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Preference Purification in Behavioural Welfare Economics: an Impossibility Result

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Abstract

We propose a precise definition of the notion of ‘context’ in behavioural economics, and identify four axioms characterising the strategies implemented in standard and behavioural welfare economics to define welfare: (1) normative individualism, (2) behavioural context-independence, (3) normative context-independence, and (4) consumer sovereignty. We then review the different approaches in behavioural normative economics in the light of those axioms. We highlight that the key distinction between those approaches is the axiom which is chosen as a way to infer normative preferences from behavioural preferences, with either normative context-independence or consumer sovereignty. We argue that preference purification requires the axiom of normative context-independence, whose justification is however limited when individual behaviour is context-dependent. This suggests that it might be impossible to offer a general strategy to infer true/normative preferences from possibly incoherent behavioural preferences.

Keywords. *normative economics — behavioural economics — behavioural welfare economics — behavioural public policy*

JEL codes. B41, D63, D90, I31

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1 Introduction

Standard welfare economics is based on two premises. First, it is assumed that the relevant normative criterion for individuals is the satisfaction of their preferences, as revealed by their choices. Second, it is assumed that individual choices reveal rational preferences, in the sense of a transitive, reflexive and complete relation over the set of alternatives. Exhibiting such ‘rational’ preferences entails that we can represent the choice of the individual as the maximisation of a real-valued function, which defines the welfare of the individual. However, the empirical findings of behavioural economics seems to invalidate the robustness of this second premise, which raises the question of how to define individual welfare out of preferences which are not coherent. The conventional practice in behavioural welfare economics consists in ‘purifying’ the observed preferences of the individuals so as to identify the underlying ‘true’ preferences, i.e. the preferences the individual would have acted on, if he was rational. Then, the aim is to use the satisfaction of such true preferences to define the individual’s welfare.¹ The intuition behind the idea of *preference purification* is that we ought to use the individual’s *own* preferences to measure welfare — such as in Thaler and Sunstein’s (2009) *as judged by themselves* clause — and not impose an external normative criterion to define what is good for individuals.²

The aim of this paper is to highlight the impossibility of preference purification, and of the project of deriving an unambiguous welfare criterion from individual preferences. Our argument builds on the distinction that is sometimes explicitly drawn between the *behavioural* and the *normative* preferences of individuals. While behavioural preferences correspond to the preferences that guide individuals’ actual behaviour and are inferred from their observed choices, their welfare is determined by the satisfaction of their normative preferences — which thus characterises what is best for individuals. This distinction is for instance found in Kahneman, Wakker, and Sarin (1997) with the notions of ‘decision utility’ and ‘experienced utility’, and in Beshears et al. (2008) notions of ‘revealed preferences’ and ‘true preferences’ (the latter also being labelled ‘normative preferences’ in their paper).³ A recurrent argument in the recent literature in behavioural normative economics (to be distinguished with standard normative economics) is that, most of the time, we should expect a discrepancy between what individuals do and what is best for them.

Our aim in this article is to characterise how normative preferences could be inferred from behavioural preferences. We argue that this characterisation is based on four inter-related and *a priori* normatively desirable axioms in standard welfare economics: normative individualism, consumer sovereignty, behavioural context-independence, and normative context-independence. The empirical findings of behavioural economics

¹We do not discuss here whether preferences are indicative or constitutive of the individual’s welfare, see Hausman (2012).

²See Infante, Lecouteux, and Sugden (2016) for a review and critique of the strategy of preference purification.

³Such a distinction between behavioural and normative preferences is not new. Discussing the soundness of the ‘consumers’ sovereignty doctrine’, Harsanyi (1955) already mentioned ‘consumers’ notorious irrationality’ and the possible distinction between actual and ‘true’ preferences, defined as ‘the preferences [individuals] *would* manifest under “ideal conditions,” in possession of perfect information, and acting with perfect logic and care’ (p. 311, fn. 7 — his emphasis).

however challenges the axiom of behavioural context-independence, which considerably weakens the justification of the axiom of normative context-independence, which is in turn necessary to define a coherent notion of welfare. A detailed review of the literature in the light of those axioms allows us to highlight the main limitations of assuming normative context-independence when behavioural preferences are context-dependent.

The article is organised as follows. We first define an axiomatic framework that characterises how normative preferences are derived in standard normative economics (Section 2). We then review the different positions taken in the literature in behavioural normative economics with respect to those axioms (Section 3). We conclude by highlighting the impossibility to define an unambiguous notion of welfare in behavioural welfare economics (Section 4).

2 Axiomatising the Reconciliation Problem

2.1 Defining the ‘Context’

The notion of *context* is central in behavioural welfare economics. It is however noteworthy that the literature lacks a precise definition of this notion, mostly because of the issue of avoiding circular definitions (as e.g. the ‘irrelevant’ factors, without defining a clear criterion to identify the ‘relevant’ factors). We propose a definition in line with the casual use of the expression in behavioural economics as the ‘background’ of choice, that seems to be irrelevant from a normative perspective, while however still influencing to some extent the choice of boundedly rational agents.

We consider an individual I who must choose an option x among the non-empty set of available alternatives X . Each option is described by a list of properties P , with \mathcal{P} the set of properties. Formally, each property $P \in \mathcal{P}$ is a function assigning to each option $x \in X$ a value $P(x)$ from some range. In the case of a binary property, the range is $\{0; 1\}$, where $P(x) = 1$ means that x has the property and $P(x) = 0$ means that x does not have the property. More generally, the range could be some interval of values, where $P(x)$ represents the degree to which x has the property (e.g. the distance between the option x and a reference point). Properties can either refer to intrinsic properties of the alternatives (e.g. the location of a dessert, its colour, its shape, etc.) or properties of the environment (e.g. social norms about how to behave in a cafeteria line). We will consider different types of properties in our analysis: (i) motivational properties $P \in \mathcal{M}_I \subseteq \mathcal{P}$, (ii) known properties $P \in \mathcal{K}_I \subseteq \mathcal{P}$, and (iii) relevant properties $P \in \mathcal{R}_I \subseteq \mathcal{P}$. The distinction is the following: motivational properties are the properties which influence the actual choice of the individual, known properties are the properties of which the individual is aware (when considering the options, the individual can determine the value $P(x)$) and relevant properties are the properties which are normatively-relevant for the individual (i.e. the properties that determine whether an option is ‘better’ than another for the individual).

The set of motivational, known, and relevant properties may overlap, and there is *a priori* no relation of inclusiveness between \mathcal{M}_I , \mathcal{K}_I , and \mathcal{R}_I . Imagine for instance an election where I is voting and politician Smith is one of the candidates. Smith is bold, promotes a centrist political agenda, and also set up a team of supporters who artificially

increases his visibility on social media. We have here several properties characterising Smith, which could be formalised as follows:

- $P_b(\text{Smith}) = 1$, meaning that the property ‘boldness’ is satisfied
- $P_p(\text{Smith}) = 0.5$, meaning his political agenda, on a range of real numbers from 0 to 1 — representing whether he is on the left or right side of the political spectrum — is in the middle
- $P_v(\text{Smith}) = 80$, giving a score of visibility on social media, from e.g. 0 to 100
- $P_m(\text{Smith}) = 1$, meaning the property ‘manipulation’ is satisfied

Suppose that $\mathcal{K}_I = \{P_b, P_p\}$, $\mathcal{R}_I = \{P_p, P_m\}$, and $\mathcal{M}_I = \{P_p, P_v\}$. The voter is aware of Smith’s political agenda and of his boldness, while he considers that only his political agenda is relevant for his vote. However, he does not know that Smith is a manipulator, while this should also be relevant for his vote (Smith being not necessarily trustworthy). Furthermore, he does not know that social media visibility — which is not relevant for his vote — might however influence his actual vote. We have here a situation in which a property is relevant, motivational, and is known (Smith’s political agenda), another which is also relevant, but neither motivational nor known (Smith’s manipulation), a property which is motivational, but neither known nor relevant (Smith’s visibility), and another which is known, but neither relevant nor motivational (Smith’s boldness).⁴

As in standard normative economics, it is commonly assumed that normative evaluations are made from the standpoint of an external observer who evaluates a given situation and then prescribe/recommend some public policy based on such evaluations. In what follows we will call this observer the ‘theoretician’ (she) and refers to the ‘individual’ (he) as the agent who is under scrutiny by the theoretician.⁵ The sets \mathcal{M}_I , \mathcal{K}_I and \mathcal{R}_I are therefore the *representation* by the theoretician of the choice problem faced by I . For simplicity, we assume that the theoretician correctly identifies the set \mathcal{M}_I , i.e. she knows precisely what are the properties which influence the choice of the individual.⁶ The set of relevant properties in particular is the theoretician’s own representation of the problem at stake — though we cannot be certain *a priori* that the individual himself considers (or would consider, upon careful scrutiny) those properties as relevant.⁷

Our definition of the context is based on the premise that it refers to what *we*, the-oreticians, consider as the ‘irrelevant’ properties of the choice environment (Bacharach

⁴We could complete the illustration to cover the other cases (e.g. motivational and known, but not relevant, such as the weather of the day the election is taking place, which could make the voter abstain or not, etc.). The main point for now is that there is no constraint set *a priori* on the relationships between the three sets.

⁵In practical terms, the theoretician refers to the actual person trying to offer a normative judgement — e.g. a behavioural economist, philosopher, expert, policy adviser, etc.

⁶Relaxing this assumption would lead us to a direct rejection of preference purification — the theoretician having indeed a wrong representation of the choice problem — so we do not discuss it further.

⁷We will remain silent in this paper on the adequate *perspective* from which the relevant properties and the individual’s welfare should be defined, which could be either the current individual’s judgement, his counterfactual enlightened judgement as estimated by the theoretician, or the individual’s ability to aggregate different judgements taken from different perspectives (see Lecouteux and Mitrouchev (2022)).

2006, p. 13). Formally, a *context property* is a property that is motivational but not relevant: $P \in \mathcal{C}_I = \mathcal{M}_I \setminus \mathcal{R}_I$. A context is any combination $\gamma = (\gamma_P)_{P \in \mathcal{C}_I} \in \Gamma$ of values of the context properties. In the illustration above, there is only one property — visibility on social media — that is motivational and not relevant, i.e. $\mathcal{C}_I = \{P_v\}$, and the context is defined as the set of scores of visibility on social media of the different candidates.

2.2 Behavioural and Normative Preferences

Given our definition of motivational properties, the choice behaviour of the individual is a function that maps each subset of motivational properties \mathcal{M}_I to a choice function over menus of options from X .⁸ This model bears some similarities to both Dietrich and List’s (2013a, 2013b) model of ‘motivationally salient properties’ and their approach to model context-dependent preferences (Dietrich and List 2016), and to Larrouy and Lecouteux’s (2018) adaptation of Mandler, Manzini and Mariotti’s (2012) model of choice by checklist.

Knowing that a context property is motivational by definition, we define I ’s *behavioural preferences* as a function of the context γ , and denote it $BP_\gamma \subset X \times X$. We interpret BP_γ as a choice ranking (Hausman 2012): ‘ $x BP_\gamma y$ ’ reads as ‘ I prefers x to y in context γ ’. It means that, when asked to choose between x and y in a context γ , I picks x . We do not make any assumption about the properties of BP_γ , e.g. whether it is transitive or not, or whether it could be interpreted as desires or motives for actions. Instead, we consider it as an analytical index aimed at representing the behaviour of the individual.

We now define $NP_\gamma \subset X \times X$ as the normative preferences of the individual. While BP_γ represents the individual’s actual preference in context γ , NP_γ represents the preference that he *ought* to satisfy in order to maximise his welfare. The distinction between BP_γ and NP_γ allows us to distinguish between the ‘descriptive’ and the ‘normative’ aspects of individual behaviour. For convenience, assume that BP_γ and NP_γ are complete and weak relations, $\forall \gamma \in \Gamma$.

While we can directly observe the behavioural preferences of the individual, this is not true of his normative preferences. Given our definition of motivational and relevant properties, an intuitive approach would be to define the normative preferences of the individual as the preferences he would reveal if he was only motivated by relevant properties, i.e. $\mathcal{M}_I = \mathcal{R}_I$. The problem is however that \mathcal{R}_I is the theoretician’s representation of what she thinks matters for the individual (e.g. that Smith is a manipulator). While standard welfare economics proposed to solve this issue by *postulating* that $\mathcal{M}_I = \mathcal{R}_I$, the crux of the ‘reconciliation problem’ (McQuillin and Sugden 2012) is that the empirical results of behavioural economics have raised the possibility that there exist some properties which are motivational but not relevant (i.e. there is a *context* that matters).

⁸A menu is a non-empty set $Y \subseteq X$ of feasible options, and a choice function maps each menu Y from some set of possible menus to an option in Y , representing the option chosen from this menu. We say ‘some set of possible menus’ rather than ‘all menus’, because many combinations of options (such as the totality of X) do not define a possible menu as the options have mutually inconsistent properties.

Consider as an illustration the Asian disease experiment of Tversky and Kahneman (1981, p. 453). An unusual Asian disease is expected to kill 600 individuals. You are asked to choose between two different health programs. The first one is efficient but costly: you will save for sure 200 individuals and let 400 die. The second one is experimental and risky, with 1 chance out of 3 to save 600 individuals (and no death) and 2 chances out of 3 to save nobody, with 600 deaths. The choice between the two programs can be framed in terms of gains or losses (the % below corresponds to the share of subjects who choose the program in Tversky and Kahneman's experiment, and N corresponds to the total number of subjects per frame).

Frame 'gain' [N = 152]

A: 200 people will be saved [72%]

B: 1/3 probability that 600 people will be saved,
and 2/3 probability that no people will be saved [28%]

Frame 'loss' [N = 155]

C: 400 people will die [22%]

D: 1/3 probability that nobody will die,
and 2/3 probability that 600 people will die [78%]

In this experiment we can clearly see that the property characterising the framing (in terms of gains vs. losses) is motivational, although we (as theoreticians) can reasonably doubt whether it is a relevant property — from a purely consequentialist perspective, the two options are indeed identical. In this type of situation, with a clear influence of a context property, it might be more difficult to identify the normative preferences of the individual.

We now characterise formally how the problem of inferring *NP* from the observed preferences *BP* has been handled in standard welfare economics, and the nature of the challenge raised by behavioural economics.

2.3 Axioms of Welfare Economics

The object of welfare economics is to derive normative preferences *NP* from the observation of the behavioural preferences *BP*. We suggest that the strategy advanced in standard normative economics was built around four interrelated axioms: (1) normative individualism, (2) behavioural context independence, (3) normative context independence, and (4) consumer sovereignty. We can show that axioms (1) and (2), when combined, imply both axioms (3) and (4), which offer an unambiguous way to define the individual welfare, and therefore normative preferences. The challenge raised by behavioural economics is however that axiom (2) seems to be invalidated, which means that axioms (3) and (4) must be *postulated* in order to derive normative preferences. An additional difficulty is that the characterisation of normative preferences derived from axiom (3) is *not* any more compatible with the characterisation derived from axiom (4).

According to the principle of normative individualism (Ross 2005, pp. 220-222), the proper locus of normative concern is individual persons, whose values and situations should be taken into account when debating ethical issues such as policy or justice. We

translate this principle in our framework as follows.

AXIOM 1. Normative Individualism (NI). For any pair of distinct alternatives (x, y) and context $\gamma \in \Gamma$, NP_γ must be such that:

- i. $x NP_\gamma y$ only if there exists at least one context γ' such that $x BP_{\gamma'} y$
- ii. $x NP_\gamma y$ if $x BP_{\gamma'} y, \forall \gamma' \in \Gamma$.

This principle establishes a close relation between the behavioural and the normative preferences of the individual. In a given context γ the choice between two alternatives must be justified in terms of one's behavioural preferences. x can be normatively preferred to y (in context γ) only if there exists a context γ' in which I would indeed pick x (condition i.). Furthermore, if the individual always chooses x independently of the context, then he ought to choose x (condition ii.). The fundamental idea of this definition is that the definition of individual welfare should not be set *a priori*, but rather inferred from actual choices, although possibly — but not necessarily — in a different context from the current one. If there does not exist any context in which I would prefer x , then x cannot be normatively preferred. And if I always prefers x , then x must be normatively preferred. Since the two conditions are not complementary, the principle of NI remains silent on cases where the behavioural preferences between x and y depend on the context.

The second axiom we propose is *behavioural context-independence*, and offers a way to address this issue.

AXIOM 2. Behavioural Context-Independence (BCI). $\forall \gamma, \gamma' \in \Gamma, BP_\gamma = BP_{\gamma'}$

BCI states that I 's behaviour does not depend on the context in which he is embedded. In other words, the set of context properties is empty (any motivational property is necessarily relevant, and vice-versa). Unlike NI, which is a normative principle, BCI is an assumption about how individuals actually behave, and is thus subject to empirical test. BCI is consistent with the common practice in standard normative economics, where it is assumed that the context can only have a transitional effect on behavioural preferences and will eventually disappear because individuals adjust to the 'rational' pattern of behaviour.⁹

AXIOM 3. Normative Context-Independence (NCI). $\forall \gamma, \gamma' \in \Gamma, NP_\gamma = NP_{\gamma'}$

NCI means that the individual's normative preferences are defined independently of the context: in other words, NP depends only on the relevant properties of options. The welfare of the individual is thus a function that maps relevant properties \mathcal{R}_I to a choice function over menus of options from X . This principle has some normative appeal, at least from the theoretician's perspective, since it states that individual welfare does not depend on what the theoretician considers as irrelevant properties of the choice problem. Once the theoretician has identified the set of relevant properties, NCI is necessary to properly define a welfare function. Indeed, if the normative preferences

⁹See e.g. Plott's (1996) 'discovered preferences' hypothesis).

were context-dependent, it would mean that the welfare associated to various options can change depending on the context, meaning that the welfare metrics would not be stable.

AXIOM 4. Consumer Sovereignty (CS). $\forall \gamma \in \Gamma, NP_\gamma = BP_\gamma$

Unlike NCI — which remains a largely implicit principle in standard normative economics — CS is a central argument in standard normative economics in favour of leaving individuals choose as they prefer. CS indeed states that the normative preferences of an individual over X correspond precisely to his behavioural preferences over X . An alternative interpretation of this axiom would be that any motivational property is necessarily relevant — meaning in effect the set of contexts is empty, because the theoretician prefers to ‘extend’ the set of relevant properties.

NI embodies the idea that normative preferences must be derived from individual behaviour, which is a constitutive idea of standard welfare economics. Standard welfare economics furthermore assumes BCI, which, combined with NI, imply both NCI and CS.¹⁰ Since the contexts have no influence on the choice (by BCI), the observed choice in any context necessarily reveals the underlying normative preferences. We can also note, before going further, that CS is a stronger requirement than NI, and that NCI can be assumed without assuming NI. The core challenge of behavioural welfare economics is how to derive normative preferences if BCI does not hold (as suggested by many experimental findings). NI remains indeed silent on the case where behavioural preferences depend on the context, so either NCI or CS has to be postulated if we want to derive the normative preferences of the individual. In the next section we review the different approaches that have been proposed in the literature.

3 A Review of Behavioural Normative Economics

The following table summarises the positions of some of the main contributions to the literature with respect to the axioms defined above (a checkmark means that the axiom is maintained):

	NI	BCI	NCI	CS
Standard welfare economics	✓	✓	✓	✓
Unified framework	✓	✓	✓	✓
Behavioural paternalism	✓		✓	
Quantitative intentional stance	✓		✓	
Opportunity criterion	✓			✓
Experienced utility			✓	

We now discuss in detail each alternative in order to highlight how they derive normative preferences from the individuals’ choices.

¹⁰See proofs in appendix A.1 and A.2.

3.1 Bernheim and Rangel's Unified Framework

The aim of Bernheim and Rangel (2008) is to extend standard choice welfare analysis to situations where individuals make ‘anomalous’ choices of various types commonly identified in behavioural economics. In this approach, frames are, by assumption, irrelevant to the definition of individual welfare. Frames are akin to the context properties in our framework that are motivational but not relevant. The principle of their approach — that they refer to as behavioural welfare economics, and which is the first occurrence of the expression — is to identify operational misunderstandings of the relationship between means and outcomes (which they treat as ‘mistakes’) that can be elicited with the use of cognitive data (Bernheim 2016). The process of preference purification consists here in tracking context properties by identifying incoherent choices, and then to base normative assessments only on the sets of choices for which we cannot reasonably identify the influence of a context property. The individual welfare function is then derived from this restricted set of choices.

The singular strategy of this approach is to maintain BCI. It is recognised that individuals’ preferences may change across contexts, yet for the sake of normative analysis BCI is ‘rescued’ by restricting the choice domain that serves as the input in normative analysis to ‘non-ambiguous’ choices. The framework of Bernheim and Rangel may be considered as a pragmatic approach to the reconciliation problem. It extends the revealed preference framework by taking into account the cognitive processes of individuals without modifying its overall principle. According to this principle, an alternative is unambiguously preferred to another one if and only if the second is never chosen when the first is available (meaning that NI is preserved). Since BCI is maintained by construction of the set of choices under consideration, NCI and CS are maintained on the restricted set of choice data that are considered to be ‘unbiased’. Removing the ‘ambiguous’ data from welfare analysis implies, however, that the theoretician cannot form normative judgements about cases in which the behavioural preferences of individuals are too inconsistent. This means that the range of situations which can be studied is rather limited, and the theoretician will lack normative guidance for many cases where behavioural preferences are context-dependent.

3.2 Behavioural Paternalism

Behavioural paternalism takes the satisfaction of individuals’ ‘true’ preferences, i.e. preferences that are not distorted by cognitive biases, as normatively relevant. The most famous account is given by Thaler and Sunstein (2003, 2009) in their defence of libertarian paternalism. Other forms of paternalism have been advocated in the literature, e.g. Camerer et al.’s (2003) asymmetric paternalism, Loewenstein and Ubel’s (2008) light paternalism, and Dalton and Ghosal’s (2011) soft paternalism. All of them share the idea that the maximisation of individual welfare, through the satisfaction of individuals’ true preferences, should be the ultimate goal of normative economics. The rationale behind this approach is that an individual would make ‘adequate’ choices only in a context-free environment and without cognitive limitations. In this approach, BCI is therefore rejected while NI is maintained — this is the ‘as judged by themselves’ clause of Thaler and Sunstein (2009). It is noteworthy that the rejection of BCI leads to the rejection of CS (since it is considered that individuals can make mistakes), while NCI is

maintained.

Within our framework, two objections can be made against the justification of behavioural paternalism and the use of true preferences as the normative preferences. First, and as argued by Infante, Lecouteux, and Sugden (2016), nothing guarantees that the individual’s inner rational agent — i.e. what a counterfactual individual would prefer if he was free from reasoning limitations and the influence of the context — would exhibit context-independent behavioural preferences. Their argument is that even if the set of motivational properties is restricted to the set of relevant properties, it is not certain that the individual will be able to make a choice (i.e. behavioural preferences derived from relevant properties may not necessarily be complete), in which case using the context to choose between two options might be an acceptable choice rule. Normative preferences (i.e. the behavioural preferences of the inner rational agent) would thus be context-dependent, violating NCI and the possibility to define a stable welfare function.

Second, we have an instance of the ‘knowledge’ problem discussed by Rizzo and Whitman (2009). Behavioural paternalism presupposes that the set of relevant properties \mathcal{R}_I , as represented by the theoretician, corresponds precisely to the properties that are normatively relevant to the individual. This is a more general issue related to the disentanglement among motivational properties of the sets of relevant and context properties. Even if \mathcal{M}_I is correctly identified, the theoretician cannot know *a priori* whether a motivational property is relevant or not. Take the illustration of Smith’s election. The theoretician considers that the fact Smith manipulates social media is relevant (because it reveals he is not trustworthy), while the individual could perfectly be fine with it — e.g. he considers it is part of an acceptable electoral strategy, and therefore that being a manipulator is not relevant for the choice. Similarly, in the Asian disease experiment discussed earlier, the theoretician cannot know *a priori* whether the individual ought to be risk-averse or risk-seeking. This problem suggests that NI may not be respected in behavioural paternalism, despite the narrative promoted by tenants of this literature. Behavioural paternalism indeed imposes *consistency* across contexts as a normative criterion: the idea that the ‘true’ self is one’s neoclassical *alter ego*. Consistency appears however to be more controversial than it seems, and would require additional justification.¹¹

3.3 The Quantitative Intentional Stance

Another approach that intends to offer welfare measurement while acknowledging that BCI is invalidated is the *quantitative intentional stance* towards behavioural welfare economics (QIS henceforth) proposed by Harrison and Ross (2018). Their normative approach is based on Dennett’s (1987) externalist account of preferences and beliefs. These are not defined as inner mental states that are the cause of individual behaviour, but rather as attributions to oneself and others that make one’s behaviour socially understandable. In this approach, looking for a notion of welfare does not require investigating individuals’ mental states. Instead, it requires interpreting individual behaviour in terms of the theoretician’s own language of subjective expected utility.

¹¹See Arkes, Gigerenzer, and Hertwig (2016) and Lecouteux (2021a) for an extensive analysis of the lack of normative justification of consistency.

According to Harrison and Ross, laboratory experiments are the adequate environment in which individual choices can be interpreted as the satisfaction of preferences, given subjective beliefs. This is because such experiments are considered as ‘small worlds’ — in Savage’s (1954) terms — where subjective expected utility can hold. Harrison and Ng (2016, 2018) and Harrison and Ross (2018), for instance, characterise the risk preferences of individuals by eliciting the most likely preference structure (expected utility or rank-dependent expected utility) in simple experimental tasks. They then use those risk preferences as the welfare metric for choices among insurance products or portfolios.

Within our axiomatic framework, the QIS rejects BCI and keeps NI as well as NCI. The suggestion that welfare can be measured in lab experiments is justified by considering that there is a lower risk of context-dependence in the lab, which offers an environment in which we can reasonably assume that the only properties considered by the individual are relevant. Unlike behavioural paternalism, it offers an operational measure to determine the normative preferences of individuals. In this approach, normative preferences correspond to the behavioural preferences that the individual would reveal in a laboratory experiment, where the ‘noise’ and uncertainty of the surrounding environment is minimised. The arbitrariness of the definition of welfare is here explicit and pragmatically justified: in many cases, the theoretician is not advising an abstract social planner but is hired as a consultant to advise an actual client. Even though ‘errors’ are defined in a much more restrictive way than in behavioural paternalism, CS is (as a result) rejected, but with the explicit consent of the client, who expresses his willingness to delegate his states of affairs to the theoretician. Unlike Bernheim and Rangel (2008), the QIS offers an operational approach to normative economics, but it faces a similar limitation: it is only applicable to ‘preferences that violate [expected utility theory] but [which] are nevertheless well ordered’ (Harrison and Ross 2018, p. 22).

3.4 The Opportunity Approach

An alternative approach to the reconciliation problem is to reject NCI and to base normative assessments not on welfare but on opportunity. This strategy values the freedom of choice of the individual, while acknowledging that freedom can properly be exercised only if the individual lives in an institutional context, whose aim is to promote individual freedom. In this section we focus on Sugden’s contribution to the debate.¹²

Sugden (2004, 2018) argues that the theoretician is not entitled to make value judgements on individuals’ preferences. An individual should be seen as ‘a continuing locus of responsibility’, treating his past, present and future actions as his own, whether or not these actions were or will be what he would like them to be now (Sugden 2004, p. 1018). Such a quality of ‘responsible person’ gives normative authority to the judgement of the individual on his own actions. In Sugden’s approach, rather than letting the theoretician make a value judgement on individuals’ states of affairs, it is up to individuals themselves to choose whether some social institutions (e.g. competitive markets) are normatively acceptable. Sugden suggests that by maximising individuals’ opportunity sets, a market society is mutually beneficial for its individual members.¹³

¹²Other contributions are reviewed in Lecouteux (2021b).

¹³Here the maximisation of opportunity sets means that we cannot further increase the opportunity set of one individual without reducing the opportunity set of another individual.

The normative authority of markets lies here in their ability to extend individuals' opportunity sets, rather than in their ability to satisfy individuals' preferences.

In this approach, normative economics is not about satisfying individuals' preferences but about the nature of social arrangements: it is up to individuals to choose as they prefer (even though their choice is likely to be context-dependent), and there is no 'correct' choice to be defined by a third party. Using our axiomatic framework, this means that both BCI and NCI are dropped, and that the adequate context for the definition of normative preferences simply corresponds to the *current* context. Therefore, CS is here maintained as a way to define normative preferences. The individual must be allowed to satisfy any preference he *might have*, even though these preferences may change depending on the context.

By endorsing this 'first-person' standpoint (in contrast to the third-person standpoint of the theoretician), Sugden avoids the critique of imposing an *ad hoc* normative criterion. His approach however also imposes a stronger version of NI, where all contexts *must* be considered as normatively relevant. This is mostly because Sugden's (2018) approach is a *defence* of the market (as explicitly acknowledged by the subtitle of the *Community of Advantage*). His main concern is that many behavioural economists question the legitimacy of market institutions by pointing out apparent incoherences in individual behaviour. This motivates his search for an alternative foundation of normative economics (in terms of opportunity rather than welfare) that does not require what he judges to be untenable assumptions about individual behavioural preferences.

Sugden's approach remains however silent on relatively uncontroversial cases that could be highlighted by behavioural economists such as (i) self-acknowledged failures of self-control (e.g. drug addiction) or (ii) cases where one's preferences are strongly influenced by external factors (e.g. aggressive marketing or adaptive preferences). Sugden's (2017) response to (i) is that genuine problems of self-control are quite rare, and that they are not comparable to more common inconsistent behaviours such as not respecting one's diet. While the former can indeed raise serious normative concerns, Sugden judges that the latter is simply an everyday incoherence that is part of what constitutes a normal life. Little is said however on (ii). It is for instance difficult to disentangle cases of adroit marketing (such as a baker who prominently displays her nicest desserts rather than offering them already wrapped in cellophane) and cases of the implementation of manipulative techniques such as using ambient scent in supermarkets as a strategy to induce different moods and desires (Akerlof and Shiller 2015). There is no decisive criterion to identify which cases can be considered or not as outright forms of fraud and deception on behalf of firms, which would violate the rules of fair competition.

3.5 Experienced Utility

The contributions we have considered so far intend to maintain NI as the basis of normative economics (even though we highlighted some difficulties in behavioural paternalism, which imposes consistency as a normative criterion). The *experienced utility* approach theorised by Kahneman, Wakker, and Sarin (1997) consists in drawing a distinction between 'decision utility' — the weight given to an outcome in a decision — and 'experienced utility' — the hedonic quality of an experience. Translated into our framework,

decision utility is derived from behavioural preferences and experienced utility from the satisfaction of normative preferences. It is acknowledged that decision utility is context-dependent, and therefore that BCI should be rejected. The underlying assumption of the theory is that individuals intend to maximise their happiness but are refrained from doing so because of biases (in a similar way than the literature using true preferences as the normative criterion). Unlike the framework of Bernheim and Rangel (2008) and behavioural paternalism, NI is however rejected: normative preferences are not defined from the choices of the individual but are postulated *a priori*. The normative stance suggested by Kahneman (1999) is to define ‘objective happiness’ according to a set of normative rules that are external to the subject. The experienced utility approach therefore keeps NCI. Since normative preferences are defined independently of individual behaviour, it also rejects NI, and therefore CS.

4 Conclusion: the Impossibility of Preference Purification

We have proposed in this paper an analysis of the strategies used in behavioural welfare economics to elicit normative preferences from the possibly incoherent behavioural preferences of the individual. We have first defined the context in terms of ‘motivational but not relevant’ properties, which is coherent with the casual definition used in behavioural economics. This allows us to clearly highlight that the distinction between context properties and relevant properties are first and foremost a representation by the theoretician. The strategy proposed in standard welfare economics to avoid value judgement on what is constitutive of the individual’s welfare was to explicitly consider all motivational properties as relevant. This implies that normative preferences are directly revealed through one’s choice, and equated to the behavioural preferences (axiom of consumer sovereignty). The invalidation of BCI as an empirical principle has however questioned CS (which could be justified by combining the weaker NI with BCI), and alternative strategies to define normative preferences have been proposed. If NI is maintained, we need a strategy to identify which contexts are relevant in order to define individual welfare. While we could maintain the principle of consumer sovereignty — according to which normative preferences always equate behavioural preferences — this might be problematic in apparent situations of ‘errors’, such as choosing to drive after having too many drinks.¹⁴ This would also suggest that one’s normative preferences depend themselves on the context, and that maintaining CS would lead to the rejection of NCI. It implies that we cannot offer a stable measure of individual welfare.

Apart from Sugden, who explicitly maintain CS (with the risk of rejecting all arguments suggesting that some properties might be motivational although clearly not relevant), and the hedonistic approach that explicitly rejects NI (with a clear and ethically disputable departure from the rest of the literature), all the other approaches try to maintain welfare measurements, which require disentangling between context and relevant properties. This means in our framework maintaining NCI as a way

¹⁴The most significant problem of driving under the influence of alcohol is that someone else may be hurt. We however only consider here the risk for the driver himself. That is, independently of whether he may cause an accident involving a third party, it is reasonable to assume that it would be preferable from the perspective of his own welfare not to drive in such a situation.

to define the normative preferences. The problem is however the identification of the correct context in which normative preferences are revealed. On the one hand, Bernheim and Rangel propose to do so by voluntarily restricting the set of choices under consideration — which leaves us with nothing to say on the many cases where behavioural preferences are context-dependent. On the other hand, Harrison and Ross’s QIS consists in reducing the influence of context properties by founding their welfare measurement in the small world of a lab experiment, so as to estimate econometrically the most likely normative preferences. The distinction between relevant and context properties is thus partly arbitrary, although the environment of choice is such that we can expect little differences between the set of motivational and relevant properties. The cost is however a restricted domain of analysis (yet less than the one Bernheim and Rangel offer).

The most ambitious program — in the sense of intending to provide welfare measurement without a significant domain restriction — is the strategy of behavioural paternalism. We have however argued two limitations of this approach. First, there is no reason why the theoretician would necessarily know the correct set of relevant properties \mathcal{R}_I . As a consequence, it might be necessary for the theoretician to rely on her own value judgements in order to define individual welfare. While this may not be a problem in some obvious cases like the drunk driver — for which she can rely on ‘platitudes’ about what makes individuals better off (Hausman 2012, pp. 92-93) — more complex cases such as the Asian disease or insurance choices (Harrison 2019) pose a dilemma for the theoretician. Second, it is not certain that the individual would reveal coherent preferences, if freed from cognitive limitations, with $\mathcal{M}_I = \mathcal{R}_I$. If the preferences of the inner rational agent appears to be e.g. incomplete, relying on the context to take one’s final decision may be justifiable. An intuition supporting this argument is that the conditions of Arrow’s impossibility theorem can be meaningful for questions of multiple selves (and how to ‘integrate’ the multiple behavioural preferences of the individual into a single relation of normative preferences.¹⁵ Steedman and Krause (1986) and Binder (2014) for instance characterise the conditions under which the aggregation is possible (or not) at the intrapersonal level. In a nutshell, this literature suggests that an aggregation may only be possible if the degree of conflict between the various behavioural preferences is low. This implies that we have no reason to expect *a priori* that a counterfactual true preference BP_0 would be integrated — unless we arbitrarily select a context γ' for which $BP_{\gamma'}$ turns out to be integrated itself, and set $NP_{\gamma'} = BP_{\gamma'}$ as the correct normative preferences. Just as with Arrow’s impossibility theorem, it may be impossible to properly purify preferences when considering an unrestricted domain, without arbitrarily imposing the definition of the correct context, and of the content of the normative

¹⁵The problem that arises when individual preferences are context-dependent is that the theoretician cannot unambiguously define the individual’s normative preferences from his collection of behavioural preferences. From a methodological point of view, such a problem of preference *integration* is closely related to the standard discussion in social choice theory about preference *aggregation*. The main difference between the questions of preference integration and preference aggregation is that the former is concerned with *intrapersonal* aggregations of preferences (aggregating different preferences belonging to the same individual), while the latter is concerned with *interpersonal* aggregations of preferences (aggregating different preferences belonging to distinct individuals). This similarity between behavioural normative economics and social choice theory is mentioned by Sugden (2018) in the preface of the *Community of Advantage* (pp. viii-ix), where he draws a parallel between his critique of Sen’s impossibility of a Paretian liberal (Sen 1970; Sugden 1985) and his proposition of the individual opportunity criterion (Sugden 2004).

preferences.

A Appendix: Proofs

A.1 Proof of NCI

By contradiction, suppose that NCI is false and that there are two contexts C and C' such that $x NP_C y$ and $y NP_{C'} x$. By condition i. of NI, this means that there should be a context C'' such that $x BP_{C''} y$ and another context C''' such that $y BP_{C'''} x$, which violates BCI. This implies that NCI is true when both NI and BCI are true.

A.2 Proof of NCS

By BCI, we know that there are not two contexts C and C' such that $x BP_C y$ and $y BP_{C'} x$. This means that as soon as condition i. of NI is satisfied, so is condition ii. So if $x BP_C y$, we have $x NP_C y$. By BCI and NCI (which is implied by NI and BCI), we also know that the relation remains stable across all contexts C and C' for BP and NP , which means that $NP_C = BP_{C'}$.

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