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THE STANDARD OF LIVING:
UNCERTAINTY, INEQUALITY AND OPPORTUNITY

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*This paper is a response to Amartya Sen's 1985 Tanner Lectures at the University of Cambridge, on The Standard of Living. It is based on my discussant's comments, delivered at a seminar after the lectures, in March 1985. I am indebted to Amartya Sen for discussions and correspondence on these issues over the past few years.

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1. Introduction

"Upon the fairest prospects of earthly happiness,
attend uncertainty and mischance."

- epitaph in Madingley Church

If it is hard to think of an idea more immediate than that of the living standard, it must be equally hard to think of a phenomenon more pervasive than that of uncertainty. As Arrow (1971) has noted, almost every aspect of economic life, and life in general, is influenced by uncertainty. How, then, does the presence of uncertainty affect the conceptualization of the standard of living? This is the question to which these comments are addressed. In the time available I will only be able to touch upon a limited number of issues, and I will focus attention on some key points raised in Sen's lectures.

At the core of Sen's first Tanner lecture is a critique of utility based views of the standard of living. In terms of what he calls the competitive plurality of views on the standard of living, the utility approach is clearly rejected by Sen. In his second lecture Sen goes on to develop an alternative line of argument whose culmination is in the advocacy of what is termed the capabilities approach to the standard of living. However, as Sen is well aware, there are several issues that still have to be sorted out in terms of the constitutive plurality of this approach. As we shall see, uncertainty considerations impinge upon both the competitive and the constitutive plurality of views in the standard of living. In particular, it will be argued that while uncertainty strengthens much of Sen's critique of utility based views,

it raises and highlights some tricky problems in the constitutive pluralism of the capabilities approach, problems which deserve serious attention.

2. The Sen-Williams example

To focus ideas, consider the following example. There are two individuals, Sen and Williams (those who wish to stick to formal notation can think of these individuals as A and B, respectively), and a cake. Since I want to introduce uncertainty I will give them the option of either dividing the cake equally, or of tossing for the cake with a coin that is fair, and is known to be fair. What will Sen and Williams decide? I do not know, but I want the example set up so that both choose to toss for the cake rather than, for example, divide it equally. So, after the toss one person has all the cake and the other has none. Suppose (in deference to this year's Tanner lecturer) that Sen wins and Williams loses.

There appears to be great inequality in the standard of living of the two agents ex post. Suppose our egalitarian sentiments are aroused, and we move to equalize the cake distribution. What sorts of arguments might Sen use to try to stem this egalitarianism? Of course we know he will not use the argument that he is deeply miserable because he loathes and detests cake--the correct response to this is of course to tell him to give some of his cake to poor Williams, thereby making both of them better off while equalizing the cake distribution. The argument Sen might try to get away with is that in fact he is less happy than Williams despite having more cake because he (Sen) adores

cake and would like to have his cake, eat it, and have some more, whereas Williams does not appreciate the finer points of cake. But of course by now we have all read Sen's first Tanner lecture, and know how to dispose of these utility based arguments. The fact of the matter is, we tell him, that he has a higher standard of living than Williams --whether measured in terms of opulence or capabilities since this is a society in which cake is the unit of account, medium of exchange, and store of value--and that we wish to equalize that standard of living by taking some of his cake and giving it to Williams.

It is now that Sen turns to the argument of the second Tanner lecture: redistribution of cake after the event is akin to denying him the freedom to decide whether to toss for the cake or to divide it equally. By taking away the cake he won fair and square we may or may not reduce his standard of living ex post. But we certainly reduce his ex ante capabilities and, perhaps equally important, we reduce the ex ante capabilities of Williams as well, by in effect nullifying his choice to gamble rather than play safe. It is of course interesting to speculate on how Williams might argue, faced with the prospect of turning down the transfer of cake ex post, in defense of his and Sen's freedom to engage in lotteries of their choice ex ante! But by now the example has done its work in introducing the central issues, and it is time to move on to a more detailed analysis.

3. Uncertainty and the utility based view of the standard of living

In his discussion of the claims of utility in the evaluation of the standard of living, Sen distinguishes between two possible uses of utility--as an object of value and as the method of valuation. Running across this are at least three different ways of defining utility--pleasure, desire fulfillment, and choice. For each of the six resulting boxes Sen carries out a meticulous critique of the utility view. The links between utility, in any of the six versions, and the living standard are argued to be weak--"they are second cousins rather than siblings." How does the presence of uncertainty affect this assessment?

The theory of rational choice under uncertainty is by now well developed and I need not go into the details here. Suffice it to say that under certain axioms (see Arrow, 1971), choice between lotteries is guided by the expected utility of each lottery--this expected utility being the sum of the utility of each outcome weighted by its probability. These axioms are not of course uncontroversial, but in what follows I shall assume that the "expected utility theorem" holds (Machina, 1982, shows that even if one of the more controversial axioms is violated, results akin to the expected utility theorem can still be derived, albeit only locally). The key issue that uncertainty raises is that of ex ante versus ex post: should the standard of living be evaluated ex ante, ex post, or some combination of the two?

If we take the ex post view, then the resolution of the lottery has taken place, and the individual is faced with an actual outcome. What is his standard of living? It should be clear that Sen's critique

of the utility based view carries over straightforwardly to this situation. Utility as pleasure, or as desire fulfillment, can be argued to be an unsatisfactory reflector of the living standard, and indeed it was on these grounds that we turned down one of the arguments against redistributing cake in the Sen-Williams example. But the case of uncertainty highlights the weakness of choice as a reflector of well-being, *ex post*. Sen has rightly criticized the simple identification of the two as overlooking the complexities of motivation; it would, for example, be rather absurd to try and characterize the giving up of one's life for a cause in terms of the maximization of a utility function into which the cause enters as an argument. But there is a simpler and more direct criticism--choice is by definition *ex ante*. I may quite happily choose to take a risk, but be miserable once the (depressing) outcome is announced. The outcome was of course chosen, in probability, by choice of the lottery. The many-one correspondence between outcomes and action, a defining feature of choice under uncertainty, undermines the links between choice, utility and the living standard.

What of the *ex ante* position? Here again, if we were to treat expected utility as a utility, Sen's critique of utility as an appropriate evaluation of the standard of living would go through. Whether we think of expected utility as a mental state of pleasure (which Broome, 1984, has argued against), or as desire fulfillment, or as choice, Sen's arguments would go through in terms of the pleasure from the lotteries, the desire for lotteries, or the choice between lotteries.

It would seem, then, that whether one takes the ex ante view or the ex post view, Sen's critique of a utility based evaluation of the living standard either goes through straightforwardly, or is strengthened.

4. Inequality: ex ante and ex post

Let us for the moment stay within the utility framework, and let us moreover imagine Sen and Williams to be identical in every respect--except of course for the fact that after the toss Sen has the cake and Williams does not. Is there inequality in this Sen-Williams society? Of course one response to this question would be to say that it is a non-question: there is equality ex ante, but inequality ex post. But it would be a pity if we accepted this response and let the matter rest there. Whether we like it or not, implicitly there will be attempts to weigh the two against each other and perhaps establish the primacy one over the other. It could be argued, for example, that there is no cause for our egalitarian sentiments to be aroused at the sight of Sen with cake and Williams without, since ex ante they were equal.

A particularly powerful argument along these lines is put forward by Milton Friedman, in *Capitalism and Freedom*, and to be fair his attempt to establish the primacy of the ex ante view is explicit rather than implicit. In the chapter on the Distribution of Income, he leads off the argument with Adam Smith's principle of compensating differences--inequality of money income is often required to equalize utilities if, for example, some jobs are more attractive than others. Friedman extends this principle in an ingenious direction:

Another kind of inequality arising through the operation of the market is also required, in a somewhat more subtle sense, to produce equality of treatment, or to put it differently to satisfy men's tastes. It can be illustrated most simply by a lottery. Consider a group of individuals who initially have equal endowments and who agree voluntarily to enter a lottery with very unequal prizes. The resultant inequality of income is surely required to permit the individuals in question to make the most of their initial equality. . . . Much of the inequality of income produced by payment in accordance with product reflects 'equalizing' differences or the satisfaction of men's taste for uncertainty.

It is of course an open question as to how much of observed inequality of income can be attributed to "equality ex ante" (I have elsewhere investigated the relationship between the extent of risk taking and the extent of inequality; Kanbur, 1979). But the thrust of Friedman's argument is clear--in the presence of risk taking, observed inequality overestimates the need for intervention and redistribution. The Sen-Williams example is a pure case that sets out the issues sharply--ex ante equality versus ex post inequality. In this case Friedman would presumably argue that there was no case for intervention at all.

Let us set down the Sen-Williams example in the form of a table. The two equiprobable states of nature are Heads (H) and Tails (T). Action A is to nullify the effect of the toss by redistributing the cake equally, while action B is to let the results stand. I assume that H means a Sen win and T means a Williams win. The entries in parenthesis show each person's utility under the different scenarios--Sen's utility is shown first, then Williams'. The same utility function is used to evaluate the cake allocation for Sen and Williams, both agents being assumed to be identical.

Table 1. The Sen-Williams Example

Actions	States of Nature	
	H	T
A	$[U(1/2), U(1/2)]$	$[U(1/2), U(1/2)]$
B	$[U(1), U(0)]$	$[U(0), U(1)]$

I would like to distinguish this example from Broome's (1984) Michael-Maggie example, which was originally put forward by Diamond (1967). In that example there is ex post inequality in every outcome, but expected utility is more equal with one action than another. In the Sen-Williams example expected utility is distributed equally under the two actions, but ex post utility is more equal under one action than another. Broome's question was whether one should promote equality of expected utilities, given the degree of inequality in realized utilities. My question is whether one should promote equality of realized utilities, given the degree of inequality in expected utility. Friedman's answer to this question, in the context of the Sen-Williams example, would be no. I would like to argue that the answer is yes.

Before developing the argument further, however, we should consider one feature of the Sen-Williams example which might be thought to complicate matters somewhat--although the degree of inequality in expected utility is zero under both A and B, the common level of expected utility

is higher under B than under A if $U(.)$ shows risk loving, and indeed this must be so since both Sen and Williams chose to take the gamble rather than opt for the safety of equal division. In fact, ex post the sum of utilities is greater under B than under A, whichever of H or T occurs. Friedman's claim that B is to be preferred to A might use either of these two factors as justification. However, in the ex post case, while the sum of utilities is greater under B than under A the inequality of utilities is also greater--social preferences may well give greater weight to the sum rather than to the inequality (or they may not), but the point is that some weight should be given to the utility inequality ex post if we are at all egalitarian. Using the argument that B is to be preferred to A because expected utility (the same for both agents) is higher under B runs into Broome's (1984) counter that expected utility as such is intrinsically valueless; it is simply the mathematical expectation of utilities (which of course are intrinsically valuable). It can be a guide to the sum of utilities--whether this will be higher or lower--but it cannot be valued for itself.

In fact, if expected utility is intrinsically valueless, then equality of expected utility should exercise no special claim in judging between the two actions A and B. Looking at the whole picture then, of the four factors characterising the comparison between B and A--no inequality of expected utility in either, higher expected utility for both in A, greater inequality of utilities in B, higher sum of utilities in B--only the last two matter; in particular, equality of expected utility is no reason for giving a zero or a much diminished weight to differences in the inequality of realized utilities.

Up to now I have essentially followed Broome's (1984) argument, that the mathematical expectation of utility is not the same thing as utility. Suppose it was. Then of course the foregoing argument could not hold. There is a further defense of the ex post evaluation that could be mounted, however. Much of the intuitive force behind favouring the ex ante view lies in an argument that if individuals "know what they are doing," they should be allowed to take the consequences of their freely chosen actions. I will deal with the question of freedom in the next section, but I now want to challenge the intuition behind this argument by suggesting that it may not be possible for individuals to fully know or appreciate the consequences of their actions. This line of argument has been pursued by Shackle (1965). In a passage that I think deserves to be better known, he observes:

I do not think it is necessarily possible in the nature of of things for information, as it exists in the human mind (and that is its only real existence) to be perfect in the sense that anticipative and retrospective utility would be bound to be the same. Suppose I am a young man with a splendid fortune. I decide to pursue all the joys of youth; I know that in doing so I shall dissipate my fortune, but I am the 'prodigal son' of our Bible story of which you may know; when middle age comes, I find myself destitute and filled with regret, regret which I foresaw. Two moments, two different dates, cannot be the same moment, cannot give to an event, an action, a situation, which objectively are one and the same events or actions, the same meaning for the individual. I do not think, in human terms, knowledge can be so perfect that tomorrow's hunger can be felt today.

I confess that Shackle's argument, put forward in a comment on a paper by Mukerji (1965) in a similar vein, appeals to me. It lies behind the sympathy that I and most other people would feel for uninsured flood

victims, and why we would not feel strongly disposed to arguing against government measures to help them, for example, on the grounds that the victims must now take the consequences of their (underinsured) actions.

If Shackle's argument is persuasive, and it must be admitted that more thought is needed in tidying up its edges and working out its consequences, then we do have a case for saying that ex ante and ex post are different animals: against the intuitive appeal of "he knew what he was doing" can be pitted the intuitive appeal of "tomorrow's hunger cannot be felt today." To the extent that the latter has some force, a case can be made for redistributing cake from Sen to Williams. Of course it is true that if this rule was known and appreciated universally, it would have incentive effects. So be it. We are well aware in other areas of economics that equality of cake distribution may have a cost in terms of the size of the cake. But that is no reason for not having equality as one of the objectives, and ex ante equality is certainly no reason for not having ex post equality as one of the objectives.

In terms of Table 1, the utility function that is used to represent the perceived utility consequences of the outcomes of the lottery before the event is not the same as the utility function that represents the actual utility of outcomes once they are known. Expected utility, using the ex ante utility function, can be used to predict behaviour but not to evaluate it. I realize, of course, that such a formulation sits uneasily with our formulation of rational choice, and I do not know how precisely to formalize the intuition that "tomorrow's hunger cannot be felt today." But Schelling (1984), for one, is well aware of the ex ante/

ex post problem in the analysis of self-command and the rational consumer, and Williams (1981), in a different context, plays upon the distinction between ex ante and ex post. All I wish to argue here is that Shackle's argument has some weight and, the theory of rational choice notwithstanding, pushes us in the ex post direction in the Sen-Williams example.

5. Capabilities and freedom: ex ante and ex post

As suggested in section 2, faced with a thwarting of his utility based counter to our egalitarian sentiments, Sen might try a different tack in leading us away from wanting to redistribute cake in favour of Williams. Following the second Tanner lecture, Sen might wish to argue that such redistribution reduces the standard of living of both Sen and Williams, since it in effect denies them the opportunity to engage in lotteries with unequal prizes. Now it will not surprise you that so far as mounting a defense of Sen's freedom to engage in lotteries is concerned, Milton Friedman got there first. In the same passage from which I quoted earlier, he argues: "Redistribution of income after the event is equivalent to denying them the opportunity to enter the lottery" He goes on to argue against redistributive taxation in this context because:

. . . the taxes are imposed after it is already largely known who have drawn the prizes and who the blanks in the lottery of life, and the taxes are voted mostly by those who think they have drawn the blanks.

And lest it be thought that the Sen-Williams example is fanciful and irrelevant, Friedman comes not only to Sen's defense but to mine as well:

This case is far more important in practice than would appear by taking the notion of a 'lottery' literally. Individuals choose occupations, investments and the like partly in accordance with their tastes for uncertainty. The girl who tries to become a movie actress rather than a civil servant is deliberately choosing to enter a lottery, so is the individual who invests in penny uranium stocks rather than government bonds

Sticking then to the Sen-Williams example, discarding the utility based view and moving to a capabilities based view, is Williams' standard of living the same as Sen's, despite the fact that Sen has the cake and Williams does not? Once again, we must avoid the temptation of being satisfied with the assessment that ex ante it is but ex post it is not. There is a real problem to be faced and we must not avoid it. A different question which touches on the same issue is: would Williams' standard of living be lower if he knew at the outset that there was effectively no chance of entering a lottery? Well, clearly one aspect of his capability, his freedom to choose between entering a lottery and not, has been reduced. But his ex post capability to survive without living on the cake line would be increased--with the lottery we know, and he knows, that there is indeed half a chance that he might end up a cake destitute.

So which is to be given greater value--the ex ante capability to restrict one's ex post capabilities, or the ex post capabilities themselves? Should Williams be allowed the freedom to choose a probability of living in shame on the cake line? I contend that our intuition once

again turns on the extent to which we believe that Williams truly appreciates what it means to live a life of shame without cake in a society in which cake is all. If, following Shackle, we believe that tomorrow's shame cannot be felt today, then the case for restricting the capability to undertake such gambles is strengthened. The appropriate focus of attention is what Sen and Williams in fact end up being --not what they could end up being. Outcome, not opportunity, is what is relevant if choice is based on inaccurate perception, and Shackle argues that this must be so in the nature of things.

6. Constitutive plurality and dominance reasoning in the capability based view

In his lectures, Sen often uses what he terms "dominance reasoning": if situation x has more of some object of value and no less of any other, than y, then x is said to dominate y. This dominance reasoning leads to a partial ordering on the space of alternatives and, as Sen notes, "there is no reason for us to spurn what we can get in this way" in resolving the constitutive plurality of a particular view of the standard of living. But how much can we get in this way?

The importance of uncertainty, and of the Sen-Williams example, is that it highlights situations where the dominance reasoning fails with respect to the constitutive pluralism of the capabilities approach. It is inherent in the nature of the problem that permitting individuals to choose risks that could lead to disaster, is bound to lead to disaster for one individual. The introduction of uncertainty raises this conflict, and it is then incumbent upon us to face the issue of the relative weights

given to the different types of capabilities--dominance reasoning will not help.

7. Conclusion

Let me summarize. In these comments I have attempted to sketch out the consequences of the introduction of uncertainty for Sen's arguments. In terms of the competitive plurality of views on the standard of living, the presence of uncertainty strengthens somewhat Sen's critique of utility based views. In terms of the constitutive plurality of capability based views, uncertainty highlights the fact that choices between different types of capability or freedom have to be made--dominance reasoning will not come to the rescue.

The crucial factor that uncertainty introduces is the distinction between ex ante and ex post. Both in the utility based approach, and in the capability based approach, the Sen-Williams example highlights the conflicts that can arise. I have argued for the primacy of the ex post situation for evaluative purposes, both along the lines of Broome (1984), and along the somewhat more unorthodox lines of Shackle (1965). That individuals may not fully appreciate the consequences of their actions, that tomorrow's hunger cannot be felt today, sits uneasily with theories of rational choice. Indeed, it is not clear how to give it coherency in our present framework of decision theory. But I think the notion has intuitive substance, and I invite more fine-grained thought to provide the analytical foundations for it. Schelling (1984) would also, I feel, welcome such an exercise.

Returning, then, to the Sen-Williams example, Williams would be glad to know that I would be in favour of taking some cake away from Sen and giving it to Williams, and I would not be much persuaded by arguments that such an arrangement would in fact lead to a catastrophic reduction in the standard of living of both.

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