Available online at www.sciencedirect.com
ScienceDirect
Journal of Economic Theory 130 (2006) 283–295
JOURNAL OF Economic Theory
www.elsevier.com/locate/jet

Note

Anchored preference relations

Jacob S. Sagi

Haas School of Business, University of California at Berkeley, 545 Student Services Building, Berkeley, CA 94720-1900, USA

Received 21 August 2003; final version received 31 January 2005
Available online 6 June 2005

Abstract

This note explores the implications of a simple and intuitive restriction on reference-dependent preferences assuming the status quo serves as the reference point. The condition imposed potentially rules out situations in which a decision maker has a choice between two prospects, selects one which subsequently becomes the new reference point, and then regrets her initial choice. It is shown that a surprising number of models in a riskless and risky setting violate this behavioral assumption, including Cumulative Prospect Theory as well as any theory exhibiting local non-satiation in which all reference-dependent indifference surfaces are smooth. It is also shown that the condition does admit a class of non-trivial reference-dependent preferences.

JEL classification: D11; D81

Keywords: Non-expected utility; Reference dependence; Cumulative prospect theory; Decision theory; Utility representation; Anchoring; Status quo bias; Endowment effect

1. Introduction

Empirical evidence, in the form of the endowment effect, loss aversion, framing, and differences between willingness to buy and willingness to sell, has long led researchers in economics and decision theory to recognize the relevance of reference effects. [1] Existing theoretical models of reference dependence in the context of risky choice, known as rank- and sign-dependent models, have been largely motivated by the clear evidence for loss

E-mail address: sagi@haas.berkeley.edu.

[1] See [21,11,2] for references.

0022-0531/$ - see front matter © 2005 Elsevier Inc. All rights reserved.
doi:10.1016/j.jet.2005.01.009

aversion.[2] These models generally specialize to preferences defined over wealth lotteries in which the agent assigns a value function to prospects using non-additive probability weights and a 'utility' function defined over wealth changes from some reference point. The nature of the reference point is not normatively elucidated, but in practice it is taken to be the agent's current wealth level or simply the status quo.

Intuitively, a decision maker with reference-dependent preferences is one whose preferences over a set of choices vary with the context of the choice problem. One may describe the behavior of such an agent using a set of binary relations, $\{\succcurlyeq_e\}$, where e is an index for the 'context'—what I henceforth call an anchor. One therefore interprets $q \succcurlyeq_e p$ to mean that q is weakly preferred to p when the anchor is at e. Following [21] I assume that e is itself a choice primitive, though not necessarily always in the choice set available to the agent, and that each of the $\succcurlyeq_e$'s has a continuous utility representation. An important, and yet open, question in decision theory is what conditions, if any, ought to be placed on the relationship between the different binary relations in $\{\succcurlyeq_e\}$, especially if one is to assume that e corresponds to the status quo.[3] This paper is an attempt to shed light on this question. I do so by proposing the following 'no-regret' or 'status-quo bias' condition: if a prospect q is either strictly or weakly preferred to p when the anchor is at p, then the same is true *regardless* where the anchor is situated; i.e., $q \succ_p (\succcurlyeq_p) p \Rightarrow q \succ_e (\succcurlyeq_e) p \ \forall e$. This axiom has two interpretations:

(i) if one prefers p to q from a 'neutral' reference point (say e), then one will prefer to hold on to p when it is the reference point. Alternatively, a prospect is most desirable when it is the anchor.
(ii) if the anchor is at e and the decision maker is offered a choice between q and p, then after choosing p and allowing it to serve as the new anchor, the decision maker will not regret her original choice and crave q over her current endowment.

One can view the first interpretation as the assertion of a status quo bias, and one that is descriptive in so far as it is believed that such a bias exists.[4] The second interpretation is examined more closely in Section 2. As it turns out, this condition results in serious restrictions over the set $\{\succcurlyeq_e\}$. For instance, under mild 'non-satiation'-type conditions, it cannot be that each of the $\succcurlyeq_e$'s has 'smooth' indifference surfaces unless all the $\succcurlyeq_e$'s are identical (i.e., there is no reference dependence). In the setting of risky choice this can be further refined to rule out any model in which all of the $\succcurlyeq_e$'s have smooth indifference surfaces when restricted to finite outcome probability simplexes. An important example of a model that does not satisfy the 'no-regret' condition is Cumulative Prospect Theory (CPT).

One paper close to this work is [14] which considers the status quo bias using a revealed preferences approach. Among other behavioral assumptions, the authors in [14] impose a 'no-regret' axiom adapted to their framework.[5] Their analysis differs from mine in that it focuses on a specific structural model of reference-dependent choice, but does not explore

[2] For e.g., cumulative prospect theory in [22,23].

[3] Formal theory in this direction includes [14,15,20,7].

[4] Kahneman et al. [11] claims the status quo bias to be both 'robust and important'.

[5] Part (ii) of Axiom SQB* in [14] can be shown to essentially imply the 'no-regret' condition.