



## Pro-environmental behavior and rational consumer choice: Evidence from surveys of life satisfaction

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### ABSTRACT

This paper theoretically and empirically investigates the hypothesis of decision error in environmental-friendly consumption. Existing evidence suggests that people make systematic mistakes in affective forecasting that lead to suboptimal decisions. The paper hypothesizes that such errors are important in the context of the private provision of environmental goods and shows in a simple theoretical model that decision errors imply a non-zero net marginal utility at the chosen level of environmental-friendly consumption. Using life satisfaction as a proxy for experienced utility, the empirical analysis finds a positive and significant association between life satisfaction and pro-environmental behavior, which is consistent with environmental-friendly consumption being less than individually optimal. The results are robust to controlling not only for socio-demographic characteristics but also for differences in environment-related personal attitudes.

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### 1. Introduction

The standard rational-choice paradigm of consumer behavior presumes that people hold perfect information about the benefits and costs of their decisions and make optimal, utility-maximizing choices. Recent research in behavioral economics, however, has shown that people have wrong intuitive theories of what makes them happy and commit systematic mistakes in affective forecasting (Loewenstein & Adler, 1995; Loewenstein & Schkade, 1999; Loewenstein, O'Donoghue, & Rabin, 2003; Wilson & Gilbert, 2003) which lead to choices that are suboptimal in terms of people's own ex post evaluation. The mistakes are systematic (non-random) because they affect certain activities more than others. Especially, the utility (satisfaction) from higher consumption levels tends to be over-rated ex ante. This implies distorted, non utility-maximizing choices which

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involve, e.g., overwork (Layard, 2007) or excessive commuting (Frey & Stutzer, 2004) relative to activities which serve more intrinsically motivated, non-consumption goals.<sup>1</sup>

While choice distortions have been identified with respect to the *overall* consumption level vis-à-vis non-consumption activities, this paper investigates whether similar deviations from rational choice affect the *structure* of consumption decisions. Specifically, we investigate whether pro-environmental consumption is consistent with rational consumer choice or whether, alternatively, it is subject to distortions stemming from biased affective forecasting and related phenomena. Because environmental-friendly consumption may satisfy intrinsic motives whereas other forms of consumption are to some extent extrinsically motivated, we consider the trade-off between pro-environmental consumption and other forms of consumption to be particularly prone to distorted choice. We hypothesize that the structure of consumption is biased to the disadvantage of environmental-friendliness, relative to the utility maximum.

We formalize these ideas by setting up a model in which utility depends on the level (*quantity*) of consumption and its environmental-friendliness (*quality*). By assuming that the (unit) cost of consumption increases in its quality, the budget constraint implies a trade-off between quantity and quality. Optimal choice of quality then implies that the marginal utility from quality is just balanced by the marginal disutility from quantity foregone or, in other words, that the *net* marginal utility from quality be zero.

We test this condition using data for about 24,000 individuals in 27 countries, elicited in the third wave of the World Value Surveys. As an empirical approximation to utility we use self-reported subjective well-being (life satisfaction).<sup>2</sup> We estimate appropriately specified life satisfaction equations with several indicators of pro-environmental behavior among the explanatory variables. In terms of our theoretical model, utility-maximizing choice of environmental-friendliness of consumption would imply that the corresponding coefficients – which measure net marginal utility – be insignificant. Significant coefficients, conversely, suggest that the observed choice of environmental-friendliness is not utility-maximizing. Especially, a positive coefficient indicates that an increase in environmental-friendliness would be utility-increasing.

By running ordered-probit regressions, we find that life satisfaction is positively and significantly associated with (a) the consumption of environmental-friendly products, (b) the recycling or reuse of goods, (c) water conservation, and (d) a composite index of these three pro-environmental behaviors. Our results are robust to controlling not only for individual socio-demographic characteristics and heterogeneity at the country level but also for differences in personal attitudes and values. Especially, we control for differences in environmental preferences, thus addressing the possibility that people with pro-environmental attitudes may be inherently more (or less) satisfied, independent of the corresponding behaviors. As we find the positive and significant association between pro-environmental behavior and life satisfaction to be robust with respect to this check, we conclude that the effects we are measuring cannot be attributed to differences in attitudes but, in fact, refer to behaviors.

To the extent that we are able to control for individual heterogeneity, our results suggest that, on average, people make suboptimal choices with respect to pro-environmental behavior. With respect to all three behaviors we find that the distortions are smaller in better educated people. Moreover, in the cases of environmental-friendly products and of recycling the results indicate that the distortions are smaller if the respective behaviors are more widespread in society. These findings suggest that better cognitive abilities and a general familiarity with pro-environmental behaviors may help to avoid biased assessments of their benefits and costs. In addition, we find that with respect to environmental-friendly products and recycling the distortions are significantly larger in materialistically oriented persons. This is consistent with the idea that an under-rating of environmentally relevant quality is partly the mirror image of an over-rating of the quantity consumed, reflecting a wrong intuitive theory of happiness especially in materialistically oriented individuals.

While pertinent previous literature examined the rationality of choice between consumption on the one hand and social activities and human relations on the other, this paper focuses on a specific form of consumer behavior, environmental-friendly consumption. The results of the paper suggest that environmental-friendly consumption is not only less than *socially* optimal (as in traditional welfare economics), but may, in addition, even be less than *individually* rational.

This paper contributes to what Sent (2004) calls ‘new’ behavioral economics. Whereas ‘old’ behavioral economics questions whether consumer behavior involves utility maximization rather than say, rule-based behavior (Dopfer, 2004), new behavioral economics takes the mainstream model of utility maximization as a benchmark and studies deviations from that model. Following Rabin (1998), three ‘degrees of deviation’ can be distinguished. While the first and second refer to the arguments and shape of the utility function and to biases in judgement under uncertainty, respectively, the most radical departure focuses on difficulties that people have in evaluating their own preferences. It is this latter issue to which the present paper contributes. Our results add to the evidence that people do not always know their own preferences when making decisions.

The paper is organized as follows. Section 2 provides the theoretical framework and Section 3 the empirical framework. Section 4 presents the empirical results. Section 5 concludes.

<sup>1</sup> A major reason for ex ante over-rating of the level of consumption or, more generally, income is that individuals insufficiently anticipate habituation to their standard of living, which implies that actual consumption-related utility is lower than expected (Easterlin, 2001). Such habituation seems to be absent with respect to activities serving non-material goals (like cultural and social activities or human relations). See Section 2.1.

<sup>2</sup> In contrast to revealed-preference approaches, using data on subjective well-being permits to separate consumption decisions from the utility thereby produced. Using subjective well-being data follows a recent line of research in economics (see Frey & Stutzer, 2002; Layard, 2005; Di Tella & MacCulloch, 2006; Bruni & Porta, 2007). A thorough discussion of methodological issues is provided by Frey and Stutzer (2002).

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