

Version 01 September 2021

## Measuring Consumer Sustainability Benefits

Roman Inderst\* & Stefan Thomas\*\*

### Key points:

- While consumer sustainability benefits exhibit particular characteristics, e.g., as they are typically based on non-use value, they can be measured by standard instruments as applied in environmental cost-benefit analysis, such as conjoint analysis and contingent valuation.
- Their measurement may be particularly sensitive to provided context, which makes it necessary to be particularly careful when measuring consumers' willingness-to-pay. This sensitivity, however, also allows to expand the scope for such benefits and allows an appropriate modelling of the counterfactual.
- While we advocate for a careful consideration of such more "reflective willingness-to-pay", we are critical about a blank consideration of externalities and with it consumers' willingness-to-pay for a change in the behaviour of other consumers.

### I. Introduction

The European Commission and various national competition authorities presently undertake initiatives to explore whether and how to expand the scope for sustainability benefits. The Netherland's competition authority has already published guidelines, while the EU-Commission's revision of its Horizontal Guidelines has identified sustain-

ability as a key area.<sup>1</sup> Irrespective of the extent to which sustainability benefits can ultimately be taken into account, they need to be measured so as to balance such benefits with the costs that arise from a potential restriction to or lessening of competition. For this we explored the concept of "reflective willingness-to-pay" in order to measure sustainability benefits, which is based on an extension of the scope for deliberation by

---

\* Professor Dr. Roman Inderst, Chair in Finance and Economics, Goethe-University, Frankfurt a.M. Email: [Inderst@finance.uni-frankfurt.de](mailto:Inderst@finance.uni-frankfurt.de)

\*\* Professor Dr. Stefan Thomas, Chair in Private Law, Commercial Law, Competition Law and Insurance Law, Director of the Tübingen Research Institute on the Determinants of Economic Activity (TRIDEA) Faculty of Law of the Eberhard Karls University, Tübingen. Email: [thomas@jura.uni-tuebingen.de](mailto:thomas@jura.uni-tuebingen.de).

<sup>1</sup> Commission, 'Commission Staff Working Document Evaluation of the Horizontal Block Exemption Regulations' (2021) SWD(2021) 103 final and for the Netherlands ACM, 'Guidelines: Sustainability Agreements – Opportunities within Competition Law' (2021) available at: <https://www.acm.nl/sites/default/files/documents/second-draft-version-guidelines-on-sustainability-agreements-oppurtunities-within-competition-law.pdf>.

consumers when expressing their appreciation for sustainability characteristics of a product.<sup>2</sup> At the editors' invitation, in this contribution we hone our proposal with a particular view on its practical applicability. This requires also to expand on some of the caveats that we noted in our previous contribution. With this article, we wish to invite critical discussion in particular from practitioners, such as economic consultants. We restrict consideration to benefits accruing to consumers in the relevant market. While this can be defended based on the Commission's practice, we acknowledge both different views as well as calls to extend the standard with a perspective on sustainability claims. Such a discussion is, however, not the topic of this article. In Section II we thus begin with a definition of consumer sustainability benefits and describe some of their key characteristics. In Section III we discuss how such sustainability benefits can be measured. The very nature of sustainability benefits implies, inter alia, that the extracted willingness-to-pay is sensitive to the provided context. One of the key messages of our contribution is that this is not only a source of potential problems of measurement, but that it also offers scope

for an appropriate consideration of sustainability benefits. In Section IV we provide a brief critical discussion focussing on the consideration of externalities.

## II. The Nature of Consumer Sustainability Benefits

### A. Societal vs. Individual Sustainability Benefits

A myriad of policy reports appeals to the notion of sustainability, associating with it environmental, economic, social, cultural, animal welfare, or many other objectives.<sup>3</sup> There exists no single widely accepted definition of such a broad concept of sustainability, let alone a metric for its measurement. The notion of ecological or environmental sustainability, instead, has been shaped by decades of research in environmental and resource economics.<sup>4</sup> Still, consumer preferences may differ widely from whatever societal objective one may formulate, for instance as consumers' preferences may sometimes be non-consequentialist. Consumers may wish to purchase certain ecological products even though the global environmental impact of such purchases

---

<sup>2</sup> Roman Inderst and Stefan Thomas, 'Reflective Willingness to Pay: Preferences for Sustainable Consumption in a Consumer Welfare Analysis', *Journal of Competition Law & Economics* (forthcoming).

<sup>3</sup> For instance, sustainable development is considered to aim at securing "*an economically, socially and environmentally sustainable future for our planet and for present and future generations*" (UN General Assembly, Resolution A/Res/66/288 of 27 July 2012, RIO +20). Also the ACM's guidelines apply

a broad definition, including "animal-friendly products" and "a fair income".

<sup>4</sup> This goes back at least to Robert M. Solow, 'Intergenerational Equity and Exhaustible Resources. Review of Economic Studies' (1974) 41 *Review of Economic Studies* 29, and John M. Hartwick, 'Intergenerational Equity and the Investing of Rents from Exhaustible Resources' (1977) 67 *American Economic Review* 972, though over time different concepts (such as of weak or strong sustainability) have been developed.

may be zero (through so-called leakage) or negative.

In what follows, we return to the specific case where a consumer's choices could fail to express her own preferences, e.g., due to a lack of information. Other than that, throughout this article we are interested in measuring consumers' preferences rather than societal preferences, irrespective of whether, for instance, an expert on environmental impacts would agree with the consumers' priorities.

## B. Characteristics of Sustainability Benefits

We presently restrict our consideration to benefits and costs that a consumer derives from her own choice, which excludes externalities that she suffers from the consumption of others, to which we return below. Traditional welfare economics supposes that individuals are endowed with well-defined, consistent and stable preferences, which are expressed in their actual choices. Under specific assumptions, this allows to extract the willingness-to-pay for products or even certain characteristics (attributes) of products. Once monetized, individual (incremental) preferences can be aggregated so as to measure changes in aggregate consumer welfare.<sup>5</sup>

When consumers choose between different brands of coffee, for example, their preferences should be largely determined by the

so-called use-value, i.e., the immediate physical sensation. Obviously, the consumer herself is the appropriate arbiter of her own taste. Sustainability benefits, however, are different as there is no direct physical benefit resulting from the purchase on the individual customer. The literature refers to this type of product attribute as "non-use benefits" or "non-use value".<sup>6</sup> In case of avoided externalities on others or saved resources, consumers may be motivated by altruism or bequest motives. They may also derive so-called "existence value" from the preservation of wild species.

The appreciation of such benefits is thus, as we explore subsequently, much more dependent on the context, including the social norms that shape the consumer's stance towards sustainability. Likewise, consumers' perceptions may depend much on the information that they possess as well as their capacity or willingness to think through the repercussions of their choices.

## III. Eliciting Willingness-To-Pay for Sustainability Benefits

### A. General Techniques<sup>7</sup>

In a contingent valuation analysis, consumers are asked directly about their willingness-to-pay for different, in our case more

---

<sup>5</sup> This corresponds to the welfare criterion of potential or compensated Pareto optimality.

<sup>6</sup> According to David Pearce, Giles Atkinson and Susana Mourato, *Cost-Benefit Analysis and the Environment: Recent Developments* (OECD Publishing

2006), non-use value is not based on actual, planned, or possible use by oneself (though possibly by others).

<sup>7</sup> For details see Roman Inderst, Eftichios Sartzetakis and Anastasios Xepapadeas, 'Technical Report on

or less sustainable, products.<sup>8</sup> While this is equally applicable to a use or a non-use value, it presupposes that consumers sufficiently understand the respective products and their attributes. This is why, for instance, for new products the respective questionnaire must contain a detailed description of the good(s) under consideration, as well as, for instance, their hypothetical availability. In an open-ended elicitation, a person would be directly asked about the maximum (incremental) amount that she is willing to pay. Alternative, less direct elicitation methods include that of a “bidding game”, where an interviewer or an online routine would gradually increase the price until the subject no longer chooses a particular variant.<sup>9</sup>

Instead of relying on stated preferences, in choice experiments subjects are presented with a series of alternatives to choose from, while varying different attributes such as sustainability and price. In such a conjoint

analysis, subjects’ valuation for the different attributes can be isolated separately.<sup>10</sup> This is done by estimating in a discrete choice model the weights that subjects attach to the different attributes. A “monetization” of a non-price attribute is obtained by setting the respective coefficient in relation to that for the price.<sup>11</sup> Eliciting socio-demographic information for subjects should allow to make results representative for the (consumer) population of interest. Given unavoidable noise in the data, statistical information on the reliability (i.e., confidence or credible intervals) need to be reported, and results have to be scrutinized for validity.

When the products of interest are already traded in the market, choice data could be obtained from actual purchases. We discuss below that the actual purchasing context may however not always be most appropriate for the question of interest. What is more, even highly granular (e.g., household scanner) data may fail to exhibit sufficient

---

Sustainability and Competition’ (2021) 21-03 Athens University of Economics and Business.

<sup>8</sup> Cf Ian J. Bateman, Richard T. Carson, Brett Day, Michael Hanemann, Hick Hanley, Tannis Hett, Michael Jones-Lee and Graham Loomes, *‘Economic Valuation with Stated Preference Techniques: A Manual’* (Edward Elgar Publishing 2002), or the overview in the OECD report by Pearce, Atkinson and Mourato (n 6).

<sup>9</sup> Such alternative formats may impose a lower cognitive burden on subjects; see more generally Ian J. Bateman, Diane Burgess, W. George Hutchinson and David I. Matthews, ‘Learning Design Contingent Valuation (LDCV): NOAA Guidelines, Preference Learning and Coherent Arbitrariness’ (2008) 55 *Journal of Environmental Economics and Management* 127 for various practical fixes.

<sup>10</sup> This presupposes a particular form of subjects’ utilities, so that they can be decomposed into such partial values. This typically precludes other, e.g.,

lexicographic, preferences, although there exist various extensions (e.g., to account for “attribute non-attendance”).

<sup>11</sup> Conjoint analyses are widely popular in marketing science and practice, where typically Bayesian models are used, which obtain for each subject a (posterior) distribution of the respective coefficients. Much care must be exerted both in setting up the analysis as well as in the statistical analysis, as at least for some subjects observations may exhibit considerable noise. This is of relevance not only for the attribute of interest, but in particular also for the price coefficient, which is needed for a calculation of willingness-to-pay (see, however, for an alternative Garret Sonnier, Andrew Ainslie and Thomas Otter, ‘Heterogeneity Distributions of Willingness-to-Pay in Choice Models’ (2007) 5 *Quantitative Marketing and Economics* 313).

variation in prices so as to estimate the attributes of interest. Incentivized choices, which economists may tend to prefer, are rare in (marketing) practice. Subjects' answers to hypothetical questions can however lead to systematic biases that are of particular relevance for sustainability benefits, which is why results must be carefully scrutinized. For instance, as their statements or choices are inconsequential, subjects may excessively conform to social norms. Or, their experience of a so-called "warm glow" effect may make their choices insensitive to the actual scope of sustainability benefits, e.g., the true impact of a sustainable choice.<sup>12</sup> Also of particular relevance for our topic is that there is often a considerable gap between willingness-to-pay to obtain a good and the minimum compensation to give it up.<sup>13</sup>

The hypothetical nature of the posed questions or choices constitutes, however, also a key advantage. Varying the context in which the respective choices are made allows to analyse how consumers' preferences depend, inter alia, on information or on expectations about the choices of other consumers. Also, the framing of choices can allow to overcome certain potential biases, thereby ensuring that we still measure consumer preferences based on consumers' own choices. We expand on these observations in the following section.

## B. Using Context

Take the following hypothetical example. A firm may have introduced a fuel version that is more expensive, but has less externalities, without delivering other direct benefits. Its take-up in the market was poor. Now, firms propose an agreement to jointly introduce this fuel while phasing out a less sustainable variant. We first note again that presently we focus exclusively on those benefits that consumers experience from their own choice. If an economist would now use past purchasing data from the failed attempt to introduce this fuel, measured willingness-to-pay would be insufficient to warrant a higher price. But this may not adequately reflect consumer welfare. Instead, a contingent valuation or conjoint analysis could vary the context in various ways, as we now describe.

Subjects could be given more information about the sustainability features of the new fuel. The hypothetical choice situation can also help breaking habits and inertia, thus forcing subjects to rethink all alternatives and make a reflected choice, including under less time pressure than what might be the case at the point-of-sale. In addition, the choice context could contain information about the hypothetical choice of other consumers, i.e., the respective market shares, which could affect individual preferences in various ways, including through a different

---

<sup>12</sup> See the dispute in William Desvousges, Kristy Mathews and Kenneth Train, 'Adequate Responsiveness to Scope in Contingent Valuation' (2012) 84 *Ecological Economics* 121, and John C. Whitehead, 'Plausible Responsiveness to Scope in Contingent Valuation' (2016) 128 *Ecological Economics* 17.

<sup>13</sup> Cf John K. Horowitz and Kenneth E. McConnell, 'Willingness to Accept, Willingness to Pay and the Income Effect' (2003) 51 *Journal of Economic Behavior & Organization* 537.

perception of social norms. We have explored such changes in context in our various contributions.<sup>14</sup>

We stress at this occasion that results derived from such hypothetical exercises have to be carefully scrutinized, also in light of the aforementioned well-known problems. We moreover acknowledge that for other purposes, such as the estimation of demand elasticities, market observations and contexts that approximate consumers' choices in the market are clearly preferable. In the present context, however, the focus lies on measuring consumer sustainability benefits. When these are particularly susceptible to such context, we need to adequately capture also the counterfactual context under an agreement, such as higher market penetration of the sustainable product and a greater availability of information. Also, there is no reason for why for a welfare analysis preferences extracted from choices that are made under time pressure and limited information or by following habits and no longer suitable heuristics, for instance, should have priority. The remaining potential ambiguity however needs to be resolved for a balancing of benefits and costs. Here, we make several related observations.

---

<sup>14</sup> See, in particular, Inderst and Thomas (n 2) more generally on the role of context, Roman Inderst, Felix Rhiel and Stefan Thomas, 'Sustainability Agreements and Social Norms' (2021), available at: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3887314](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3887314) for the role of norms, and Roman Inderst and Stefan Thomas, 'Prospective Welfare Analysis-Extending Willingness-to-Pay Assessment to Embrace Sustainability', *Journal of Competition*

## C Resolving Ambiguity

Our first observation in light of such a possible variation in choices and extracted preferences relates to calls for a "laundering" of consumer preferences.<sup>15</sup> In specific occasions it may be obvious that consumers err when making choices that they regret immediately or after being presented additional information. Behavioural economics posits, however, a range of possible systematic biases that would generate a wedge between consumers' choices and their supposedly "true" preferences. Given the nature of sustainability benefits, i.e., their non-use value or the associated complexity, these may provide particular scope for such biases, as already noted. Now, changes in the context as well as a potential re-framing of choices should mitigate such biases. We provide an example. An often cited case is consumers' supposed failure to sufficiently take into account longer-term benefits, e.g., from avoided electricity costs, putting thus too much emphasis on higher immediate costs of the respective appliances. If this was indeed the case, hypothetical choices could be framed accordingly, thus making costs and benefits sufficiently transparent. Instead, there seems to be little justification for super-imposing preferences. After all, while there may be reliable indications that

*Law & Economics* (forthcoming) for its use to forecast preferences of future cohorts of consumers.

<sup>15</sup> A frequent point of reference for such "laundering" is the hypothetical benchmark by Cass R. Sunstein and Richard H. Thaler, 'Libertarian Paternalism is not An Oxymoron' (2003) 70 *University of Chicago Law Review* 1159, 1162 'if [consumers] had complete information, unlimited cognitive abilities and no lack of self-control'.

consumers have made a wrong choice when this has immediate monetary or health implications, there should be little ground for second-guessing, for instance, how much consumers would “truly” wish to care about others.

A second observation relates to limits in the choice of context. Such hypothetical choices still need to be set within the frame of a consumer. In fact, given the discussed nature of sustainability benefits, preferences elicited in a context that appeals less to a consumer’s self-interest but more to a subject’s general values may lead to a potentially much higher willingness-to-pay.<sup>16</sup> While we admit that the respective boundaries may be blurred, competition analysis should, however, still build on subjects’ choices as consumers rather than as citizen who, for instance, could be willing to vote collectively for rules that commit them to actions that are subsequently against their self-interest.<sup>17</sup>

We noted that context-dependency can be important for an adequate counterfactual analysis. Still, depending for instance on the provided information or the architecture of presented choices, extracted willingness-to-

pay as displayed by the very same consumer may differ, even after scrutinizing choices for obvious errors or biases that may result either from their hypothetical nature or from some deeper-rooted behavioural predispositions. Put differently: One and the same consumer may express different willingness-to-pay values in relation to the same sustainability feature of a product simply owing to the context, including the amount of information, and the time for deliberation which is available to her. The competition authority or court, together with experts, must eventually choose from this set of values to ultimately balance costs and benefits. In our contributions we put forward the proposal that a selection of willingness-to-pay could be based on norms that are enshrined in the law, such as environmental sustainability. We argue that an agency can feel legitimized to choose the willingness-to-pay value that attributes the greatest measurable importance to sustainability when conducting a counterfactual analysis, if and to the extent that sustainability is enshrined as a societal goal of great importance in the respective legal order.

---

<sup>16</sup> In welfare economics there is a long tradition of such a distinction, e.g., to cite three Nobel laureates, between “interests” and “values” (Kenneth J. Arrow, *Social Choice and Individual Values* (Yale University Press 1963)), between “subjective preferences” and “ethical preferences” (John C. Harsanyi, ‘Cardinal Welfare, Individualistic Ethics and Interpersonal Comparisons of Utility’ (1955) 63 *Journal of Political Economy* 309), or between individual vs. social preferences through self-commitment (Amartya Sen, ‘Rational fools: A Critique of the Behavioral Foundations of Economic Theory’ (1977) *Philosophy and Public Affairs* 317).

<sup>17</sup> For the same reason one should be sceptical about a meta-ranking of consumers’ expressed preferences that would give priority to those preferences that seem to be based more on values and commitments rather than on self-interest. Interestingly, this also bears some resemblance to the distinction proposed by Robert Sudgen for the framing of cost-benefit analysis, namely between a “citizen frame” and a “consumer frame” (Robert Sudgen, ‘Coping with Preference Anomalies in Cost–Benefit Analysis: A Market-Simulation Approach’ (2005) 32 *Environmental and Resource Economics* 129, Section 4), although this is mainly motivated by concerns about potential biases.

Such a selection would not contradict a consumer welfare standard, and it would not substitute normative goals for expressed consumer preferences. The legal order would not serve the purpose to define the relevance of sustainability in an antitrust analysis. Rather, it would merely serve as a gauge to choose between different, albeit equally true, willingness-to-pay values as elicited in different contexts.

We acknowledge, however, also potential limitations. For one, as discussed above, it remains unclear which broad sustainability benefits, such as those relating, for instance, to animal welfare or fair trade, are sufficiently expressed in such norms. Even if there was a general passage referring, for instance, to animal welfare, it remained debatable whether this sufficiently expresses societal preferences for specific matters. This applies in particular when, as also discussed, consumer preferences are non-consequentialist, while a particular societal objective, such as environmental sustainability, may be measured precisely in terms of consequences. Consumers' ecological preferences may then even conflict with societal preferences for sustainability.

This final discussion highlights the complexity of the whole issue and the need to carefully explore different arguments and approaches. Opening up competition analysis to claims of sustainability without having thought through their delineation as well as measurement must, instead, either remain void or prone to high uncertainty and errors.

#### **IV. A Critical Remark on Extending Preferences to Externalities**

When a consumer's choice has externalities on others, she may wish to integrate them into her decision for various reasons, such as altruism or adherence to social norms. It must be observed, however, that such an internalization follows already when emissions at production or consumption are taxed or when their (partial) abatement creates costs that are then imposed on the consumer. For argument's sake only, we briefly abstract from this, suggesting in our example that a consumer chooses her fuel regardless of the externalities on others, including future generations, and that neither fuel nor its usage are taxed. Then, eliciting only consumers' preferences for their own choice would clearly miss such externalities. While still staying within a consumer welfare framework, one may then be tempted to even further expand the context and framing of hypothetical choices so as to capture at least within-market externalities, i.e., those externalities that a present or future consumer in the relevant market experiences from all other consumers' production or consumption of such products. Eliciting consumers' preferences over the choices of others does not, however, need to be constrained to environmental externalities. For instance, consumers of meat may have strong preferences for the welfare of animals that are raised and slaughtered also for the consumption of others. In practice, very much in the spirit of cost-benefit analyses carried out in environmental and resource economics, one could there-

fore elicit a consumer's incremental willingness-to-pay for different scenarios, in which, for instance, all consumers were deprived of a certain (less sustainable) choice. Eventually, what would be measured would be a consumer's willingness-to-pay for a change in the behaviour of other consumers.

In one of our contributions we discuss such a collective consumer welfare analysis in detail.<sup>18</sup> There, we express serious reservations against such an expansion, notably in case of non-environmental externalities. Including preferences over the choices of others can lead to particularly large distributional implications, which the enforcement of competition law cannot address distinctly. Also, restricting individual freedom (of consumers) and imposing costs on particular segments of society (such as those with high demand) on the basis of how their choices are valued by other individuals should typically be the outcome of a political process, rather than, e.g., of an agreement between firms or the deliberation of a competition authority. In fact, it should always be recalled that also in the actual scenario, e.g., without an agreement, all available goods are produced and consumed within existing norms. Notwithstanding arguments of political failure, these norms should *prima facie* be regarded as an expression of societal preferences, including

over the trade-off between individual freedom and a welfarist approach.<sup>19</sup>

---

<sup>18</sup> Roman Inderst and Stefan Thomas, 'The Scope and Limitations of Incorporating Externalities in Competition Analysis within a Consumer Welfare Approach' (2021), available at: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3896243](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3896243). There, we also discuss, however briefly, how in the case of environmental externalities these could be measured, given that preferences

of consumers for the avoidance of such externalities are typically not adequately reflected in their choices within the concerned market.

<sup>19</sup> Such a trade-off is inherent in any liberal society; cf Amartya Sen, 'The Impossibility of a Paretian Liberal' (1970) 78 *Journal of Political Economy* 152.