

# ***Research on Loss Aversion and Its Formation in Prospect Theory***

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**Abstract:** One of the most popular concepts in the social sciences is loss aversion, the idea that losses loom larger than rewards [1]. This paper begins with an overview of previous research on loss aversion and demonstrates the importance of the impact of loss aversion on social and individual decision-making. At the same time, this paper also lists three applications of loss aversion and their related research in psychology. Finally, the paper makes recommendations for future research on loss aversion. Few theoretical and mostly experimental studies have been done in the past on loss aversion. The endowment effect, the winner's curse, and consumer choice behaviour are the three specific areas of applied research that are covered in this paper. Future research on loss aversion is advised by this paper to consider the unique situational circumstances when examining people's exposure to losses and gains, as well as the psychological drivers of loss aversion formation.

**Keywords:** loss aversion, prospect theory, behaviour economics, decision-making, endowment effect

## **1. Introduction**

Losses loom larger than gains, according to Kahneman, who defines loss aversion as: "A salient characteristic of attitudes to changes in welfare. One's pain at losing money seems to outweigh their pleasure at winning it [2]. Losses are said to "loom larger" in the sense that they have a more profound psychological effect [1]. This paper focuses on one of the key findings in prospect theory-loss aversion. The theory of expected utility in conventional economics is broken by loss aversion. People behave in "abnormal ways" when they lose because losses cause them much more pain than gains do pleasure. Through three examples from real-world situations, this paper explains in detail how loss aversion functions for both individuals and financial markets. The study demonstrates how loss aversion can be used to improve social and trading market problems. It suggests as a conclusion that we need to focus more on the psychological processes and motivations that shape loss aversion in psychological and behavioural terms.

## **2. Previous Studies on Loss Aversion and the Prospect Theory**

One of the most widely accepted theories in the social sciences is loss aversion, the idea that losses evaluate larger than gains [1]. There are significant studies and research on loss aversion. People's loss aversion increases as the stakes of their decisions increase [3].

Prospect theory incorporates loss aversion heavily. While there are other concepts in prospect theory besides loss aversion, Nobel Prize winner Daniel Kahneman stated in his biography that "the concept of loss aversion was, in my judgment, our most useful contribution to the study of decision making." The idea of loss aversion, as stated in Kahneman's writing, is without a doubt the psychology's most important contribution to behavioural economics.

The study of loss aversion is of great academic and practical importance. It is an intellectual addition to regular economic study and can offer a more logical explanation for some phenomena that traditional economic analysis cannot explain. In practical terms, we can take a closer look at the behavioural changes of individuals and companies, and the factors that influence them when they make economic decisions. At the same time, loss aversion makes more sense to understand and explain some of the anomalies in the market.

One of the fundamental and central ideas of expectations theory is loss aversion. According to the Expected Utility Theory, the utility of an uncertain prospect is equal to the sum of the outcomes' utilities, each of which is weighed according to its likelihood. We understand individuals frequently depart from the expected utility theory.; for example, the Allais Paradox [4], which is incompatible with the expected utility theory. Therefore, it is plausible that there might be better models to accommodate the decisions that people actually make. The most prominent of the alternative models is the prospect theory. The original model was proposed by Kahneman & Tversky. They are psychologists, and they looked at cognition to think about how people were making economic decisions. Prospect theory introduces a perceptual and psychological perspective to thinking about money, goods, and risk [5]. Since gains and losses, not final assets, are the drivers of value empirically, utility of the outcomes will not be used in prospect theory. People base their decisions on a reference point. Gal and Rucker noted that shifts from what people erroneously believe to be a neutral reference point are used to determine losses and benefits (e.g., the status quo)..

This brings us to the first characteristic of the prospect theory value function, which is reference-dependence. We do know how wealthy we are, but what this is saying is that our focus and what we actually use to make our decisions is the change, either positive or negative, with respect to the money we already have. So, in this case, the axes are changes, not absolute levels. In this graph, the original point is the reference point, and anything that goes above that will be a gain, and of course we'll get positive values.

The second characteristic is loss aversion. As shown in Figure 1, this is a hypothetical value function that kinks at the origin [2]. For 1 unit of gain, we look at the value, which will be lower than the same unit in losses. And then one thing that we are retaining from Expected Utility Theory is the diminishing marginal utility. We'll refer to it as diminishing sensitivity in this instance. The effect of a further acquired or lost unit is diminishing. The value function's shape changes because of this. Gains are concave, while losses are convex.

If we examine the functional form of the value function in the graph, what tends to be done is to assume a power function  $x$  to the power of  $a$ , if the outcome is positive, so this means that for gains. We will transform whatever outcome we have by using the power of  $a$ . And for losses, we have a minus  $\lambda$  times the power of the loss to  $b$ .

$$v(x) = x^a \text{ for } x \geq 0 \quad (1)$$

$$v(x) = -\lambda(-x)^b \text{ for } x < 0 \quad (2)$$

$a$  and  $b$  are parameters that determine the value function's arc of curvature.  $\lambda$  is the loss aversion parameter, so if we change it, people will be either more or less loss averse. And empirically it's been

found that people's most usual loss aversion parameter is 2. It has been argued that "Losses hurt about twice as much as gains make us feel good" [6].

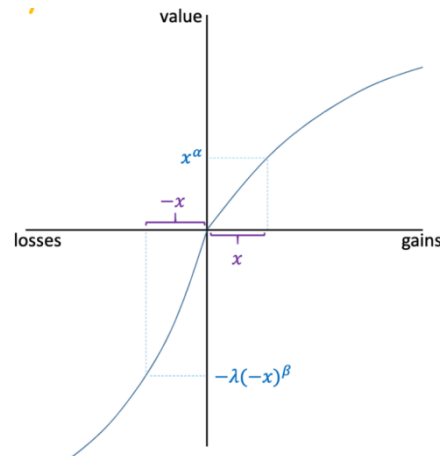


Figure 1: hypothetical value function

### 3. Loss Aversion Causes the Endowment Effect

The endowment effect means that when people own an item, regardless of its market value, they will always overestimate the value of the item [7].

Thaler was the first to find that WTA was significantly higher than WTP in endowment effect experiments [8]. The endowment effect and some other conundrums in his collection could be explained by the loss-averse value function of prospect theory [2]. The seller perceives the loss as a loss and raises the lowest acceptable price (WTA) to compensate for it, making the WTA higher than the value of the good itself. The buyer perceives the money spent on the good as a loss and minimizes the loss by lowering the highest price he/she is willing to pay (WTP).

This asymmetry between loss costs and benefit benefits is also the evolutionary basis for the development of the psychological process of endowment effect benefits. There is a chance of an asymmetry between WTA and WTP if loss aversion exists. When someone offers a WTP, they are essentially trying to acquire the good and making the highest offer possible. As a result, the product is evaluated in the context of gain. WTP is typically less than WTA due to people's being more sensitive to losses than profits, which causes the endowment effect. The endowment effect, which frequently occurs in marketplaces where the willingness to receive is generally higher than the desire to pay, causes the value of an object to be generally higher among those who own it than among those who do not.

Additionally, this asymmetrical behavioural trait frequently results in under-traded markets. Used cars are not priced properly and transactions are not successful because of the presence of the endowment effect. The endowment effect is expressed as the difference between willingness to accept and willingness to pay. People who sell their own cars are also subject to reference dependence and endowment effects when pricing. Because the value of a car decreases over time, sellers use the original price as an anchor. As the mileage of the car increases, the seller will discount the value of the car reasonably according to the condition of the car, to evaluate a compromised price for the car as a reference. At the same time, the seller will be influenced by the endowment effect of owning the car and facing the loss of the existing vehicle, which will cause the seller to overestimate the value of the used car relative to the neutral reference price, resulting in a used car price.

In used car transactions, sellers should be more rational in their pricing, and base their pricing on objective reference points, thereby facilitating the conclusion of transactions. This is conducive to an

increase in the volume of transactions in the used car market and an increase in the efficiency of resource circulation. In addition to the used car market, the endowment effect should also be considered for the pricing and compensation behaviour of demolition and land transfer, in order to reduce social conflicts and asymmetrical problems in transactions. This also provides some reference for the formulation of market rules and the optimisation of commodity pricing strategies.

#### 4. The Winner's Curse

At auctions, it frequently happens that bidders pay substantially more than both their initial maximum bid and the actual worth of the lot. This is the "winner's curse" phenomenon [9]. If it is difficult to "rationalise" an empirical result or if implausible assumptions are required to explain it within the paradigm, it is considered an anomaly. Evidence of a winner's curse in market settings would be considered an anomaly [9] since the winner's curse cannot happen if all the bidders are rational [10].

In Thaler's article, he provides experimental-type evidence and concludes that any positive bid yields an expected loss to the bidder. The winner's curse in the situation may be avoidable, but it is neither simple nor quick to learn.

The presence of more bidders suggests that the bidders must bid aggressively in order to win the auction. However, the presence of the other bidder also raises the likelihood that, if the winning bidder, he or she would have overestimated the value of the item up for sale, indicating that the winning bidder should place a less aggressive bid [9].

This phenomena can also be explained by the idea of loss aversion: at the start of the auction, the bidders who stand to gain regard the lot as theirs. Throughout the bidding process, people modify their value judgments considering the bids made by other bidders. The bidder impulsively increases the price after a higher bid is made by another bidder in an effort to keep "his" item and eventually win control of it, even though the price is already significantly greater than the object's true value [11]. The "pseudo-endowment effect," which contends that people feel loss aversion even for things they do not actually own, is how researchers also refer to this phenomena.

#### 5. Consumer Choice

Incorporating various psychological theories of price perception into empirical models of consumer purchasing behaviour has received a lot of attention (Rinne 1981; Winer 1986; Kalyanaram and Little 1988; Raman and Bass 1988; Lattin and Bucklin 1989; and Kalwani, Yim, Rinne, and Sugita 1990) [12]. Numerous empirical studies have already confirmed the effect of price levels on consumer behaviour from a microeconomics perspective. Putler's article investigates how reference prices affect consumer behaviour theoretically.

In commodity markets, consumers are asymmetric with regard to price changes, Putler's theoretical model was founded on the idea that customers compare a product's actual price to their reference price. Consumers are led to believe they have gained if the actual price is lower than the reference price or that they have lost if the actual price exceeds the reference price by this comparison. Putler found that consumers are more sensitive to increases than decreases in egg prices. For loss-averse consumers, price increases are a loss and price reductions, or discounts are a gain, so they are more sensitive to the former.

The difference between the real price of the good and the reference price specified by the customer is known as a marginal (or per unit) gain or loss. Consumers can evaluate and feel the utility consequences of gains and losses on a per-unit basis. As a result, consumers may monotonically switch from their initial linear scale to a nonlinear one when rescaling marginal gains and losses. According to his theoretical framework, brand choice models and empirical demand functions should additionally consider separate perceived marginal gains and loss terms in addition to pricing.

In practice, businesses have the chance to play on consumers' loss aversion by playing price games: instead of "raising prices" in response to real price increases, they describe them as "removing discounts" because consumers are more willing to accept the latter. Psychologically, the 'price increase' is a loss, while the 'removal of the original discount' is perceived as a no-gain, which has less negative psychological effect because of the loss aversion. In the case of price reductions, businesses are more likely to give a percentage of cash back rather than the same percentage of discount directly, as the former is a real benefit to consumers, while the latter is perceived as a no-loss, and research suggests that the former has a greater positive psychological effect [13].

## 6. Conclusion

In summary, loss aversion has been described as a fundamental principle that underlies human behaviour and states that losses are feared more than profits. Prospect theory includes loss aversion as a key theory. The following conclusions are drawn from three applications in this article. It has been demonstrated that people value losses more intensely than gains of the same amount in relation to a reference point, or that "losses loom larger than gains."

In used car transactions, sellers should be more rational in their pricing and base their pricing on objective reference points, thereby facilitating the conclusion of transactions. This is conducive to the rise in the volume of transactions in the used car market and improves the efficiency of resource circulation. In addition to the used car market, the endowment effect should also be taken into account for the pricing and compensation behaviour of demolition and land transfer, in order to reduce social conflicts and asymmetries in transactions. This also provides some reference for the formulation of market rules and the optimisation of commodity pricing strategies.

Loss aversion explains some anomalies that cannot be explained by traditional economic theory, and the winner's curse opens a new field of modern economic research from another perspective.

Businesses can optimise their business strategies by exploiting the loss-averse psychology of consumers, replacing the loss representation framework with a gain representation framework. For example, replacing a discount with a trade-in, offering a seven-day no-excuse return, etc. To sum up, target groups must be established for loss aversion research as well. This study unifies the target groups, so hopefully future research will have a target population that is more nuanced.

We also need to look at the underlying characteristics of the people we are targeting. Respondents who are older and less educated are more loss averse [14]. Much of the existing loss aversion literature has been done with young, educated people in college. This may underestimate the size and importance of loss aversion. To sum up, target groups must be established for loss aversion research as well. This study unifies the target groups, so hopefully future research will have a target population that is more nuanced.

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