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Compensating the dead☆

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ABSTRACT

An early death is, undoubtedly, a serious disadvantage. However, the compensation of short-lived individuals has remained so far largely unexplored, probably because it appears infeasible. Indeed, short-lived agents can hardly be identified *ex ante*, and cannot be compensated *ex post*. We argue that, despite those difficulties, a compensation can be carried out by encouraging early consumption in the life cycle. In a model with heterogeneous preferences and longevities, we show how a specific social criterion can be derived from intuitive principles, and we study the corresponding optimal policy under various informational assumptions.

1. Introduction

It is undeniably true that an early death constitutes a serious loss, even when it is due to natural causes. Such a loss should, in a fair society, imply a compensation. However, the compensation of short-lived persons has remained so far largely unexplored in policy circles. The absence of debate on that issue is surprising, since longevity inequalities are widely documented. It is well-known that sizeable longevity differentials exist even within a given cohort, as shown by Fig. 1.[1] Although all cohort members are, by definition, born in the same country and at the same epoch, there is a substantial dispersion of the age at death, some persons turning out to have longer lives than others.

Given that longevity differentials are mainly explained by factors on which individuals have, on their own, little control, there exists a strong ethical intuition for compensating short-lived agents, who are, in some sense, victims of the arbitrariness of Nature.[2] Longevity inequalities due to differences in genetic backgrounds are the best illustration of this. According to Christensen et al. (2006), about one quarter to one third of longevity inequalities within a cohort can be explained by differences in the genetic background. Hence there is a strong intuitive support for compensating the short-lived, who cannot be regarded as responsible for their genes.

But despite the sizeable – and largely arbitrary – longevity differentials, little attention has been paid to the compensation of short-lived agents. This lack of attention may seem quite surprising, since philosophers and economists have largely emphasized that longevity constitutes a necessary condition for having a "good life", whatever the life plans one pursues. Among others, Sen (1998) underlined that a premature death constitutes a serious source of deprivation. Moreover, Nussbaum (2000) argued that the possibility to live a complete life or the possibility to avoid a premature death constitutes the first of all basic capabilities, which

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[1] Sources: the Human Mortality Data Base (2010).

[2] Note that longevity is also influenced by individuals, for instance through their lifestyles (see Kaplan et al., 1987), but those behavioral determinants of longevity (e.g. smoking, diet, physical activity, etc.) only explain one part of longevity differentials, the rest remaining out of individuals' control (e.g. genetic background, environmental determinants of longevity, etc.).

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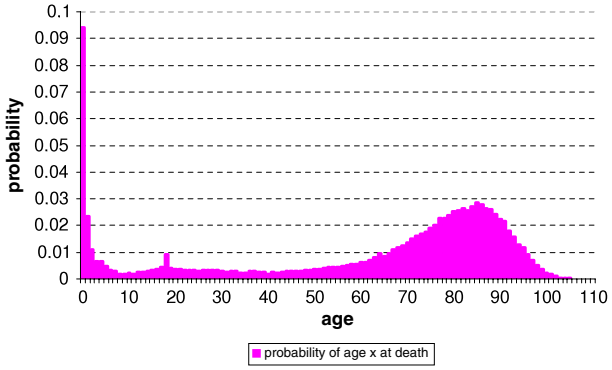

Fig. 1. Distribution of the age at death: Swedish female (1900 cohort).

should be enjoyed by everyone. Considering premature death as a major source of human deprivation makes the compensation of short-lived persons most relevant.[3]

The reason why the compensation of the prematurely dead was largely ignored lies in the apparent impossibility to compensate short-lived individuals. A first difficulty is that short-lived agents can hardly be identified *ex ante*. Life-tables statistics show the distribution of the age at death in a population or a subpopulation (e.g., by gender), but do not tell us what the longevity of each individual will be.[4] Another difficulty is that, *ex post*, i.e., once a short-lived person is identified, its well-being can no longer be affected, so that little compensation can take place at that stage.[5] Thus we face a non-trivial compensation problem: agents to be compensated cannot be identified *ex ante*, and cannot be compensated *ex post*. Such difficulties may explain why little attention has been paid to the compensation of an early death.

This problem seems in sharp contrast to the opposite problem of helping the elderly people who are in poverty. As they can be identified *ex post* and benefit from income support, it appears straightforward to organize a social security system in their favor.

The goal of the present paper is to propose a way to overcome the difficulties with the compensation of the short-lived. For this purpose, the first part of this paper is devoted to the construction of a measure of social welfare in the context of unequal longevity. The social objective is derived from basic principles guaranteeing that compensating the agents who turn out to be short-lived would be desirable. Moreover, the approach, of the "egalitarian-equivalent" type, takes the agents' preferences over longevity into account.[6] More precisely, the proposed social objective evaluates a particular social state by looking at the smallest consumption the individuals would accept in the replacement of their current situation, if they could benefit from some reference longevity level. In sum, it applies the maximin criterion to what we call the Constant Consumption Profile Equivalent on the Reference Lifetime (CCPERL). Hence we shall refer to the social objective we propose as the Maximin CCPERL.[7]

Once the social objective is defined, it can be used to compute the optimal allocation of resources in various environments. In the second part of the paper, we compute the social optimum in a context in which the social planner knows each individual's preferences and life expectancy, as well as the statistical distribution of longevity in the population (but not individual longevity). We then also consider the more relevant second-best context, in which the planner knows the distribution of all variables (including longevity), but ignores each individual's preferences and life expectancy. It might seem that very little compensation for a short life can be made in this case, but the planner can nonetheless improve the lot of the short-lived agents by inducing everyone to consume more in the first part of their life, and less in the second part, than they spontaneously would. One of the results of this paper is that it is even possible, in rather general cases, to eliminate welfare inequalities between short-lived and long-lived agents.

Finally, it should be stressed here that the policy recommendations implied by the Maximin CCPERL social objective, although uncommon, are nonetheless far less counterintuitive than the redistributive implications of utilitarianism in the context of unequal longevity. Actually, as shown by Bommier et al. (2011a,b) and Leroux et al. (2011), utilitarianism tends, under standard assumptions like time-additive lifetime welfare and expected utility hypothesis, to redistribute resources from short-lived agents towards long-lived agents, against any intuition of compensation. This anti-redistributive bias is due to Gossen's First Law (i.e. the law of declining marginal utility from consumption), and is robust to various specifications of lifetime welfare. In particular, as shown by Leroux and Ponthiere (2013), representing lifetime welfare as a concave transform of the sum of temporal utilities only mitigates – but does not eradicate – the utilitarian tendency to redistribute resources towards the long-lived. In comparison, our approach is not based on utilitarianism at all, and allows for the compensation for unequal longevity, without imposing any strong structure on individual preferences.

The rest of the paper is organized as follows. Section 2 introduces the compensation problem, and provides the intuition for the approach and the main results. Section 3 presents the formal framework. Section 4 derives a social objective from ethical axioms. Section 5 characterizes the optimal allocation of resources under Maximin CCPERL in an economy with heterogeneous preferences and life expectancies, under perfect information of agents' *ex ante* characteristics (first-best problem) and asymmetric information of those characteristics (second-best problem). Section 6 computes the actual distribution of CCPERL in France (2008), and illustrates the magnitudes of welfare losses due to premature deaths. Section 7 concludes.

2. Compensating the dead: a primer

To illustrate the challenges raised by the compensation of unequal longevity, let us start with a simple example. Consider a one-cohort, two-period model, with a large population of individuals facing uncertain longevity. They all live the young age (period 1), but the old age (period 2) is reached with a fixed probability π, which is known to everyone. They are all initially identical, with the same survival probability π, the same endowment w of a storable

[3] Note, however, that, even though the importance of longevity supports the need to compensate short-lived persons, the mere *possibility* to compensate short-lived persons requires that having a long life is not lexicographically superior to any other feature of life (see *infra*).

[4] This is problematic because compensation requires information on individual outcomes.

[5] It is true that, in some cases, a premature death could be anticipated before death occurs. But it is unlikely that a significant compensation could be provided during those hard times.

[6] The egalitarian-equivalent approach to equity was introduced by Pazner and Schmeidler (1978).

[7] That social objective, being of the maximin type, can obviously be related to Rawls (1971)'s pioneer work on the foundations of a fair society. Note, however, that the derivation of our social objective does not rely on a veil of ignorance procedure (unlike in Rawls, 1971). The information used for deriving our social objective consists of the statistical distribution of realized longevity, and not the usual life expectancy statistics. Assuming a standard veil of ignorance procedure could lead to maximizing the expected or average utility among the population, which is different from the social objective we propose.