

Optimism, pessimism and the compensating income variation of cardiovascular disease: A two-tiered quality of life stochastic frontier model

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Abstract

Self-reported measures of life satisfaction may be biased by optimistic or pessimistic dispositions of respondents. In this paper we view life satisfaction as stochastic and estimate a two-tiered quality of life stochastic frontier model to account for upward and downward biases in self-reported quality of life questions. Using the British Household Panel Survey 1995, we interpret the two one-sided errors to represent optimism and pessimism, respectively. The results suggest that the realistic values of life satisfaction are closer to the pessimistic values than to the optimistic ones. It is further found that men are relatively more optimistic and less pessimistic than women. Cardiovascular disease makes people both less optimistic and less pessimistic. The results are used to calculate the compensating income variation (CIV) of cardiovascular disease. It is found that the CIV is substantial.

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Introduction

An optimist takes a more positive view of the world and one's own role in it than a pessimist. The *Shorter Oxford English Dictionary* describes an optimist as someone "... disposed, under all circumstances, to hope for the best". A pessimist is someone "... who habitually takes the worst view of things...". Besides optimism and pessimism, we can distinguish a third state of mind: realism. Realism can be defined as the unbiased or true perception of the quality of life conditional upon income, health status and other

characteristics. Optimism and pessimism might be regarded as biases in a realistic perception of life satisfaction. Cummins and Nistico (2002) refer to optimism as a 'positive cognitive bias'. Pessimism can be seen as the tendency for downward revision of one's perception of quality of life compared with the realistic perception, whereas optimism is the upward revision of quality of life relative to the realistic perception. Furthermore, we expect that pessimism leads to a further downward revision given unfavourable events (such as a low or decreasing income or a health impairment), whereas optimism leads to a further upward revision of life satisfaction in the presence of positive life events.

Pessimism is not necessarily related to depression, although some authors relate depression with the

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absence of optimism. Ackerman and DeRubeis (1991) argue that “depression is a breakdown in the motivation to maintain self-esteem, resulting in the absence of optimistic biases.”

The use of the terms “optimism” and “pessimism” can be ambiguous. On the one hand, optimism/pessimism may refer to the current evaluation of the future state of the world. Easterlin (2001) argues that people are generally optimistic about the future and typically think they will be better off in the future than at present. The results in Easterlin (2001) show that when current happiness ratings are compared with current evaluations of happiness 5 years ago and expected happiness 5 years from now “... respondents, on average, rated their prospective happiness higher, and their past happiness less...” (Easterlin, 2001, p. 471).

Alternatively, optimism/pessimism may refer to the current evaluation of the current state of the world. Pessimism (optimism) then refers to an evaluation of a state of the world which is more negative (positive) than the evaluation given by others of the same state of the world. It is in this latter sense that we use the terms optimism and pessimism in this paper.

Some studies have treated psychological factors in the evaluation of life satisfaction—such as optimism and pessimism—as individual specific effects and have estimated fixed effects models on panel data to account for these. Ferrer-i-Carbonell and Frijters (2004) provide an excellent overview of the application of fixed effects models on life satisfaction. They conclude that allowing for individual-specific effects has a substantial impact on the results.

Another line of research measures optimism and pessimism by psychometric tests based on survey questions. For example, Schou, Ekeberg, and Ruland (2005) use a self-report scale—the Life Orientation Test-Revised (LOT-R, see Scheier, Carver, & Bridges, 1994)—that measures expectations about positive and negative outcomes in general. Respondents are asked to indicate their degree of agreement with statements like “in uncertain times, I usually expect the best” and “I hardly ever expect things to go my way”.

Most of these studies using psychometric tests have looked at the correlation between life satisfaction and optimism. Somewhat surprisingly, there appear to be more studies that look at optimism and quality of life than at the relation between pessimism and life satisfaction. Cummins and Nistico (2002) cite four studies in which the correlation

between life satisfaction and optimism ranged between 0.23 and 0.61. Chang and Sanna (2001) find that both optimism and pessimism (but especially optimism) have strong effects on life satisfaction among middle-aged adults. Schou et al. (2005) investigate the relation between optimism–pessimism and quality of life among women diagnosed with and treated for breast cancer. This study finds that optimism–pessimism had both a direct and an indirect effect on their quality of life. The indirect effect occurred through coping mechanisms such as fighting spirits and hopelessness/helplessness. Optimists responded with fighting spirits, which has a positive effect on the quality of life. Pessimists responded with hopelessness and helplessness, which reduced their quality of life. Similar conclusions about the relation between optimism–pessimism and quality of life among patients are drawn by Allison, Guichard, and Gilain (2000), Brenes, Rapp, Rejeski, and Miller (2002) and Carver, Lehman, and Antoni (2003).

Direct survey questions on optimism–pessimism are not always available to researchers. Furthermore, as these measures are essentially based on self-evaluations, it may be questioned whether they are reliable and really measure what they intend to measure. Do people always know for themselves whether they usually expect the best in uncertain times?

A more serious limitation of these studies is that they mostly look at correlations between optimism–pessimism and quality of life. This is interesting in itself, but does not answer the question on how optimism and pessimism affect the impact of health problems and changes in income on one’s evaluation of the quality of life. For example, we may expect that a negative life event, such as the occurrence of a health problem or a drop in income, has far more negative consequences on self-reported quality of life for a pessimist than for an optimist. Conversely, positive life events may have a more positive effect on the life satisfaction of an optimist than on that of a pessimist.

In this paper we take a different approach. Like Ferrer-i-Carbonell and Frijters (2004), we consider psychological factors such as optimism and pessimism as unobservables, but we do not treat them as fixed effects but rather assume explicit distributions for these unobservables. This results in a two-tiered stochastic frontier model of life satisfaction. We interpret the two one-sided errors that represent the positive and negative deviance of the underlying

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