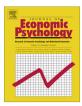


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## Real and hypothetical endowment effects when exchanging lottery tickets: Is regret a better explanation than loss aversion?



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#### ABSTRACT

The endowment effect is the finding that possession of an item adds to its value. We introduce a new procedure for testing this effect: participants are divided into two groups. Possession group participants inspect a numbered lottery ticket and know it is theirs, while inspection group participants only inspect a lottery ticket without being endowed with it. Subsequently participants choose between playing the lottery with this (possessed or inspected) ticket, or exchanging it for another one. Our procedure tests for the effect of endowment while controlling for the influence of transaction costs as well as for inspection effects and the influence of bargaining roles (buyer vs. seller), which often afflict experimentation with the endowment effect. In a real setting, tickets in possession were valued significantly higher than inspected tickets. Contrary to some findings in the literature participants also correctly predicted these valuation differences in a hypothetical situation, both for themselves as well as for others. Furthermore, our results suggest that regret rather than loss aversion may be the source of the endowment effect in an experimental setting using lottery tickets. Applying our procedure to a setting employing riskless objects in form of mugs revealed rather ambiguous results, thus emphasizing that the role of regret might be less prominent in non-lottery settings.

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#### 1. Introduction

An endowment effect exists if the subjective value of an item is higher when it is owned than when it is not owned (Thaler, 1980). This phenomenon has frequently been found in bargaining contexts with items like coffee mugs, pens, or lottery tickets (e.g., Kahneman, Knetsch, & Thaler, 1990; Knetsch, 1989; Ortona & Scacciati, 1992; Van Dijk & Van Knippenberg, 1996, 1998). For instance, Kahneman et al. (1990) reported that the average of buyers' maximum willingness to pay (WTP) for a mug was about half of the average price that sellers (i.e., owners) were willing to accept (willingness to accept; WTA) as minimal price for selling the mug.

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The standard economic explanation for this difference is based on two features of prospect theory (Kahneman & Tversky, 1979), namely reference dependency and loss aversion. Reference dependency means that the subjective value of an item depends on the current reference point of the decision maker. From the reference point of a seller, who by necessity owns the item, the transaction is framed as a loss. In contrast, from the reference point of a buyer, who attempts to get the item, the transaction is perceived as a gain. Since losses have a greater psychological impact than gains of the same magnitude (loss aversion; Kahneman & Tversky, 1979; Kahneman & Tversky, 1984; Thaler, 1980, 1985), sellers accept losing an item only for a higher price than buyers are willing to pay in order to get it. Subsequent research has shown that this WTA–WTP disparity may be more likely caused by both, loss aversion of the item in the case of being a seller and loss aversion of money in the case of being a buyer (Bateman, Kahneman, Munro, Starmer, & Sugden, 2005).

Recent research on the endowment effect offers alternative explanations to loss aversion. For instance, people may value things they own, because they typically have chosen them beforehand. Thus they follow a heuristic: if I have chosen something, it must be valuable (Brehm, 1956). Another line of research argues that chosen items are associated with the self (e.g., Gawronski, Bodenhausen, & Becker, 2007), and that people tend to value things more that are associated with the self (Beggan, 1992; Beggan & Scott, 1997). Finally, since we typically do only sell things that we own, and buy things that we do not own, ownership and bargaining role are often confounded in buyer–seller-tasks. In an experiment unconfounding ownership and bargaining role, Morewedge, Shu, Gilbert, and Wilson (2009) found that the effect disappeared when buyers were owners and sellers were no owners. For instance, buyers were willing to pay just as much for a coffee mug as sellers demanded, if the buyers already owned an identical mug. The authors suggest that ownership rather than loss aversion causes the endowment effect in the standard buyer–seller paradigm.

#### 1.1. Endowment effects in lottery settings

In order to exclude these alternative explanations and to avoid the bargaining role-ownership confounding, research procedures have been developed where participants are endowed with an item and subsequently offered the possibility to exchange it for another (not owned) item (e.g., Bar-Hillel & Neter, 1996; Knetsch, 1989; Van Dijk & Van Knippenberg, 1998). For instance, Bar-Hillel and Neter (1996) handed out lottery tickets to participants who could either keep the initial ticket or exchange it for another one. People showed a reluctance to trade their ticket, indicating a higher value of the ticket they had originally been endowed with. However, this line of research faces a problem: prospect theory in neither the original version (first generation; Kahneman & Tversky, 1979), nor the second generation cumulative version (e.g. Luce & Fishburn, 1991; Starmer & Sugden, 1989; Tversky & Kahneman, 1992; Wakker & Tversky, 1993) does allow for an uncertain reference point. Thus, these versions of prospect theory cannot be applied to predict an endowment effect in a lottery setting. Only the recent third generation prospect theory (Schmidt, Starmer, & Sugden, 2008) retains the basic features of previous variants (loss aversion, diminishing sensitivity, non-linear probability weighting) while allowing for uncertain reference points. Third-generation prospect theory indeed predicts an endowment effect even for exchanging endowed lottery tickets for other – not endowed – tickets.

Nevertheless, it stays controversial, whether the phenomenon of an endowment effect in lottery settings is entirely due to loss aversion. The reluctance to exchange a lottery ticket might also follow from anticipated regret: imagining that an exchanged ticket might win may induce regret (e.g., Bar-Hillel & Neter, 1996). Regret is experienced after realizing that the current status would have been better, if one had decided differently in a particular situation (Zeelenberg & Pieters, 2007). Regret theories in economics (Bell, 1982; Loomes & Sugden, 1982; Sage & White, 1983) rest on two fundamental assumptions: (i) People experience emotions after learning about the outcome of a decision. Regret follows when a different choice would have led to a more desirable outcome; rejoicing follows when one finds out that a decision has resulted in the best outcome. (ii) When making decisions under uncertainty, people try to anticipate the emotions associated with different outcomes and choose options that minimize anticipated regret or maximize anticipated rejoicing.

Psychological research adds to this basic relationship, as it has been shown that the anticipation of regret does not only depend on the outcome itself, but also on how the outcome came about (Zeelenberg & Pieters, 2007). For instance, Gilovich and Medvec (1995), among others, report that actions produce more regret than inactions. Similarly, in an experiment by Kahneman and Tversky (1982) participants indicated that an active investor in the stock market would feel more regret than a passive holder, even when they both lost the same amount of money. In addition, Inman and Zeelenberg (2002) report that in the case of a negative outcome a consumer's decision to switch from one product to another generally produces more regret than the decision to make a repeat purchase. Zeelenberg, Van den Bos, Van Dijk, and Pieters (2002) provide further evidence that regret depends on what behavior is perceived as the "normal" behavior in the situation at hand.

Anticipated regret is an alternative to loss aversion as an explanation for the reluctance to trade an endowed lottery ticket for another ticket: imagining that the exchanged ticket might win leads to regret, and anticipating this regret leads to a reluctance to exchange tickets. Examination of the endowment effect within a lottery setting has the advantage of avoiding the confounding of ownership and bargaining role, but the experimental lottery procedure also implicates some problems. Plott and Zeiler (2005, 2007) argue convincingly that there is no consensus on whether the literature supports the interpretation that WTA–WTP disparities in different contexts are due to an endowment effect. They offer evidence that support the notion that these findings may actually be based on incorrect interpretations of experimental results. Despite empirical evidence that WTA–WTP disparities are observable even when controlling for experimental misconceptions in lottery settings (Isoni, Loomes, & Sugden, 2011), some of their arguments remain challenging the standard lottery procedure. These

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