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Research Report

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Life quantity, life quality and longevity: the need for an intertemporal evaluation framework

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Those of us who have traveled through international airports in the last few years have almost certainly seen the following HSBC ad (quite frequently found on those covered walkways that are used to embark on or disembark from airplanes):

“Of all the people in the world who have ever lived to be 65, two-thirds are alive today”.

I admit having felt puzzled every time I have seen that ad. I would ask myself: Is this statement saying something good or bad about humanity?

One can think of obvious reasons to feel good about the presence of so many older people. Should we not rejoice at the significant increase in life expectancy over the last decades? Should we not be pleased that the earth sustains the lives of an increasing number of human beings?

At the same time, the above quote can also leave us perplex. Would it not be better if human beings were younger? Should we not assign a value to population renewal? Should we not be concerned about the dynamics and sustainability of aging and increasing population sizes?

Additionally, and more traditionally, welfare issues are also absent from the above quote. Should we not also be concerned about the welfare of individuals, not only about their number and longevity? Should we not also value equality across human beings? Has the increase in population size and longevity been associated with an equally strong increase in average living standards and with a fall in inequality?

This simple quote therefore raises a number of important social evaluation questions. All around the world, development has been associated for many decades with improved longevity. It has more recently been associated with slower demographic growth. Global average life expectancy at birth has risen from 63 years in 1980 to 70 years in 2011, while the global annual population growth rate has fallen from 1.8 % to 1.2% during the same period. Developed countries have already crossed what is commonly called the critical point of a “demographic transition.” Such a critical point is characterized by relatively high longevity and by relatively low fertility. This demographic transition is also starting to occur in the developing world. Do these economic, health and demographic changes improve the “overall value of our societies”, namely, their social welfare?

Perhaps more importantly, again from a normative perspective, is the question of the extent to which these changes actually increase social welfare. Answering this question is fundamental to assessing differences in social welfare over time and across societies. It is also useful for addressing the trade-off that may exist between changes in the quantity (as measured by longevity and population size) and in the quality (individual welfare in each period) of wel-

fare along the process of development. Despite the importance of the topic, the literature has largely ignored that trade-off. Social welfare is traditionally evaluated in a timeless framework, based solely on quality of life (usually captured by living standards) and ignoring the quantity of it (longevity and population size).

A social evaluation framework that is jointly sensitive to both longevity and economic growth nicely complements recent changes in the human development evaluation paradigm. Development objectives have indeed evolved significantly in recent decades, shifting partly away from traditional income growth objectives towards broader human development ones. Longevity and health are prominent objectives among these, as illustrated below in the first UNDP Human Development Report (1990, p.10): “Human development is a process of enlarging people’s choices. In principle, these choices can be infinite and change over time. But at all levels of development, the three essential ones are for people to lead a long and healthy life, to acquire knowledge and to have access to resources needed for a decent standard of living. If these essential choices are not available, many other opportunities remain inaccessible”

UNDP’s stance has been influential in spurring a multidimensional approach to social evaluation. What has not been recognized, however, is that there may be trade-offs between standards of living, longevity and population size.

The main objective of the paper “Life quantity, life quality and longevity: An intertemporal social evaluation framework” is to contribute to the understanding of the normative elements of this trade-off by setting up a social evaluation framework that can be used to account jointly for population size, longevity and the distribution of periodic welfare. The evaluation of development processes and of public policies often involves taking into account such trade-offs, for instance by comparing social states in which populations differ in size and longevity. This requires social evaluation principles to be

sensitive to both the number and the length of lives. It also requires social evaluation principles to be sensitive to the “quality” of human lives, typically measured by living standards and by other indicators of periodic well-being.

The paper explores the use of axiomatic and welfarist principles to assess social welfare in that general framework. It attempts to overcome some of the limits of existing methods in the literature, in particular by avoiding a “temporal repugnant conclusion” and by neither penalizing nor favoring life fragmentation. It builds on seminal contributions to intertemporal social evaluation based on two types of social evaluation functions: those based on “Classical Generalized Utilitarianism” (CGU) and those based on “Critical Level Generalized Utilitarianism” (CLGU).

CGU defines social welfare as a double sum of transformed periodic utilities across individuals and time. The problem with classical utilitarianism is that it is subject to a “repugnant conclusion”: with classical utilitarianism, a sufficiently large population will necessarily be deemed better than any other smaller population, even when the larger population has very low average utility. CLGU does not have this flaw since it grants positive contributions to social welfare only for those whose lives are “worth living.” Its value function is a sum of lifetime utilities net of the “critical level”, defined as the level of lifetime utility for an additional individual that does not affect the social utility function.

However, the intertemporal CLGU principles introduce another type of repugnant conclusion: it can always evaluate the life of a sufficiently long-life individual who is destitute in every period to have been better than that of any richer individual with a shorter life. This conclusion may be deemed to be repugnant if one feels that longevity is welfare increasing only for those additional periods that are worth living. *Ceteris paribus*, therefore, an increase in longevity should not always increase social welfare. Intertemporal CLGU functions further

exhibit a preference for “unfragmented lives”. A preference for unfragmented lives penalizes population renewal and may encourage some awkward demographic features in the long run. In order to avoid an intertemporal form of the repugnant conclusion and “indifference towards fragmentation of lives”, the paper adopts a critical-level procedure applied periodically rather than over a lifetime. This leads to the characterization of a critical-level lifetime utility function that values utilities periodically, thus providing a consistent intertemporal framework for social evaluations.

An important next task will be to quantify the importance of life quantity, life quality and longevity in recent development processes. This is the object of work in progress.



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