

Determinants of Health Economic Decisions in Actual Practice: The Role of Behavioral Economics

This is a summary of the presentation given by Professor Daniel Kahneman at the ISPOR 10th Annual International Meeting First Plenary Session, May 16, 2005, Washington, DC, USA. Professor Kahneman is Eugene Higgins Professor of Psychology and Professor of Public Affairs at the Woodrow Wilson School, Princeton University, Princeton, NJ, USA.

Decision Utility versus Experience Utility

The concept of utility has had two quite different meanings in its history. Originally, Jeremy Bentham [1] introduced the concept of utility as the measure of pain and pleasure as the sovereign masters that can govern our conduct. This meaning of the term utility was used through the 19th century. Around the beginning of the 20th century, the development of certain philosophies of science known as positivism began. In psychology, positivism took the form of behaviorism, and the concept of utility as the experience of pain and pleasure was discredited because experience is private and therefore not amenable (so it was argued) to scientific study. What was substituted was a concept of utility as expressed in decisions. It is no longer what you experience or what you enjoy, it is what you want. Wants are much more observable directly than enjoyment. They are observable because choices are observable.

Utility became the degree to which one wants something. This concept has dominated economic and decision theory. Economists then derived from this concept their view of well-being. For economists, well-being of societies is measured by gross domestic product (GDP) or GDP per capita. The theory is that the more choices you have, the better off you are. If you have more opportunities to choose, then you cannot be worse off. Thus, to economists, income is a good proxy to the number of choices you have. In that sense, GDP is a measure of social welfare. Nevertheless, many people (including economists) are dissatisfied with this concept of utility. Now, there is a trend to return to the “Jeremy Bentham” concept of utility.

Decision utility is what is studied when we observe choices, and in the theoretical context, decision utilities infer some choices and are used to explain choices. Experienced utility is the utility that people experience. It is what makes life in its various aspects good and bad. In the early 20th century, when utility became decision utility, the standard model of economics assumed a rational agent. If a rational agent does what

is best for him/her, then the quality of the outcomes of that agent does not have to be measured, because the outcomes are as good as they could be. So if the agent is a maximizing agent, and the wants of the agent are known, there is no need to investigate whether the agent enjoys the consequences of her choices. But behavioral economists now believe that people are not necessarily always rational and if people are not rational, they do not necessarily always choose what is best for them. And in that case, it becomes useful to measure consequences, independently of people’s wants. So interest in the experienced utility grows.

Error in Quality-Adjusted Life-Year (QALY) Measurement

Quality-adjusted life-years are about decision utility. They are inferred from choices and preferences that people make, not from a study of actual experience. The QALY assigns to each period of time, a weight, ranging from zero to one, corresponding to the health-related quality of life during that period, with one as optimal health and zero equivalent to death. QALYs are frequently obtained, not from the patients themselves, but from the public. QALYs are affective forecasts (i.e., forecasts of an experience that someone will have under given conditions). Because affective forecasting is a task that people do not perform very well, QALYs obtained from the public are also susceptible to biases. In particular, QALYs obtained from patients and the QALYs obtained from the public are going to be radically different. This is because the public and the patients have different reference points. For a time trade-off or standard gamble exercise obtained from the public, the perspective is that of a healthy person considering losing his health. The healthy person is in the situation of selling health. Patients confront a choice between the same states, but in that case, as buyers of health. Many experiments have shown that buyers and sellers do not attach the same price to goods, contrary to standard economic theory. The effect is known as an endowment effect: people assign a substantially higher price to any good when they sell it than when they buy it, contrary to the standard theory in which buying price and selling price only differ by an income effect. A major difficulty with QALYs is the difference between the patients and the public. The difference is an error that the public makes in their forecasting of patient utilities. A substitute or at least a complement to QALYs and various related measures is a direct measurement of people’s well-being.

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Well-Being

There are several ways of measuring people's well-being: retrospective global evaluations of life (people are asked questions about their lives), experience sampling (a sampling of activities and feeling throughout a day/week/or period of time). More recent methods include the day reconstruction method [2], and there is some promise of developments in the measurement of brain correlates of positive emotional states [3].

What have we learned about well-being (happiness)?

- Happiness has substantial physiological correlates.
- Happiness is correlated with fewer illnesses and faster healing (immune system functions better).
- Happiness correlates with specific measures in brain activity. In particular, the happy side of the brain (left side) is specialized in processing approach (which includes both pleasure and anger), whereas the unhappy right side is specialized in processing avoidance (things that make us miserable or afraid).
- Happiness is primarily a personality trait. Individual differences account for about half of the variance in experience sampling studies, and for much more than half of the systematic variance.
- Life circumstances have small effects on well-being. (For example, in a study of paraplegics and lottery winners, paraplegics are less miserable than almost anyone would have expected, but not as happy as other people and lottery winners are not particularly happy at all).
- Happiness changes in the course of the day, depending on the activities in which people engage and the people with whom they interact. The effects of local circumstances are not quite as big as the effects of individual differences, but they are larger than the effects of general life circumstances (e.g., income or age).
- Being with friends is a major source of happiness.
- Quality of sleep is also a significant predictor of the quality of emotional life.

The Hedonic Treadmill

To understand health states one needs to understand the following phenomena. Although the standard of living in the United States between 1946 and 1996 increased significantly, people's satisfaction with their life and self-reported happiness remained about the same. In Japan over the same period, although real income increased fivefold, satisfaction with life remained constant. There are other surprises of this kind. In particular, the effects of health, although significant, are in many cases surprisingly small. Likewise, the effects of age are small (the correlation is

positive, and $r = 0.1$), and the correlation of life satisfaction with income within a society is also small (0.15). Variables of life circumstance are not substantially correlated with well-being. This phenomenon is described as the hedonic treadmill: the image is that people struggle to advance, but do not really get anywhere [4]. These are very powerful effects.

The hedonic treadmill is a phenomenon of adaptation. There are many mechanisms that contribute to adaptation. For example, paraplegics learn to achieve their goals in different ways, but perhaps more importantly, they gradually begin to think of other things than their handicap. A recent paraplegic may think mostly about his tragic circumstances, but attention flows to novel events and is withdrawn from events that have lost their novelty. The main cause of adaptation to stable circumstances is probably the withdrawal of attention. Being a paraplegic is effectively a part-time condition, because it does not affect experience very much when attention is drawn to other aspects of life. And that is true for all stable states. You think about it less, it affects your hedonic state for less time and it affects your life satisfaction and reported happiness less and less.

Failure of Affective Forecasting—The QALY

The exercise of affective forecasting in QALYs is the wrong thought experiment. If you are not a paraplegic, what you will do to assess that state is imagine what it is like to become a paraplegic. Becoming a paraplegic is more dramatic, it is an event, it is a change and it is therefore easy to imagine. What is missed during the thought experiment is adaptation, and the fact that the paraplegic will mostly think of other things. It seems to be virtually impossible to avoid that error.

The claim is that the task of determining QALYs is essentially impossible to perform well. QALYs are not a measure of the experience of the patient; they measure how much healthy people fear that particular condition. Furthermore, the procedure elicits a measure of the reluctance to sell health, which may not be the appropriate reference point for assessing value.

Perhaps the answer is to measure the actual experience of patients. Nevertheless, this procedure will also raise significant ethical and normative problems, especially because the ordering of the diseases may change if there is differential adaptation. We know far less about this way of measuring the impact of illness than we do about QALYs. But we should acknowledge that QALYs do not measure what we wish to measure.

References

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