

Mental Accounting And Insurance Decision

Looking for the reference point in insurance demand

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Abstract

It is commonly stated that one of the main current challenges for reference-dependent models, and thus for behavioral approach of decision theory in general, is to determine the relevant reference point in risk decision when no salient reference point is available. We chose to deal with this issue in the special case of insurance decisions, where the reference point is not clearly defined, as the disagreements in the "behavioral insurance" literature show us. With an experimental approach, we find strong evidences of a reference-dependent behavior in insurance decisions. Nevertheless, it also seems that these kinds of reference-dependent behavior can not be reduced to a trivial adaptation of the prospect theory model.

Introduction and Motivation

The existence of a kink in the utility function at the level of the reference point is generally seen as one of the major contributions of behavioral economics to decision theory. This kink corresponds to the notion of "loss aversion", often summarized by the statement "losses hurt more than gains". This notion, which appeared for the first time in the seminal paper "Prospect Theory : A theory of decision under risk" (Kahneman and Tversky, 1979 [2]), has already been confirmed by numerous studies, both from experimental and field data. Nonetheless, one of the main critics to reference-dependent preferences theories is that the reference point remains often unclear, and in many decision problems, no one can objectively define what should be considered as a gain or as a loss by the decision maker. Surprisingly, only very few and recent studies deal with the issue of the research of a relevant reference point in decision problems on empirical basis. We try here to contribute to this growing literature by examining the special case of insurance decisions.

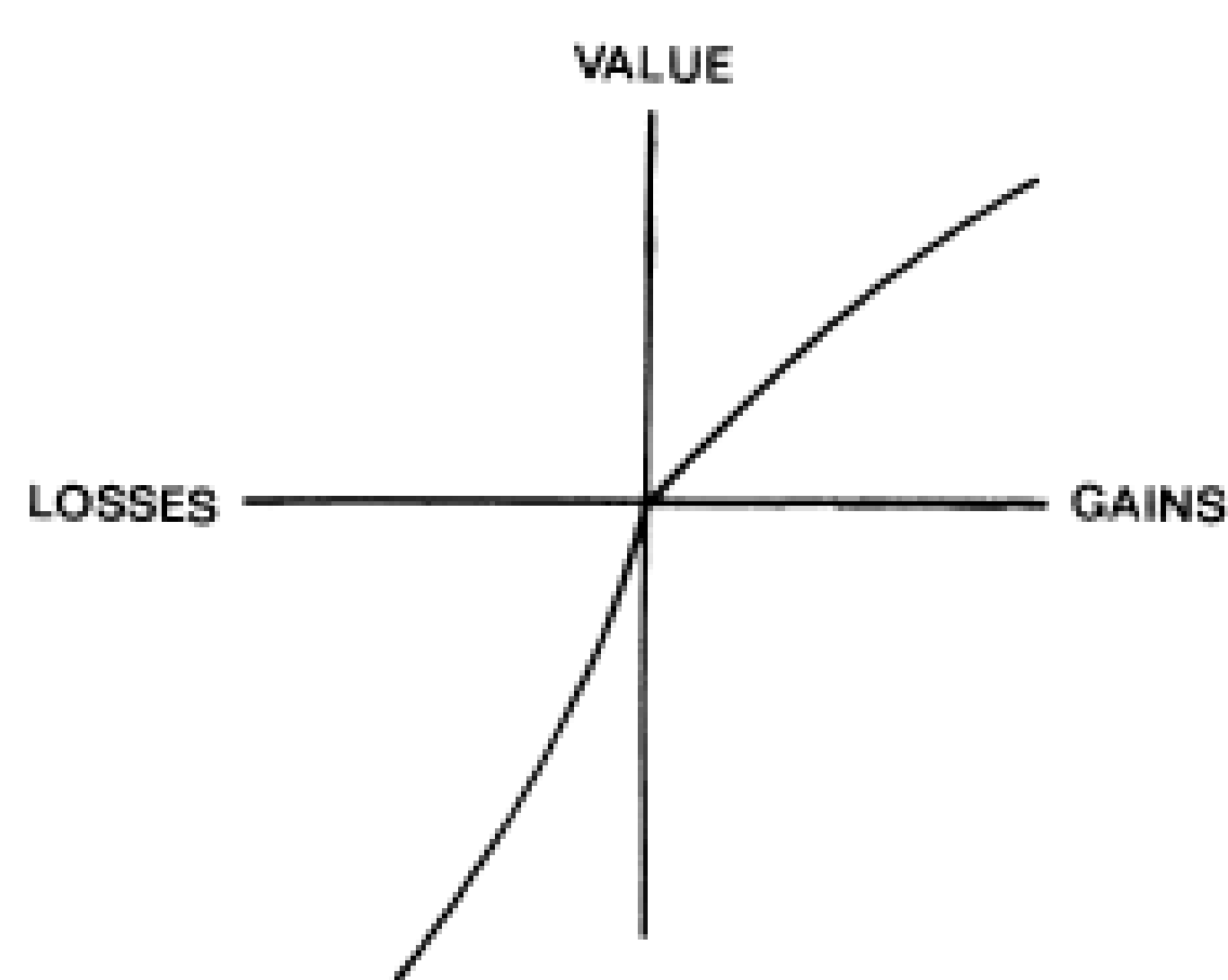


Figure 1: An example of reference-dependent utility function (Kahneman and Tversky, 1979)

Let's precise that determining what is a loss and what is a gain is nothing but discovering the rules of the "Mental Accounting" of insurance decisions, since Thaler (1999) [6] defines himself the notion of mental accounting as "the set of cognitive operations used by individuals and household to organize, evaluate, and keep track of financial activities". We chose to explore this issue with an experimental approach.

Main Research Questions

1. What reference point has the best descriptive power ? We will especially focus on the two reference points which are present in the literature : the current wealth and the current wealth minus the premium (see, for instance, Schmidt (2016) [4]).
2. Do the decision makers can precisely define their own mental accounting in their insurance decisions ?
3. Do the insurance decisions depend on the contracts previously displayed?

Protocol

We developed an experimental protocol in three steps, each described in the following subsections.

The earnings task

In a first step, the subjects had to complete a fastidious task in order to earn their experimental endowment. For external validity purpose, it seems important that the subjects see their endowment as they could see their own wealth, and not as token given for playing. More precisely, the task consisted here in counting the "A" in an old French poem.

The Insurance Decisions

The insurance decisions consisted in 24 binary choices, displayed like in the figure 2. These binary choices included :

- Decisions to purchase a full coverage or not.
- Decisions to purchase a partial coverage or not.
- Decisions to purchase a partial coverage or to purchase full coverage.

For each case, we introduced as clearly as possible the premium, the deductible and the indemnity.

Option A : Assurance Partielle		Option B : Assurance Complète	
Prime (prix à payer) :	0.5 euros	Prime (prix à payer) :	1.3 euros
Franchise (Montant restant à votre charge en cas d'accident) :	3.2 euros	Franchise (Montant restant à votre charge en cas d'accident) :	0.0 euros
Indemnité (Montant versé par l'assureur en cas d'accident) :	4.8 euros	Indemnité (Montant versé par l'assureur en cas d'accident) :	8.0 euros

Figure 2: A choice extracted from the experiment

The questionnaire

At the end of the experiment, the subjects had to respond to two different sets of questions :

- The first set of questions concerned the feelings of the subjects under several scenarios. For instance, one of the questions was "Let's suppose that you bought an insurance for a premium of one euro with a deductible of 6 euros and you had no accident, what option corresponds the best to what you could feel ?" With responses like "A - I would have the feeling to lose 1 euro", "B - I would have the feeling to earn 6 euros" and so on. These questions are directly inspired by Thaler (1985) [5].
- The second set of questions corresponds to a questionnaire on the motivations in insurance decisions. This questionnaire is based on the taxonomy of goals in insurance purchase developed by Krantz and Kunreuther (2007)[3].

Results

These first results are drawn from a pilot session with 13 subjects, run on May 2018.

Results from the experimental decisions

By using the test of Clarke (2003) [1], a non parametric-test designed for the comparison between two non-nested models, it seems that the decision model with the current wealth as reference point has a better descriptive power than the model with the current wealth minus the premium as reference point (p-value < 0.001). Both models also outperform the expected utility model (p-value < 0.001). Nonetheless, because of the sample size, we are not able, for the moment, to test other things that models where the subjects are (erroneously) supposed to be homogeneous.

Also, from basic probit and logit models we are able to show that the insurance decisions depends on the contracts previously displayed :

- The passage from a situation where there is only one partial insurance contract available to a situation with a full contract available significantly decreases the probability to take the full coverage.
- The previous loading factor has no effect on the current insurance purchase except when the indemnity remains the same (in this case, it is likely that the decision maker is more sensible to the modification of the loading factor because he fully "see" it). Moreover, this sensibility to the past loading factor is asymmetric. The subjects are significantly more sensitive to the decrease of the loading factor than they are sensitive to the increase of the loading factor.

Results from the qualitative questionnaire

- The subjects are able to correctly describe their own mental accounting, and what they consider as a loss or as a gain in insurance decisions. In each scenario (see the previous section), the subjects are compelled to choose a description of their feelings in terms of gain or loss, but, in only 4 cases out of 78 responses, a subject responded that his or her previous response "imperfectly" described his or her feelings.
- We have some evidences of a strong heterogeneity in the mental accounting rules of the subjects. For instance, 61% of the subjects see the premium as a loss when they take an insurance and do not have an accident and 46% see the premium as a gain when they do not take the insurance and do not have an accident. The responses seem consistent since only two subjects see the premium both as a loss in the first case and as a gain in the second case.
- Nevertheless, the answers seem inconsistent with the existence of a constant reference point. Indeed, when the insurance is taken and an accident occurs, 53% of the subjects have the feeling to earn the indemnity (or the indemnity minus the premium) but only 15% of the subjects have the feeling to earn something when they have an insurance and no accident occurs.

Conclusions

- Facing the question of the relevant reference point in insurance decisions, we developed an original protocol able to deal with this issue both with qualitative data on subjective feelings and experimental decisions.
- From experimental decisions, we established that the subjects exhibit reference-dependence preferences more complex than the basic applications of the prospect theory could suggest. In particular, the subjects seem to be influenced by the contracts previously available.
- From qualitative answers, we show that people are able to determine what is a gain and what is a loss for themselves in insurance context, and that their responses indicate a strong heterogeneity in mental accounting rules.

Forthcoming Research

The next step in our research is to extend this pilot to a panel of approximately one hundred subjects. These ones will be recruited on the Internet, in order to have a representative panel of the French policyholder population. We will also try to take more into account the heterogeneity in risk preferences. Thus, we will probably develop a hierarchical model able to deal with the diversity of mental accounting rules in insurance decisions.

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