



# Exchange asymmetries for bads? Experimental evidence<sup>☆</sup>



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## ABSTRACT

This study provides the first incentivized test of exchange asymmetries for unpleasant items, the so-called *bads*. While prospect theory predicts an endowment effect for goods and bads, attention-based theories predict an endowment effect for goods, but a reverse exchange asymmetry (that is, a particularly high willingness to switch) for bads. The investigation of exchange asymmetries for bads is a key element to distinguish between the validity of loss aversion- and attention-based theories. As we find a strong endowment effect for bads, our results speak in favor of prospect theory.

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## 1. Introduction

Recent attention-based theories of individual decision making challenge the prevalence of loss aversion-based theories in behavioral economics. Attention-based theories, such as saliency theory (Bordalo et al., 2012a,b), a theory of attention and reference dependence (Bhatia and Golman, 2013), and focusing theory (Kőszegi and Szeidl, 2013) assume that agents overemphasize features which stand out in a certain context. In contrast, theories based on loss aversion (Kahneman and Tversky, 1979; Tversky and Kahneman, 1991; Kőszegi and Rabin, 2006, 2007) assume that agents evaluate outcomes with respect to a reference point and put more weight on outcomes below the reference point (*losses*) than on outcomes above it (*gains*). Bordalo et al. (2012b) compare saliency and prospect theory and show that both can account for a wide range of cognitive biases relevant to decision theory, such as the Allais paradox, preference reversals or the *endowment effect* for goods (Thaler, 1980). Thus, the investigation of these well-known decision biases does not allow us to distinguish between the validity of the two classes of models.

In order to test the two approaches against each other, we implement a laboratory experiment which yields contradicting predictions. Specifically, we investigate exchange asymmetries for unpleasant items (*bads*).<sup>1</sup> For pleasant items (*goods*), agents typically reveal an endowment effect, that is, they exchange their endowments less often than standard theory predicts. According to prospect theory, this effect emerges as a result of loss aversion. In contrast, attention-based theories argue that an agent overemphasizes salient pleasant features of the endowment and therefore refrains from exchanging it. In a setting with unpleasant items, the approaches yield different predictions. Since agents are loss averse with respect to their reference point, prospect theory predicts the usual endowment effect regardless of the characteristics of the reference

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<sup>1</sup> Exchange asymmetries denote exchange rates for endowments in exchange experiments which differ from the rates rational choice theory predicts.

good. In contrast, according to attention-based theories the endowed bad's downside is salient and is therefore over-emphasized by the agent. Thus, the agent wants to exchange her endowment, such that the endowment effect reverses for bads.

This study tests for exchange asymmetries for bads. First, we randomly assign each subject one of the two unpleasant tasks “sorting” or “zeros and ones.” For “sorting,” a specific amount of two-colored confetti is to be sorted. For “zeros and ones,” the subject has to write zeros and ones into boxes of one and a half sheets of checkered paper. Before the actual task starts, each subject is given the unexpected chance to switch tasks. This approach enables us to test for the specific exchange asymmetries as predicted either by loss aversion-based or by attention-based theories.

Our results are in line with prospect theory. In contrast to salience theory's prediction of a reverse endowment effect for bads, subjects do not exchange the bad they are endowed with. That is, we find a robust endowment effect as has been documented for goods in [Knetsch \(1989\)](#), [Kahneman et al. \(1990, 1991\)](#) and many subsequent studies.

In apparent contrast to our results, [Brenner et al. \(2007\)](#) and [Bhatia and Turan \(2012\)](#) find no endowment effect for bads in a hypothetical frame. We reproduce this finding in two hypothetical treatments, in which the tasks “sorting” and “zeros and ones” serve as bads. The strong discrepancy between incentivized and non-incentivized setups can be rationalized as follows. As [Bordalo et al. \(2012a\)](#) propose, an agent immediately disapprobates an assigned bad due to focused attention on its downside. Therefore, she wishes to exchange her bad, such that the endowment effect is eliminated in hypothetical scenarios. The agent, however, reconsiders this wish in an incentivized setup. She realizes the alternative's downsides and her reference point adjusts toward her endowed bad. Then, loss aversion superposes the disappreciation of the endowment, such that the agent refrains from switching. Thus, she follows her first disapprobation of the endowed bad only in the hypothetical, but not in the incentivized setup.

In the next section, we review the theoretical approaches to exchange asymmetries for bads and the related experimental literature. [Section 3](#) introduces the experimental design, before we present the results in [Section 4](#). In [Section 5](#), we discuss the crucial features of our setup and the discrepancy between the hypothetical and the incentivized results. Finally, [Section 6](#) concludes.

## 2. Exchange asymmetries for bads: predictions and related literature

We compare two classes of behavioral models with respect to their predictions on exchange rates for bads in a two-stage exchange experiment. At the first stage (*the endowment stage*), an agent is endowed with one of two bads, each of which is characterized by two attributes and an upside in one, but a downside in the other. We assume that according to rational choice theory, both bads provide the same disutility.<sup>2</sup> At the second stage (*the trading stage*), the agent gets the unexpected opportunity to exchange her endowment for the alternative. We sketch the two approaches in the following with details provided in [Appendix A](#).

### 2.1. Over-trading according to attention-based theories

Attention-based theories in general and [Bordalo et al. \(2012a\)](#) and [Bhatia and Golman \(2013\)](#) in particular predict a reversal of the endowment effect, that is, over-trading, for bads. First, we introduce the corresponding mechanism by [Bordalo et al. \(2012a\)](#). Second, we sketch how also focusing theory ([Kőszegi and Szeidl, 2013](#)) can similarly explain over-trading.

According to the salience mechanism ([Bordalo et al., 2012a](#)), agents overemphasize salient features of their endowments. As a consequence, exchange asymmetries emerge. If an agent is endowed with a bad, she compares it to her initial status quo in which she held no item. Suppose that the bad differs from the agent's initial status quo only in its down-, but not in its upside, such that only the downside sticks out. Thus, at the first stage, the endowment's downside is salient and overemphasized. Consequently, an agent undervalues her assigned bad. As soon as she gets the chance to switch, she compares her endowment to the available alternative. Here, she evaluates the items equally as both have, relative to each other, one downside and one upside. According to [Bordalo et al. \(2012a\)](#), the final valuation of the endowment is a convex combination of its first- and second-stage valuations and is, consequently, below the valuation of the alternative.<sup>3</sup> This mechanism predicts over-trading, that is, a switching rate above 50% (for details, see [Appendix A](#)).

Over-trading for bads can similarly be explained by focusing theory ([Kőszegi and Szeidl, 2013](#)). An agent puts more weight on an attribute in which her options differ more, i.e., in which her range of choice is broader. Since at the first stage only the assigned item is available, she compares it to the option of holding nothing. Her options differ more in the attribute the endowed item is particularly bad in, such that she overemphasizes it. This results in a first-stage undervaluation of the assigned bad. At the second stage, the endowed item's valuation is unbiased as agents focus on all attributes equally if both

<sup>2</sup> We impose the assumption that both bads yield the same negative utility for illustrative reasons. It is also supported by our data. In general, it is sufficient to assume that both items yield a negative utility and that none of the options is universally preferred over the alternative by all subjects.

<sup>3</sup> There is a “cold glow of ownership” for bads, such that the first stage's undervaluation of the endowment is persistent ([Bordalo et al., 2012a](#)).

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