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change economics*

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# Nordhaus on philosophy in climate change economics

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**Abstract:** Nordhaus' contribution to climate change economics is well-known and, for many, praiseworthy. But his refusal to acknowledge his normative stances is philosophically problematic. This article explores his arguments about philosophy in the economics of climate change found in his review of the Stern's *Review* (2007). It concludes that Nordhaus nonetheless relies on normative, ethical assumptions, whose oversight hinders the finding of a solution to the problems he tries himself to solve.

**Keywords:** Nordhaus, climate change economics, normativity, ethics, discounting

## Introduction

William D. Nordhaus is one of the laureates of the 2018 Nobel Memorial Prize in Economic Science. Granted the stature of this celebrated scholar, it is worth considering his arguments about philosophy in economics on their own merit. My main aim in this article is to assess those arguments, especially those found in his 2007 paper 'A Review of the Stern Review on the Economics of Climate Change' (Nordhaus, 2007), and to show that they exemplify, to a large extent, what *not* to do when dealing with philosophical questions in economics, and with the place of philosophy in economics. Moving away from his refusal to acknowledge his normative, philosophical assumptions could lift some ambiguities and resolve some tensions in his account of climate change economics.

The role of philosophy and especially of ethics in economics (and in any scientific discipline for that matter) is still a debated issue. It is a matter of controversy, for instance, whether or not values (epistemic or otherwise) play a role in science. However, what should *not* be debated is that the *question* of this role does belong

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to philosophy and not economics. Doing science is one thing and talking about science is another. The question of the legitimacy or the superiority of any scientific discipline is indeed an epistemological question. For instance, when Newton argues that 'natural philosophy' (i.e. physics) is about such and such and not about other stuff (as Descartes would have it), he is not doing physics but philosophy (i.e. epistemology or philosophy of science). Therefore, whether or not economics should take into account ethical arguments is a philosophical question, and when Nordhaus is considering the arguments about 'ethical reasoning on discount rates', he is plainly philosophizing.

## The indetermination of philosophical background

In what appears to be a slightly different version of the Preface Paradox [1], Nordhaus (2007, p. 692) tells us that he finds 'the ethical reasoning on discount rates in the *Review* largely irrelevant for the actual investments and negotiations about climate change', but goes on to discuss it for half a dozen paragraphs. His first argument attacks the universality of the ethical assumptions behind the Stern's *Review*. So, the 'logic behind the Review's social welfare function is not as universal as it would have us believe' because it 'stems from the British utilitarian tradition with all the controversies and baggage that accompany that philosophical stance' (p. 692). There are quite a few problems with this argument that I want to discuss.

First, it would be more precise to say 'ethical approach' rather than 'logic', but most likely Nordhaus had the ethical assumptions in mind. This could also be labelled as the 'philosophical background' of a given economic theory. That being said, his terminology appears to be symptomatic of his aversion for any normativity.

Second, it cannot be that the *Review's* philosophical stance is not universal because of its British origins, for the latter has nothing to do with its validity nor its applicability. Neither philosophy in general nor any of its doctrines in particular are any more 'Greek' than natural selection (Darwin) or political economy (Smith) are 'British'. The accusation is even more surprising since Nordhaus himself adopts some kind of utilitarian stance based on economic welfare as the maximal marginal rate of return. If, on the one hand, what is meant is that utilitarianism is not universally *applied*, then the argument is trivial because it could be said of any ethical approach whatsoever. On the other hand, if the argument targets the applicability—i.e. that utilitarianism *could not* be applied universally—then it is in need of better support. The more relevant question is which ethical approach would

be best in addressing the question of climate change. Whatever the answer may be, it is both an ethical and political choice where *many* answers are indeed *possible*. In any case, it would require justification, which will necessarily be philosophical in nature, unless one is willing to address or even overcome the naturalistic fallacy. [2]

Third, it is quite surprising that Nordhaus is concerned with utilitarianism, which holds that what is right maximizes total or average welfare, because this ethical doctrine could be said to belong to *any* economic theory whatsoever. After all, one obvious meaning of economy is 'the employment of our resources [...] so that we may derive from them the maximum net return of utility' (Keynes 1917, p. 7). Although the question of which ethical doctrine is best suited to economics remains open, there is a strong historical link between utilitarianism and economics. There are indeed strong conceptual links between the economic and the utilitarian pictures of desirability (Brennan 2007). Thereby, it would be quite unusual for an economist to argue against the idea that an intervention or a policy should not be judged by considerations of the amount of utility it brings about or that the total welfare is not to be maximized in general. Indeed, Nordhaus adopts this thesis. He adopts a cost-benefit model that optimizes a social welfare function, which is the discounted sum of the population-weighted utility of per capita consumption (Nordhaus 2017), and this model bestows a fairly low value on the 'generational inequality aversion.' Therefore, by attacking the ethical doctrine that appears to be 'natural' for economics and without providing an alternative, Nordhaus leaves us with no ground on which our assumptions could be based.

Nordhaus then goes on with another argument in which he presents at least four different ethical stances that might have been adopted by the *Review*. The purpose of this presentation is presumably to show that many different ethical stances can be put forward to justify a given descriptive, economic proposition. Of course, this is trivial. It seems that the argument is that the mere *possibility* of various ethical stances is a problem for a specific application of any ethical stance. Obviously, the question is not whether alternative ethical stances are possible or available but rather which one is better, that is, more justified, than the others in a given context. However, Nordhaus can only enter the arena of a philosophical debate at the expense of contradicting himself (recall that he claims that philosophical questions are irrelevant here). Therefore, it appears that his strategy amounts to presenting several ethical stances that could be adopted and then hoping that this will provoke a feeling of unease and indecision because, supposedly, no justification could be provided for choosing one stance over another.

One of these alternative ethical stances that Nordhaus suggests is a 'Rawlsian perspective that societies should maximize the economic well-being of the poorest generation' (Nordhaus 2007, p. 692). He then asserts that the 'ethical implication of this policy would be that current consumption should *increase* sharply to reflect the projected future improvements in productivity'. There are two assumptions behind this assertion, and both are misguided. The first assumption is about the economic growth and more specifically its Cornucopian version. This version draws from the history of human-environment relationships in which the great forces of technological change continue to increase nature's bounty, or substitutes for it. It thus relies on an inductive inference based upon the quasi-steady increase in income per person over the last two centuries or so, and supposes that global damages to the environment can be compensated through technology. This inductive inference is dubious and as likely to fail as that of 'Russell's chicken' in need of a 'more refined view as to the uniformity of nature' (Russell 2009, p. 123). In effect, Nordhaus seems optimistic about the potential impacts of global warming, estimating the damages on global income at 8,5% at a 6°C warming (Nordhaus 2017, p. 1519). A recent study contrarily concludes that Canada and the United States are likely to lose over 10% of their income at a less than 6°C warming (Kahn et al. 2019).

The second assumption is that the present generation is *diachronically* the poorest generation because of economic growth. In other words, every generation is richer than the precedent one. The Rawlsian perspective thus leads to the conclusion that the present generation must be helped, and that is why current consumption should be increased. Despite some recent improvements, as some countries seemingly follow an environmental Kuznets curve, decoupling economic growth and carbon emissions and/or environmental damage is still a remote possibility. Moreover, economic growth without environmental resources and healthy ecosystems is illusory. In effect, even in countries with a lot of nonecosystem services (e.g., technology, manufacturing, services) the increasing consumption of natural resources means that environmental impacts are higher and are often exported to other countries, whereas economic growth alone cannot lead to environmental sustainability (Cumming and von Cramon-Taubadel 2018). Furthermore, as a resource becomes scarcer, its price rises. Therefore, it is dubious to suppose that both economic growth and purchasing power will increase in a context of grave or even medium environmental degradation (more on this matter later).

## Normativity and sustainability

Nordhaus could object that none of these alternatives is meant as a real, legitimate ethical background for climate economics. Rather, and as mentioned, they are discursive elements of a rationale aimed at showing that the mere possibility of many ethical perspectives is sufficient to support the claim that none of them should be adopted. In other words, ethical perspectives and philosophical assumptions would be irrelevant and thus superfluous in such a matter. It is true that consensus is rare in philosophy, or at least rarer than in the majority of the natural sciences, but could this be an argument against its legitimacy? Nordhaus claims anyway that his approach is exclusively descriptive and not normative in any way. However, he, like anybody else, cannot exonerate his approach from any normative assumptions whatsoever.

In effect, Nordhaus adopts the standard, normative economics presuppositions: countries should adopt capitalist market economies and a strategic attitude of self-interest. [3] As argued by Habermas (1996, p. xvii), in these economies strategic action (instead of e.g. communicative action) acquires greater importance for social coordination, and an actor who adopts a strategic attitude is 'primarily concerned with getting his or her way in a social environment that includes other actors'. Furthermore, even if we agree with the assumption that 'people with equivalent consumption bundles should be treated as having the same level of economic welfare' (Nordhaus 2007, p. 693), one could argue that maximizing welfare is not necessarily what a society should do, and that it should rather maximize (e.g.) the sets of capabilities. [4] Thus, these are already normative assumptions (and not only because of 'epistemic values'). Finally, there is neither evidence for the claim that self-interest maximization provides the best approximation to actual human behaviour nor that it leads necessarily to optimum economic conditions (Sen 1999).

There are two other sets of normative claims and assumptions, upon which Nordhaus relies. First, based on the previous normative assumptions, Nordhaus tries to determine what countries themselves would do if they were fully informed about the future costs of climate change. That is, he tries to discover how much greenhouse gas mitigation would be undertaken if countries could overcome some obstacles that persuade them to emit profligately. Yet, he calls the obtained results as 'optimal' (Nordhaus 2008, p. 14). As rightly pointed out by Kelleher (2019, p. 95), the 'rhetorical use to which Nordhaus puts his results is normative, and not merely positive or descriptive'. Again, even without such a use of rhetoric, these results are framed within normative presuppositions about what society should consider as

optimal. Surprisingly, Nordhaus admits that climate policy models are fraught with uncertainties that lead to 'uncharted territory in economic growth theory' (Nordhaus 2007, p. 693), but refuses nonetheless to use reason (i.e. philosophy) over and beyond what economics can do. [5] The uncertainties related to the long-run growth path of the global economy and the adaptability of future societies to an altered climate are here to stay, but that shouldn't lead to policy paralysis.

Second, as previously discussed, this strategy to determine the most 'profitable' mitigation strategy relies on a quite conservative interpretation of economic theory, which implies an inductive inference for determining a temporal discount rate. Let me explain. The debate between Nordhaus and Stern over the choice of a discount rate is notorious and touches upon the issue of the relevance of philosophical assumptions in economics. Yet, this debate can be interpreted as one between different (ethical) attitudes toward risks of type I and type II errors, or put differently, between practical wisdom (or *phronesis*) and theoretical wisdom (or *sophia*). Type I error, which amounts to a false positive, consists in concluding that there is a phenomenon or an effect when in fact there is none; whereas type II error, which amounts to a false negative, consists in missing an existing phenomenon or effect. On the one hand, scientific practice can be seen as an example of theoretical wisdom since it gives higher priority to avoiding type I errors, because scientists try to add only reasonably certain information to the body of knowledge as opposed to more speculative knowledge (Lemons et al. 1997). On the other hand, when errors have practical consequences (e.g. the crash of an airplane), applying practical wisdom by avoiding type II errors (e.g. acting as if there were no defect in this airplane when there is one) would be counted as more serious than avoiding type I errors. Many controversies on risk assessment concern the balance between risks of type I and type II errors (Hansson 2018).

Now, both Nordhaus and Stern agree that climate change involves considerable uncertainty about the precise magnitude and distribution of its effects on the planet and societies. But they disagree about which attitude toward risks, which types of wisdom, either practical or theoretical, we should adopt. Indeed, Stern (2008; 2014 a, b) argues that we should exercise practical wisdom because climate change might result in catastrophic outcomes, even in the absence of strong evidence in that regard, and that the possibility of such a catastrophe, along with ethics, should indicate broad precautionary directions for policy. Conversely, Nordhaus argues that this possible catastrophe, though probable, should not be considered as a given in the determination of mitigation policy granted the absence of strong scientific evidence,

but rather as a possibility among others in a cost-benefit analysis. Therefore, these divergent points of view ascribe different epistemological weights to the projection of climate change effects, and consequently different ethical importance to this projection.

Perhaps Nordhaus relies heavily, and implicitly, on a difficult and quite polemic thesis derived from 'ethical naturalism', according to which ethical properties, distinctions, and facts are natural. This claim often results from prior commitment to a certain form of metaphysical naturalism. According to this thesis, to claim that this action maximizes welfare would amount to a claim that the action is right. In other words, economic description would have some kind of built-in normativity about practical relevance. Such a philosophical commitment is implausible, because, at the very least, it would assert that there is no need to provide justification or debate about any economic policy. Obviously, we are compelled to do so. As acknowledged by Sen (1970, p. 105) about a special branch of economics, 'It is obvious that welfare economics cannot be 'value-free', for the recommendations it aims to arrive at are themselves value judgments'. Even more to the point, this thesis must (implausibly) precise what kind of facts, which empirical evidence, are to be looked for supporting this very thesis about the *rightness* of welfare maximization (rather than welfare maximization *per se*).

Nordhaus' conservative interpretation of economic theory is manifest on two points. First, its belief in economic growth is based on inductive grounds and should be similar to what happened in the last two centuries. Second, his choice of a discount rate for long periods relevant to climate change impacts is also similar to what can be applied to contemporary economies for much shorter periods. Thus, the projection utilized in the determination of mitigation policy should be mostly based on what we observed in the past. Of course, there is cogency in supporting projective inferences on evidence drawn from the past and present, as Nordhaus does. These could be labelled 'direct evidence' because future economic growth and discount rate are basically taken to be the same as in the past (instead of inferring future parameters via some rule). However, as mentioned, it is hard to keep confidence that future generations will enjoy the same stock of natural capital or even the same economic growth. In other words, it is worth considering that the standard economic assumptions are turning into bad inductive inferences. In effect, economic tools are notoriously problematic in the very long term. Therefore, this stance ascribes a peculiar, privileged epistemic status to a certain interpretation of our economic past and puts a high confidence in extrapolative inferences.



The question of the economic growth assumption is obviously important because it entails the claim that future generations will be better off (i.e. higher living standards), and that, *without discounting*, the present generation should save a very large portion of one's income to mitigate future climate change-induced costs. Conversely, discounting future goods leads to a wait-and-see approach and to a merely disguised exhortation to increase consumption right now, with the well-known consequence that for virtually any positive discount rate, it is always more lucrative to exploit natural resources now than to conserve the ecosystems and the biodiversity at the basis of these resources. If we admit these environmental costs despite their uncertainty, is the economic growth assumption really justified? What seems to be the main point that is often missed—presumably the 'more refined view'—is that *both* these costs and the economic growth (at least a large part of it) depend on the *environment*. So, by and large, these costs come with a diminished capacity to sustain economic growth. Consequently, with the 'ratchet effect of a flow-stock process and lock-in of capital and infrastructure' (Stern 2014a, p. 11), and despite large uncertainties, large climate change-induced costs entail (1) environmental degradation, (2) inflation and (3) a limited economic growth. The magnitude and distribution of these effects can still be disputed, but at least their consideration should affect the choice of a discount rate and thus of mitigation policy.

## Conclusion

Nordhaus ended his 1977 article by asking the question: 'How costly are the projected changes in (or the uncertainties about) the climate likely to be, and therefore to what level of control should we aspire?' (Nordhaus 1977, p. 346). It should be acknowledged that Nordhaus, like anybody else and despite his contribution to climate change economics, cannot dispense with normative assumptions, both ethical and epistemological. Since those who pretend to do without philosophy in everything tend to do bad philosophy, acknowledging this fact should contribute to better framing of the problems of this discipline and thus to their solutions.

## Endnotes

[1] This kind of paradox arises when the author of a book, despite having good reasons to believe that each statement in her book is true, writes a disclaimer in the preface saying that it is likely that there are errors or mistakes in the book.

[2] The procedure of deriving ethical conclusions from non-ethical premises or of defining ethical notions in non-ethical terms. A derivative would be an unjustified appeal to nature where something would be deemed desirable because it is natural.

[3] While it is obvious that Nordhaus adopts these presuppositions in the works quoted above, I will not make a full demonstration of it, because my point is not about which ethical particular presuppositions he adopts but that he adopts such particular presuppositions.

[4] According to Sen (1999), the set of capabilities is the ensemble of alternative combinations of functionings, i.e. the various things a person may value doing or being. Sen (1999, pp. 74f) argues that the appropriate 'space' for many evaluative purposes is neither that of utilities (as claimed by welfarists), nor that of primary goods (as demanded by Rawls), but that of substantive freedoms – the capabilities.

[5] Analogously, Richard Feynman said, during the commission that investigated the Challenger, that 'When you don't have data, you have to use reasons.'

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