ECONOMICS OF SUSTAINABLE DEVELOPMENT: RECONCILING DIVERSE INTERTEMPORAL PERSPECTIVES

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Keywords: Sustainable development, ethics, future generations, discounting, time preference, compensation, resource depletion, diminishing marginal utility, risk

Contents

Summary

While there are many different views on the valuation of future events, there are also areas of agreement. From various perspectives, it can be argued that future generations' interests should not be discounted, just because of their futurity. There are some mechanisms whereby present generations' actions support future generations, but these may not be sufficiently efficacious, and some mechanisms may threaten future generations' well-being. The absence of future generations from decision making emphasizes the external nature of environmental costs. There are difficulties in internalizing these intergenerationally imposed costs. Depletion of resources is to an extent accompanied by compensating improvement in technology and accumulation of capital, though these do not guarantee diminishing marginal utility as a justification of discounting. Conventional treatment of risk does not adequately deal with the complexity of future unknown-ness. Where views about future valuation do not coincide, there are several means of combining them, though each has its problems. Sustainable development is not a clear operational concept; in some senses it is redundant to economic analysis; and it may be that something better than its provisions may be offered to future generations.

1. Introduction

The four chapters surrounding this one in the EOLSS (Natural Resources, Economic

Growth and Sustainability: A Neoclassical Perspective, Perspectives on Discounting the Future, Intertemporal Natural Resources Management; can it be left to the market?, and Essential Components of Future Ethics) all approach valuation of the future from different directions. Ott considers obligations to future generations and individuals from several philosophical perspectives in Essential Components of Future Ethics, without going into the detailed trading of cost and benefit that engages economists. Krautkraemer in Natural Resources, Economic Growth and Sustainability: A Neoclassical Perspective adopts an enlightened neo-classical economist's position, which modifies the traditional view that markets are completely adept in allocating resources. In his treatment of future resource constraints and technology, he considers himself a "cautious optimist": which is to say that he can see possibilities for technology to solve problems, but does not take it for granted that it will inevitably succeed in doing so. In Perspectives on Discounting the Future, the author adopts a view not much beholden to any tradition except that of pragmatism and common sense: in relation to future values, the question is always "for what particular reason should consumption to future generations be valued at other-than-parity with that to the present generation?". The overview chapter: Welfare Economics and Sustainable Development places discounting in the wider welfare context of market success or failure, with particular reference to environment.

Central to the tetrahedron of these chapters is sustainability. This word has been widely used, particularly by politicians and in the media, as a near-synonym of "everything I approve of": however, its established meaning is "capable of continuing for a long time, perhaps indefinitely", and it is in this sense that the term will be used. Sustainability and sustainable development have also been used synonymously, although sustainable development is only a particular manifestation of sustainability. The most-often quoted definition of sustainable development has been "*development that meets the needs of the present generation, without compromising the ability of future generations to meet their own needs*" (Brundtland, 1987): this definition will be provisionally adopted.

None of the chapters rejects the broad concept of sustainability, though there are suggestions that future generations might be offered something *better* than sustainability as presently conceived.

They are, of course, like this one, set in the wider context in which sustainability is debated. Their focus, and the focus in this chapter, is on economic and philosophical issues. This is not to deny that underlying these issues are biological and physical realities which these approaches must, and do, engage with.

Since this chapter also revolves around discounting, it is pertinent to repeat the basic definition and form of the process given in *Perspectives on Discounting the Future*.

Discounting is the process of giving a lesser equivalent present value to a commodity, resource, service, event or experience on the grounds that its consumption lies in the future. The mathematical form which discounting has normally taken is a negative exponential function, that is:

$$[Equivalent\ present\ value] = \frac{[Future\ value\ of\ \ some\ event]}{(1+[discount\ rate])^{[time\ lapse\ before\ event\ occurs]}} \quad (1)$$

"Event" is an umbrella term for any brief process – such as consuming goods or using services or enjoying environments or experiencing sensations or expending resources – which has positive or negative value. "Discount rate" is some constant of the process of decline in value, often but not invariably equated with interest rate or rate of return on investment.

Traditionally, this functional form has been accepted almost without question, the debates centering on the actual discount rate to be used, or on whether discounting should be done at all. However, by the beginning of the 21st century a wider range of functional forms has been proposed, with the general character that the effective discount rate is lower, the longer the period over which discounting is practiced. This is discussed in Section 4.3.

There is an apparently irreconcilable opposition between sustainable development, which is what governments and people say they favor, and discounting, which is what governments and people actually do, in assigning values to future benefits and costs. Disquiet about this opposition is reflected increasingly, among the wider community of economists, in concern about the drastic impact of discounting over the very long term. Portney and Weyant (1999) collate such dissenting views, from a number of rather mainstream economists.

In *Perspectives on Discounting the Future*, the author laid out his own viewpoint on discounting: in this chapter, the author explores how the various viewpoints agree or differ, wherein the disagreement lies, and whether, and how, due compromise can be found, or whether there are aspects of any viewpoint that can be argued away. Sections 2–6 treat individual arguments about the weight to be given to future generations. Section 7 looks at various ways of reconciling apparently opposing arguments, and Section 8 compares the advantages of protecting the future's interest through sustainability constraints, or by "giving each generation its due" by appropriate use, or non-use, of discounting.

In places the arguments of the above mentioned four closely related chapters are summarized briefly, so that the flow of this chapter's argument can be followed, without a break to refer to these other documents.

2. Do Future Generations Matter?

2.1. Asking the Right Questions about Future Generations

Some confusion is evident in the literature between the question "does it matter if future generations exist/are born?" and the question "if future generations exist/are born, do they matter?" The first is an entirely philosophical – one might say metaphysical – issue: the second, while having philosophical overtones, is the subject matter of that branch of welfare economics which undertakes intergenerational discounting.

If future generations do not matter, then their being or not-being must be a subject of indifference. This, importantly, would suggest that discounting cannot be justified on the basis of the probability of catastrophe (which Ng and Wills use in *Welfare Economics and Sustainable Development* as a basis for a nominal discount rate not more than 0.1%). Instead, discounting could reflect, in a way that its traditional form cannot reproduce, the proportion of future benefit that accrues to presently-living people.

If they *do* matter, the further questions are "to what extent do they matter", and "how is their importance to be reflected in present decision making?"

2.2. The Relevant Political Constituency

According to Marglin (1963a), it is "axiomatic that a democratic government reflects only the preferences of the individuals who are presently members of the body politic", and "a democratic view of the state does not countenance governmental intervention on behalf of future generations". This seems an intertemporal equivalent of the parochial view of international relations: that national governments are beholden only to the interests of their own electorate, and are ethically justified in ignoring other interests – except of course in so far as doing so would provoke threats to national interest. The key difference is that future generations are not present to exert retaliatory action. This is a pragmatic argument, flowing naturally from a contractarian approach to philosophy, but it is not a very ethically admirable one. There is now a distinctly out-of-touch feeling to Marglin's assertion. We have moved on from there: acceptance of sustainable development implies that governments *do* acknowledge a duty to constituencies of the future. And in a vague way their electorates approve of their doing so, provided that it does not entail much present sacrifice.

2.3. Philosophers' Perspectives – Should We Care, and if so Why?

At first sight it might seem surprising that philosophers have offered, more explicitly and more variously than economists have done, arguments that future generations should *not* count to any extent. After all, economists' discounting entails only that the importance of the future should fade away, according to a rule that equally reduces the importance of *present* generations' future well-being. They do not usually suggest, as economists, that there is a particular set of future individuals whose well-being, or consumption, should be entirely ignored.

But perhaps it is not so surprising. Philosophers do on the whole require very stringent tests for claims that anything should, or should not, count. Arguments against future generations that might strike readers as sophistries, may in fact represent a detailed exploration of possibilities, in order that no stone should be left unturned, that might otherwise be thrown at the glass-house of sustainable development. A particular line of skeptical enquiry may reflect, not so much a heartfelt belief in a viewpoint, as an intellectual obligation to test its credentials. *Essential Components of Future Ethics* considers some of the ways in which the claims for future generations have been put in

the dock and asked to account for themselves. It is plain that some of those making the case for the prosecution do not feel comfortable about it. And one of the valuable results of this enquiry may be to reveal, through revulsion at the outcomes of the arguments, the human conviction that future generations *ought* to count, whatever the sophistication of the argument against that proposition. It seems, for example, monstrous that we should be free to damage the well-being of future generations, just because we do not now know which *particular* individuals will be wronged. That is not the basis on which swathes of health and safety legislation are enacted for the benefit of the present generation. Nor does it seem acceptable to entertain the claims of future generations only to the extent that we expect to share values with it: Barry (1977) considers this provision "distasteful", and Goodin, "odious" (1985). Goodin himself erects an argument for protecting future generations on the grounds that they are vulnerable to our possible indifference or hostility. Again, the common human feeling that "our heart goes out" to the vulnerable could motivate us, once future generations' circumstances have been envisaged.

It is this felt conviction that future persons count, that has made sustainable development, as an idea, so intuitively acceptable. When Heilbroner (1981) wrote "what has posterity ever done for me?", he was drawing satirical attention to the asymmetry of power relations between generations, not seriously questioning the entitlements of those whom accidental circumstance places later in history.

Even the iconically unsentimental Thatcher (1989), a notable champion of individual liberty, could assert that

No generation has a freehold on this Earth. All we have is a life tenancy – with a full repairing lease.

In fact, as Ott makes clear in *Essential Components of Future Ethics*, each of the arguments for excluding or diminishing the interests of future generations may be contested from the head as well as from the heart, and his overall conclusion is that future generations should count. Indeed, it might be said in justice that the burden of proving the opposite contention – that future generations should be *excluded* from consideration or treated less favorably than the present generation – lies with the generation (the present one) that seeks to impose such an asymmetrical treatment.

2.4. Economists' perspectives

With exceptions such as noted above, economists have on the whole agreed that future generations should not be disenfranchised just because of their date of birth. Utilitarianism, the philosophy from which much welfare economics derives, is often deemed to be narrow and short term in its view of all that is "other". Yet economists such as Hume and Bentham were wary of the effects of selfishness and short-sightedness, and the position of utilitarianism on future generations was memorably summarized by Sidgwick (1874), who believed that the time at which a man exists cannot affect the value of his happiness from a universal point of view; and that the interests of posterity must concern a Utilitarian.

The focus is not on particular individuals whose interests may be damaged, but on sources of well-being that may – or may not – accrue to individuals as yet unknown.

For Ng and Wills in *Welfare Economics and Sustainable Development*, "impartiality between generations" is a position agreed: their acceptance of discounting is to do with reasons why it is either not in the end an issue, or an issue to be dealt with in other ways. Similarly, in *Natural Resources, Economic Growth and Sustainability: A Neoclassical Perspective* for Krautkraemer the discounting of future generations' well-being is to do with reasons other than its *futurity as such*, or the date of birth of its beneficiaries.

On the other hand, if future generations really do *not* count, then to preach sustainable development is vapid tub-thumping, a claim on that present utility which may be derived from moral self-congratulation.

Let it be provisionally agreed, on ethical and political grounds, that future generations do count. It matters whether they exist or not; and, if they exist, their interests are deemed to matter. The next questions are, how *much* do they matter? and is there need to *do* anything about it? These are addressed in Section 3.

3. Can the Present Generation safely be left to protect the Interests of Future Generations?

Of course in a sense the present generation *must* be left to protect the interests of future generations, because at present there is no-one else living to take action on their behalf. The real issue is whether the natural impulse of presently-living people can *safely* be assigned a protective role for the future.

This section considers human impatience and selfishness, and their influence on discounting, and asks whether, nonetheless, there are mechanisms which might reliably cause self-interested individuals to behave voluntarily in a manner that gives adequate attention to future generations. After all, classical economists believed that "every individual in pursuing his own selfish interest is led, as if by an invisible hand, to achieve the best good of all" (Smith, 1776). If it is not so, then protection and promotion of the interests of future generations require some form of public intervention, which is the subject of Section 4.

3.1. Pure Time Preference

Offered the choice between good things now and good things at some future time, people generally express preference for good things now (and for postponement of bad things until some future time). Almost invariably, economists have interpreted such a *time preference* as preference for good things *sooner* rather than *later*.

This tendency has been acerbically ascribed to a "failure of the imagination" (Ramsey, 1928), a "defective telescopic faculty" (Pigou, 1929), and "rapacity and the conquest of reason by passion" (Harrod, 1948). Plato (C4 BC) saw one aspect of humans' superiority as their capacity for making decisions in which future, foreseeable consequences are

weighed in full measure against present gratification: to submit to the imperative of immediate gratification is to revert to an animal state.

However, such expert dismissive judgment of human tendencies might appear elitist and undemocratic: it apparently repudiates the democratic ideal of consumer sovereignty. To evaluate pure time preference impartially requires analysis of *why* the tendency exists and *why* it should or should not be incorporated in societal preferences. Such a critical review is presented in Price (1993, 2005a). The main issues arising are as follows.

Human mortality is a rational cause for a self-interested individual to put less weight on the future. But this self-interest takes no account of interests persisting or arising beyond that individual's life-span. The ethical claims of future generations, as discussed above, have not been included in the balance.

The evolutionary conditioning that makes impatience a successful strategy for animals set in a context of common property resources is not appropriate to a human context, in which proprietary resources are prominent. Not even the self-interest of an individual's own future is served in the form of discounting implanted by evolution. Nevertheless, early possession of resources may yield more years of benefit to the possessor. This is because of the positive productivity of capital. If offered the restoration of a degraded ecosystem sooner rather than later, conservationists would be quite right to prefer it sooner. That expressed self-interest is not contrary to the interests of future generations, who enjoy the benefits of the restored ecosystem regardless of whether restoration comes early or late in the life-span of the present generation. The fuller relevance of the productivity of capital argument is explored in Sections 4 and 5.

If authority for discounting were to be sought in democratic approval, that authority would apply as much to the *form* as to the *fact* of discounting. The overwhelming evidence is that individuals' decisions arise from discounting which differs widely from a simple negative exponential. Whether it is in their self-interest so to behave is a separate issue.

The most dramatic indicator of individuals' dissent from the commonly accepted form of discounting is seen in preferences revised as time unfolds. The expressed and realized preference for early over late gratification in forward-looking decisions is balanced by equally expressed but futile regrets that late gratification has been forgone or present pain incurred, once outcomes are reviewed in hindsight. Sen's (1957) assertion, that the relevant evaluation of future gratification is the evaluation made *in* the future, applies as much to the present generation's own future as it does to the future of future generations.

There remains the practical argument, that one is entitled to act in one's perceived self-interest, because this is the best among the real set of bad options (e.g. better than allowing the judgment of self-interest to be made by an autocratic contemporary, whose motives for so doing may also be suspect). This anti-authoritarian view, however, does not adequately support the case for contemporaries collectively to take lightly the interests of future generations.

All these factors are more fully discussed in *Perspectives on Discounting the Future*.

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