between these lives—either a person could live now or a person could live a life of exactly the same quality a century later—should we favor the existence of the present person rather than the future one?

I think most of us would naturally answer no to this question. We find it strange to suppose that the value of a person's well-being might vary simply according to the time when it occurs. We naturally think that well-being has the same value at any time. We may call this answer to the question "temporal impartiality." ...

[You may stop here. The rest of this excerpt is optional.]

The opposite of temporal impartiality is temporal partiality. One sort of temporal partiality is to discount future well-being compared with present well-being. Economists call this "pure discounting" or "pure time preference."

Temporal partiality versus temporal impartiality is one distinction. A different distinction is marked by the terms "temporal neutrality" and "temporal relativity." Temporal relativity is the view that the goodness of the world depends on the perspective of the particular time when it is evaluated. Suppose that in 2015 you contemplate two different possible futures for the world. You value each, and conclude that the first is better than the second. Then in 2020 you evaluate the very same two possibilities, and conclude that the second is better than the first. According to temporal relativity, each of your judgments may be correct. One possibility may genuinely be better than the other from the perspective of 2015, and genuinely worse from the perspective of 2020. Temporal neutrality is the opposite view: that the goodness of the world does not depend on a temporal perspective.

Temporal impartiality and temporal neutrality are associated. First, all impartial theories are neutral; this is obvious. Second, all plausible neutral theories are impartial. There are some neutral, partial theories, but they are implausible.

To see what is implausible about them, notice first that they all incorporate pure discounting at a constant rate from year to year. The only difference between one neutral, partial theory and another is their rate of discount. If the rate is 1 percent, well-being in every year is worth 1 percent less than wellbeing in the previous year, and 1 percent more than well-being in the following year. This is so whatever year you judge their value from.

This is a neutral, partial theory, but its implications are intolerable. It means that, as you look back into the past, each year that you go back is 1 percent more significant than its succeeding year. On this theory, the few thousand casualties of the battle of Hastings in 1066 work out to be almost as bad as the tens of millions of deaths caused by the Second World War. The 7,000 casualties of the battle of Marathon in 490 BC work out to be far, far worse than would be the slaughter of every single person alive on Earth today. Any neutral, partial theory will have similar consequences. They can all safely be rejected.

So, if you are to adopt pure discounting, which is partial, your theory will have to be relativist. And indeed, Kenneth Arrow, the leader among those economists who favor pure discounting, is explicitly relativist.¹ He thinks that each generation should discount the well-being of later generations compared with its own. Being a practical man, he does not consider past well-being, but we can assume that he would not assign enormous value to past events in the way that neutral discounting implies.

We most naturally take impartiality for granted, as I said. That is probably because we are trying to make our judgments of goodness from a neutral point of view. But if you were to give up the neutral standpoint and make your judgments from the particular standpoint of your own time, you might think it natural to give more value to well-being at that time than to wellbeing at other times. Once you stop trying to be neutral, you might consequently adopt pure discounting. This is Arrow's position.

Whether we should adopt pure time discounting therefore depends on whether goodness is really temporally relative. Is it? There is one major objection to temporally relative goodness. As time passes, each person occupies the perspective of many different times in sequence. The same is true of each government. If goodness differs from the different perspectives, and if these relative goodnesses have a practical effect, this will lead to a particular sort of incoherence in a person's life (and a government's). The objectives you pursue will vary from time to time in a way that will make your life incoherent.

Suppose, for instance, that you have time to see just one movie: either a less good movie on Wednesday or a better one on Friday. Suppose you have to buy the tickets on Monday. Monday's values discount well-being; they give less value to well-being on Friday than to well-being on Wednesday. Suppose indeed that their discount rate is enough to give more value to seeing the less good Wednesday movie than to seeing the better Friday movie. Suppose you make your judgment of value correctly on Monday and correctly decide to see the Wednesday movie.

¹ Kenneth Arrow, "Discounting, morality, and gaming," in *Discounting and Intergenerational Equity*, edited by P. R. Portney and J. P. Weyant (Washington DC: Resources for the Future, 1999), 13–21.

Now suppose that values are temporally relative, and from Friday's perspective well-being on the previous Wednesday is no more valuable than well-being on Friday. When Friday comes and you make a judgment from the perspective of Friday, you will correctly judge that the decision you made on Monday was wrong. Moreover, on Monday you could predict that this is the judgment you will correctly make on Friday. Suppose you make that prediction. Then, when you act rightly on Monday in buying the Wednesday tickets, you know that on Friday you will correctly judge that on Monday you acted wrongly. A theory that says you can act rightly even though you know that you will later correctly judge that you acted wrongly is not consistent with living a coherent life.

For this reason, temporal relativity seems to me an unpromising theory, and it is the only way that pure discounting can be justified. So we should not adopt pure discounting.

What attraction does it have, anyway? Most of the arguments that have been presented in its favor are versions of this one: utilitarianism, which does not allow discounting, has implications that seem too demanding. It implies that we should be saving and investing much more for the future than seems plausible.

Utilitarianism is indeed demanding. That is because a bit of economic investment now adds permanently to the world's stock of capital. It will continue to produce benefits almost forever. Making a sacrifice of consumption now, and instead saving more resources for the future, therefore leads to gains for a very long time. So if we value benefits at all times equally, a lot of present sacrifice will seem worthwhile. When the theory is worked out in detail, utilitarianism can easily imply that we should be saving more than half our income.² Common sense tells us that that is too much for us to sacrifice for the sake of future generations.

I think it would not seem too much if future generations were going to be worse off than we are. We should not feel entitled to live at a higher level than all the huge number of future people, when we could pass more resources down to them and still be as well off as them. The truly implausible feature of utilitarianism is that it asks us to make such a big sacrifice for future generations even if those generations will be better off than us.

The common-sense problem, then, is that utilitarianism asks us to make too big a sacrifice for better-off people. One solution is to give less weight to better-off people. This is exactly what prioritarianism does; it assigns diminishing marginal value to well-being. If we replace utilitarianism with prioritarianism, and make the marginal value of well-being diminish fast enough, the common-sense problem will evaporate.³

Pure discounting at a fast enough rate is another way to evaporate the problem. But it does not attack the problem's intuitive source, which is that we should not be asked to make a big sacrifice for better-off people. Pure discounting is an ad hoc fix. Given its initial implausibility, the incoherence it implies, and the weakness of the argument for it, we should reject it. ...

² Ibid. For another powerful statement of the demandingness objection, see Nordhaus, *A Question of Balance*, 182–84.

³ This conclusion is confirmed by calculations reported in Nordhaus, *A Question of Balance*, 187.

SUMMARY

The economic theory of the discount rate, built on ethical foundations, is well understood.⁴ We have covered the ethical core of the subject. We have learned that there is no good reason to take the discount rate for cost-benefit analysis from the interest rate on the money market. Nevertheless, there are excellent reasons to discount future commodities, as is the practice of economists. However, there are strong arguments against discounting future well-being: we should count well-being as equally valuable whenever it occurs. ...

⁴ I recommend an article by Joseph Stiglitz, “The rate of discount for benefit-cost analysis and the theory of second best,” in *Discounting for Time and Risk in Energy Policy*, 151–204.