Small Gains Or Smaller Losses: Optimal Price Promotions and the Silver Lining Effect

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The silver lining effect predicts that segregating a small gain from a larger loss results in greater psychological value than does integrating them into a smaller loss. Starting from the prospect theory value function, we derive conditions under which this effect should occur; the optimality of integration depends on the size of the gain and the loss, as well as the individual’s degree of loss aversion and rate of diminishing sensitivity. Some of the predictions are tested and confirmed in an online consumer purchase setting where integration and segregation are operationalized as discounts and rebates, respectively.

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EXTENDED ABSTRACT

The representation of information as an integrated whole or as segregated components may have different effects on the decisions taken based on that information. This is the starting point for an analytical and empirical investigation of two phenomena: the silver lining effect (Thaler 1985), and the use of instant rebates in retailing (Lanctot 2002). We derive conditions for the appearance of the silver lining effect, based on prospect theory (Kahneman and Tversky 1979), and apply the results to a consumer setting, in which an instant rebate is used as the silver lining.

Rebates are common in modern retailing, especially consumer electronics, where they are the most common means of promotion (Lanctot 2002). The most commonly studied variant of rebates has been the mail-in rebate (e.g. Jolson, Weiner and Rosecky; Soman 1998), which has two characteristic elements: effort is required in order to receive the price reduction, and this effort occurs after the purchase, adding an intertemporal component to the purchase decision. We focus on the “instant rebate” in order to eliminate these two components and center on the effect of the representation of price as a base price and a separate reduction.

This form of promotion entails that the retailer, instead of simply presenting a new, lower, price, presents the old price accompanied by the amount that is “given back” to the customer upon purchase. We interpret this as a possible application of the silver lining effect (Thaler 1985), and next derive conditions for its implications for decision making.

In accord with the findings of Bateman et al. (2004), we assume that consumers treat purchases as losses, at least to some extent; thus, we can apply prospect theory (Kahneman and Tversky 1979) in our analysis. We take the value function \( v(x) \) to be any concave function \( v(x) = \alpha x + \beta x^2 \) for \( x \geq 0 \) (with \( v(0)=0 \)), and \( l(-x) = -\lambda g(-x) \) for \( x < 0 \); \( g(x) \) is then the “gain function” and \( l(-x) \) the “loss function.” This results in the characteristic curve kinked at \( x=0 \) due to the loss aversion parameter \( \lambda \).

Thaler (1985) observed that when an outcome is composed of several parts, prescriptions can be issued for when it is optimal to combine (integrate) the parts, and when it is best to keep them separate in mind (segregate). We examine the case of a “mixed loss;” that is, where a loss, say \( x < 0 \), is combined with a smaller gain, say \( y > 0 \), making the overall outcome negative. The value from integrating the components is then \( v(x+y) = l(x+y) \) and that from segregating them is \( v(x) + v(y) = l(x) + g(y) \). In the first case, then, there is only a loss, whereas in the second there is a loss and a gain.

Our analysis shows that the optimality of segregation versus integration depends on the size of the gain, the size of the loss, the loss aversion parameter \( \lambda \), and the degree of diminishing sensitivity (i.e., concavity) of the function \( g(x) \). For any fixed loss \( L \), there exists a threshold value of the loss aversion coefficient, \( \lambda^* \), such that if \( \lambda > \lambda^* \), it is optimal to integrate for all \( G \leq L \), and if \( \lambda < \lambda^* \), it is optimal to segregate small gains (below a smallest gain \( G^* \)) from the loss.

From this analysis follow several predictions, of which two are tested empirically. We assume that participants treat information largely as it is presented to them (the concreteness principle, Slovic 1974). We first predict that for a small price reduction, a rebate (segregation) should be more optimal than a discount, and vice versa for a large price reduction. Second, there should be a preference for segregation among participants with lower loss aversion, and for integration among those with higher loss aversion.

The hypotheses were tested in an online study using a hypothetical choice scenario, where participants chose to buy or not to buy a DVD player in one of four conditions (2(frame: rebate vs. discount) x 2(size: small vs. large)). The results confirm the hypotheses. In the low reduction conditions, respondents preferred the product under the rebate \( (M=.63) \) versus under the discount \( (M=.36; \) Fisher’s exact \( p=.03) \), while in the high reduction conditions, respondents marginally preferred the product under the discount \( (M=.70) \) versus under the rebate \( (M=.52; \) Fisher’s exact \( p=.11) \); a logit analysis confirmed that the interaction was significant \( (\chi^2=6.48, p<.01) \).

For testing the second hypothesis, a measure of loss aversion was adapted from Götte, Huffaman, and Fehr (2004); as predicted, there was a (marginally significant) interaction between the framing of the reduction and loss aversion \( (\chi^2=3.47, p<.06) \).

These results indicate that our analysis is valid, and have important implications for the optimal management of promotions; it also extends our understanding of the mental representation of information in decision making.

REFERENCES


