



Measuring Impartial Preference for Biodiversity

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ABSTRACT

Biodiversity undergoes unprecedented rates of erosion despite the important services it provides. This is considered evidence that biodiversity is undervalued. Biodiversity valuation is accordingly a prominent issue in the literature. Economic valuations are, however, largely criticized. Numerous alternatives have been introduced. Most of them involve participatory protocols aimed at producing high-quality results. Being time-consuming and expensive, it is difficult to implement and reproduce them at a large scale. We produce an easily reproducible, inexpensive survey methodology to measure impartial preference for biodiversity. We implement it in Switzerland through a mail-based survey. Our result is that biodiversity should be ranked after retirement schemes and public transportation, but before relations with foreign countries, order and security, and culture and leisure in the expanses of the State. Current expenses therefore substantially underestimate the value that Swiss people grant to biodiversity. Our new method is a viable alternative to standard economic valuation. Given the impartiality achieved, at least in the Swiss political context our estimate can be used by decision makers to assess the legitimacy of conservation programs or to gauge public support. At a philosophical level, our measure is relevant for public policies because it captures the stances that people take when they participate in public decisions.

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1. Introduction

Biodiversity is “the variety of living organisms; the biological complexes in which they occur, and the ways in which they interact with each other and the physical environment” (Groves et al., 2002). Over the past ten years, biodiversity valuation has become a prominent issue in the economic (Bartkowski et al., 2015), ecological (Laurila-Pant et al., 2015) and philosophical (Maclaurin and Sterelny, 2008) literature.

This prominence stems from two observations. On the one hand, measures of biodiversity are correlated with measures of ecosystem functioning (Schmid et al., 2009), many of which provide “ecosystem services” (Quijas et al., 2012; Mace et al., 2012). On the other hand, biodiversity is under increasing pressure and undergoes unprecedented rates of erosion (Butchart et al., 2010).

The fact that biodiversity is being eroded despite the services it provides is considered evidence that biodiversity is undervalued (TEEB, 2010). Economic valuations are often presented as tools that can help to overcome this problem by informing environmental policies through:

- environmental accounting (Cobb and Cobb, 1994);
- rationalization of investments for the protection of species and/or habitats under:
 - o national legislations such as the Swiss law on the protection of nature and natural landscapes (admin.ch/opc/fr/classified-compilation/19660144/index.html),
 - o supranational legislation such as Natura 2000 in Europe (CEC 1992),
 - o international agreements such as the Convention on Biological Diversity (Nijkamp et al., 2008),
- more generally, improvements of the allocation of conservation funds (Scharks and Masuda, 2016).

The economic methods at issue are predominantly based on individual willingness to pay (iWTP), and are classically divided in two types (Bartkowski et al., 2015):

- stated preference methods are survey-based inquiries encompassing contingent valuation, where respondents state their iWTP for an environmental entity or project, and choice experiments, where iWTP is inferred from choices between scenarios;
- revealed preference methods, which use observation of behavior, mainly on markets, to infer iWTP.

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The notion that these iWTP-based methods can inform environmental policies is debated (Ives and Kendal, 2014; Jax et al., 2014; Spash, 2012) with respect to two issues: (1) informational basis and (2) aggregation procedure.

- (1) In terms of informational basis, the relevance of iWTP is questioned on four counts.
 - (1.1) iWTP is sensitive to knowledge, and individuals are often poorly knowledgeable about scientific issues such as biodiversity (Munro and Hanley, 2001).
 - (1.2) iWTP is sensitive to income and socio-economic status (Meinard et al., 2016), implying that the richer one is, the more influential one can be on iWTP-based decisions.
 - (1.3) Despite evidence that respondents can act as committed citizens by modulating their stated iWTP (Ami et al., 2014; Martínez-Españeira, 2006), iWTP elicitation arguably confines people to their role as consumers rather than citizens (Anderson, 1993; Sagoff, 2008; Sarkar, 2005).
 - (1.4) iWTP measurements ignore the motives (including social norms and ethical motivations) behind actions and statements, which impairs their usefulness for public policies (Spash et al., 2009; Liebe et al., 2011).
- (2) In terms of the aggregation procedure, the relevance of iWTP is questioned on two counts.
 - (2.1) Many methods aggregate iWTP through summations and therefore endorse utilitarianism (Lo and Spash, 2012), an ethical doctrine whose relevance has long been debated (Rawls, 1971; Kymlicka, 2002).
 - (2.2) According to the theory of deliberative democracy (Chappell, 2012), by confining aggregation to a mathematical exercise, these methods bypass the crux of legitimate collective decision-making: the public discussions through which people form their positions about public policy.

In the wake of these debates, the main methodological tool introduced is deliberative monetary valuation (DMV) (Kenter et al., 2015; Randhir and Shriver, 2009; Spash, 2007). Various approaches to DMV tackle different deficiencies of standard iWTP-based methods (Bunse et al., 2015). Empirical studies mainly aim at improving the estimates produced by “facilitating the construction of well-informed and rational preferences” (Bunse et al., 2015, p. 91), and therefore mainly tackle deficiency (1.1) and to some extent (2.2). Theoretical studies tackle all the deficiencies by questioning the standard economic theoretical framework, using various interpretations of the deliberative democracy literature (in particular, Bunse et al., 2015 single out Spash and Lo, 2012 as defending a distinctively pluralist interpretation).

The present study aims to contribute to the development of alternatives to iWTP-based methods, not by developing a new DMV approach, but by assessing whether a measure of reasonably impartial preference for biodiversity can be reached through an easily reproducible, inexpensive survey methodology.

This aim has two aspects. The first aspect is that we aim at capturing “impartial preferences”—that is, preference of people focusing on biodiversity per se rather than on their personal situation. Indeed, most conservation actions result in different costs and benefits for various people. Therefore, if they take their personal situation into account, some agents strongly favoring biodiversity might downplay this attitude because they think that conservation policies might have detrimental consequences on their personal situation. Conversely, some agents not concerned with biodiversity might express a positive attitude because they expect positive impacts on themselves. Here we want to focus on preference for biodiversity per se.

The second aspect of our aim is to produce an easily reproducible, reasonably inexpensive survey method. Indeed, the current alternatives to standard iWTP-based methods such as DMV involve dense protocols, where participants are asked to work together for several hours or days.

For example, Hattam et al. (2015) organized a citizen’s workshop to assess the ecosystem services provided by a sandbank. To set up their jury with 19 members, they implemented a recruitment procedure, invited experts to explain the stakes of the exercise, and orchestrated deliberations. Such protocols produce high-quality results, but because they are time-consuming and expensive, it is difficult to reproduce them at a large scale. Accordingly, Bunse et al. (2015) highlight the development of larger-scale investigations as a pivotal challenge for the future of DMV. That is why we aim at developing a more quantitative method.

This article is organized as follows. The core theoretical elements structuring the protocol are developed in the “Methods” section. The “Results” section presents empirical findings. Additional theoretical elements useful to interpret them are presented in the “Discussion”.

2. Methods

2.1. Theoretical Framework

2.1.1. The Literature on Preference for Redistribution as Role-model

We developed a survey-based approach, inspired by the economic literature on preferences for redistribution. One can distinguish two approaches in this literature. The first uses data from international survey programs such as the World Values Survey to identify the determinants of people’s attitudes towards redistributive policies (e.g. Alesina and La Ferrara, 2005; Fong, 2001). The second approach, largely inspired by the work of Rawls (1971), encompasses theories of “extended” (Harsanyi, 1977), “laundered” (Goodin, 1986), “fundamental” (Kolm, 2005) or “abstract” (Meinard and Grill, 2011) preferences. These theories claim that, in order to express their preferences for redistribution, people have to abstract from their personal situation. Indeed, if they take their personal situation into account, rich people are incited to oppose redistribution while poorer ones are incited to favor it. Empirical studies aiming to capture preferences for redistribution therefore have to embed an “impartialization” (Kolm, 2005) protocol, leading respondents to abstract from their personal situation (Clément and Serra, 2001). An illustrative classic impartialization protocol was implemented by Frohlich and Oppenheimer (1992). Working in small groups, they asked participants to choose one among four principles of redistribution (maximization of minimal income, maximization of mean income, maximization of mean income within limits in income disparity, maximization of mean income subject to a lower limit for the minimal income), in view of the distribution of income that each principle would produce among eight classes of income. Each individual was randomly assigned to one class, but did not know which one until the principle was chosen. At the end, each player received a payoff determined by the principle chosen and the class to which s/he was assigned. In this protocol, the players cannot take their personal situations as players into account to decide their move, because when playing they don’t know the class to which they have been assigned. Numerous other examples are presented by Gaertner and Schokkaert (2012).

If the logic behind impartialization is thought through to the end, it can be criticized for reducing agents to “unencumbered selves”, deprived from personal attachments and shared meanings, and therefore incapable to have preference (this criticism was originally raised against Rawls’s theory: see Kymlicka, 2002). Unencumbered selves are rhetorical specters, but in concrete terms this criticism means that the personal situation and history of real-life respondents can have a deep effect on their values, from which even the best imaginable impartialization protocol is powerless to abstract. Impartialization is hence better conceived as what Sen (2009) terms a “comparative”, as opposed to a “transcendental” notion: thorough impartialization is elusive, but certain preferences can be more impartialized than others.

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