The Presence of Reference Price: How Value Can Appear Convergent to Buyers and Sellers

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Abstract
This paper argues that the endowment effect—the tendency of minimum selling price to exceed maximum buying price for a particular object—might be minimized when a reference price appears. The findings from 418 participants in two experiments support our hypothesis: the endowment effect would be smaller when the reference price is available. The importance of reference price is thus highlighted.

[to cite]:

[url]:
http://www.acrwebsite.org/volumes/12350/volumes/v33/NA-33

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ABSTRACT
This paper argues that the endowment effect—the tendency of minimum selling price to exceed maximum buying price for a particular object—might be minimized when a reference price appears. The findings from 418 participants in two experiments support our hypothesis: the endowment effect would be smaller when the reference price is available. The importance of reference price is thus highlighted.

INTRODUCTION
Economists are often concerned about the estimated “value” or welfare measures on various goods or services, and attempt to derive empirical estimation of objective measures. The assessment of objective values refers to “people are required to estimate the least price they are willing to accept (WTA) and the selling price they are willing to pay (WTP).” Most economists argue that the gap between WTA and WTP should converge for most commodities. However, experimental research showed that the values of WTA and WTP might be remarkably different even for the same object. Specifically, research on the valuation of objects by laboratory experiments indicated that people desire a higher WTA for an owned object than WTP for a not-owned-yet object (Kahneman, Knetsch, and Thaler 1990; Knetsch and Sindin 1984; Thaler 1980). The gap between the buying price and the selling price for an object is perfectly rooted in the status of ownership and is termed as “the endowment effect” (Thaler 1980; Kahneman et al. 1990).

The concept of the term “endowment effect,” first mentioned by Kahneman et al. (1990), has proven robust in studies employing laboratory experiments (Kahneman, et al. 1990), economics style market experiments (Franciosi, Kujal, Michelitsch, Smith, and Deng 1996), and field studies (e.g., Johnson, Hershey, Meszaros, and Kunreuther 1993). These studies have shown that people tend to demand a higher selling price for commodity that they own than they would be willing to pay in order to acquire the same object.

Explanations of the endowment effect generally rely on psychophysical notions of reference dependence and loss aversion, as postulated in prospect theory (Kahneman and Tversky 1979; Tversky and Kohneman 1974) and subsequent research on mental accounting (Thaler 1980). According to prospect theory, states below the reference point are negatively coded as losses and states above the reference point are positively coded as gains. The loss aversion postulate further states that losses loom larger than the corresponding gains: $V(x) > V(-x)$. In other words, the pain of giving up an endowment will exceed the pleasure of acquiring it. This should be observed as a disparity in selling and buying price for the same good, with the former exceeding the latter (Mandel 2002). Similarly, loss aversion may account for why people are reluctant to exchange lottery tickets, even when a small bonus is offered for doing so (Bar-Hillel and Neter 1996). Explanations of support loss aversion have shown that endowment effects are more likely to be observed when prospective gains and losses are difficult to integrate, either because of high uncertainty about future exchange prices (van Dijk and van Krippenberg 1998) or reduced comparability of consumer goods (Chapmann 1998). Strailevitz and Loewenstein (1998) also used loss aversion to explain the ways in which perception of subjective valuation depends on time of possession for the object. An individual’s selling price for a current possession will increase as a function of how long the person has owned the object.

The endowment effect also appears to be moderated by regulatory focus: participants were reluctant to exchange an endowed object when they focused on prevention goals rather than they focused on promotion goals (Liberman, Idson, Camacho, and Higgins 1999), Mandel (2002) found that the endowment effect was observed when participants imagined another individual wanting to buy from or sell to them rather than they imagined wanting to buy from or sell to another individual. Additionally, some works emphasized the importance of affective response (i.e. positive and negative feeling evaluations). Loewenstein and Issacharoff (1994) found that the manner in which people obtained an object affected their valuation of the objects. Specifically, individuals who received goods based on exemplary performance valued the goods more than they received the goods by chance or based on poor performance. These findings suggested that an affective role based on associating positive affect with the item was responsible. Forgas and Ciarrochi (2001) found that people with positive emotions enhanced and those with negative emotions decreased subjective cognitive value regardless of both owner and non-owner for general consumer’s commodity.

This research focused on the relationship of reference price to the impact of endowment effects. The magnitude of the endowment effect might be influenced by reference price. Previous research on perceptive valuation has shown that perception of valuation is likely to be influenced by both cues relating to the subjective value of the item and the relevant reference price (e.g., the market price for the product) (Monroe 2003; Green, Jacowitz, and Kahneman 1998). It is reasonable that both seller and buyer’s perceptions of value are influenced by reference price and indirectly moderate endowment effects.

MODEL OF REFERENCE PRICE AND ANCHORING EFFECT
The role of reference price in consumer price perception and evaluation has been underscored by numerous studies (Heath, Chatterjee, and France 1995; Herr 1989; Mayhew and Winer 1992; Urbany and Dickson 1991). Reference price can be defined as “an internal price to which consumers compare observed prices” (Winer 1989). In other words, consumers possess a reference price, which is based either on their previous experiences (Winer 1986; Lattin and Bucklin 1989), on an external cue such as the advertised price (Biswas and Bliar 1991), or contextual effects (Rajendran and Tellis 1994; Hardie, Johnson, and Fader 1993). Empirical findings in the literature support the notion that consumers behave as if they had a reference price that factors into their decision process (Kalyanaram and Winer 1995). These findings indicate an increase in the predictive power of choice models that incorporate reference price rather than to price-only models (Winer 1989; Lattin and Bucklin 1989; Kalwani, Yim, Rinne, and Sugita 1990; Mayhew and Winer 1992). Although there is a general consensus in the consumer literature that reference price has a significant impact on product evaluation and purchase decision, there has been less studies.
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regarding to the manner in which consumers decide on the lowest price they are willing to accept for an item (Carmon and Ariely 2000; Kahneman et al. 1990).

The anchoring effect is often used to explain the effect of reference price on product evaluation. Tversky and Kahneman (1974) described anchoring as a process in which “people make estimates by starting from an initial value that is adjusted to yield a final answer…” In a typical demonstration, participants were asked to estimate a certain value. They were given an arbitrary value (20% or 80%) and are then asked to provide their best estimate. The usual finding is that these estimates are significantly influenced by the anchor (Green et al. 1998; Jacowitz and Kahneman 1995). Consistent with this idea of anchoring, Jacowitz and Kahneman (1995) also suggest that judges who are first asked if a target value is higher or lower than a given anchor adjust their estimates in the appropriate direction until reaching an acceptable value. We used the concept of anchor to explain reference price effect on consumer’s WTP and WTA (or endowment effect).

Theoretically, perception of valuation is influenced both by cues relating to the subjective value of the item and the relevant reference price (e.g., the market price for the product). However, that most products come in several varieties with different features are associated with numerous brands and counties of origin. They also are sold at a variety of stores. Once consumers decide to purchase a product, they still need to decide on a specific item and, correspondingly, the price they are willing to pay. Consumers must determine what combination of item characteristics and price offers the best solution for their values. This can be a challenging task, because preference and values are often ambiguous and unstable (Bettman, Luce, and Payne 1998; Simonson 1993). Thus, the buyer’s valuation of an item is expected to be particularly susceptible to reference price.

In contrast, sellers who have already decided to trade can base their asking price on the estimated market price. Suppose that a consumer has an unwanted item (e.g., a second CD player received as a gift) deciding to sell. In this situation, the personal value of the item to the seller becomes less relevant and the selling price is expected to be determined primarily by an external cue such as reference price. When reference price is provided by the retailer or the advertiser, a person who wants to sell a product will anchor and will be inclined to accept the price.

The magnitude of the endowment effect might be influenced by reference price. Specifically, when market reference price appears, owners may be moreanchored into reference price to sell and potential buyers may be more anchored and inclined to buy. To see how inferred reference price might influence the endowment effect, one considers the “wine problem” that Frisch (1993) (see also Thaler 1980) used to test the endowment effect:

1. Back in the 1950s you purchased a case of good wine for $5 a bottle. Today, a wine merchant offers to purchase it from you. How much would you be willing to sell it for?
2. You have just heard that a wine merchant has a case of good wine dated from the 1950s. He purchased the wine for $5 a bottle. He now wants to sell it. How much would you be willing to pay per bottle?

In order to examine our hypothesis that ownership and the presence of preference price interact to influence subjective valuation, an experiment was conducted in which two additional experimental conditions were added to a tiny modified version of the wine problem. Scenarios A and B correspond to scenarios 1 and 2, respectively:

A. A decade ago, you purchased a case of good wine for $5 per bottle. Today, you are interested in selling the case to a wine merchant. How much would you be willing to sell each bottle?
B. A decade ago, a wine merchant purchased a case of good wine for $5 per bottle. You are interested in buying the case. How much would you be willing to pay for each bottle?

In contrast to scenarios A and B in which reference price was explicitly present in market information in the following two scenarios:

C. A decade ago, you purchased a case of good wine for $5 per bottle. Today, a wine merchant offers to purchase it from you. You got information from the Internet that there is a market price with $12 for same commodity. How much would you be willing to sell each bottle for?
D. A decade ago, a wine merchant purchased a case of good wine for $5 per bottle. He is now interested in selling the case. You got information from Internet that there is a market price of $12 for the same commodity. How much would you be willing to pay per bottle?

As in scenario A, the case of wine is endowed to the participant in scenario C. However, unlike that in scenario A, the presence of market reference price is showed by the participant C. Similarly, presence of market reference price is inverse between scenarios B and D

Method

The experiment was conducted by a 2 (ownership: owner vs. non-owner) x 2 (reference price: presence vs. absence) between-subjects design. One hundred and sixty undergraduate students (88 females and 72 males), who participated in this experiment as part of the course requirement in marketing management class, were randomly and equally assigned to one of four different experimental conditions.

Procedure

Participants were given a 1-page questionnaire in which they were asked to consider a case of wine problem. The case varied in terms of who was described.

After reading the scenario, participants were asked to indicate the amounts for which they thought the owner was willing to sell the bottle of wine and the non-owner was willing to buy the bottle of

consistent with the endowment effect prediction, Frisch (1993) found that the mean price was significantly greater for participants when they imagined themselves as sellers (scenario 1) than as buyers (scenario 2). However, if the information of “market price is $12 for same commodity now” is added to both scenarios 1 and 2, seller and buyer will anchor and adjust subjective perceptual value to the price. Jacowitz and Kahneman (1995) described anchoring as a process in which “people make estimates by starting from an initial value that is adjusted to yield a final answer…” When both seller and buyer anchor the reference market price, their subjective value will be adjusted to approach the price and the endowment effect—the discrepancy in buying and selling price for the same commodity—will be decreased. Thus, we predict that

H1: The endowment effect will be small when reference price is available.

STUDY 1

In order to examine our hypothesis that ownership and the presence of preference price interact to influence subjective valuation, an experiment was conducted in which two additional experimental conditions were added to a tiny modified version of the wine problem. Scenarios A and B correspond to scenarios 1 and 2, respectively:

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Method

The experiment was conducted by a 2 (ownership: owner vs. non-owner) x 2 (reference price: presence vs. absence) between-subjects design. One hundred and sixty undergraduate students (88 females and 72 males), who participated in this experiment as part of the course requirement in marketing management class, were randomly and equally assigned to one of four different experimental conditions.

Procedure

Participants were given a 1-page questionnaire in which they were asked to consider a case of wine problem. The case varied in terms of who was described.

After reading the scenario, participants were asked to indicate the amounts for which they thought the owner was willing to sell the bottle of wine and the non-owner was willing to buy the bottle of
wine. For example, in the owner conditions, participants were asked to indicate the minimum amount for which they would be willing to sell the bottle of wine and they were asked to indicate the maximum amount they thought the wine merchant would be willing to pay to buy the bottle of wine from them.

Results and discussion

A two-way factorial ANOVA was employed to test the effect of reference price on the perceived value for the case of wine. The statistics \( F(1,156)=88.49, p<0.01 \) showed significant main effects of ownership: people who own the case of wine have a significantly higher price ($10.01) than the non-owners do ($7.96). This finding is consistent with prior evidence for the endowment effect (Thaler, 1980). More importantly, as we expected, a significant interaction was found between the endowment effect and reference price, \( F(1,156)=16.12, p<0.01 \). A significantly higher price for the case of wine was perceived by the owners ($8.97) than by the non-owners (NT$6.95) in the absence of reference price, \( t(78)=6.15, p<0.0001 \). However, statistics also proved to be an irrelevant factor between “those who owned the case of wine but wanted to sell it” ($10.15) and “those who did not own the case of wine but wanted to buy one” ($9.87) in the condition of presence of reference price, \( t(78)=0.96, p>0.1 \), these analysis supports our H1.

These statistics strongly support our assumption that the endowment effect occurs only in the absence of reference price rather than in the presence of reference price.

Experiment 1 supported our hypothesis that the reference price as a moderator decreased one’s perceived value of an owned object and the endowment effect did not occur in the presence of reference price. However, although the results of Experiment 1 supported our hypothesis, we found the above value effects on choice even we used a bisecting task to control for the impact of reference price. Thus, a stronger test of our hypothesis would require simultaneously manipulating the degree to which prospective buyers and seller value a target commodity about market reference price is provided. Experiment 2 was designed to allow a direct comparison of range versus value effects.

STUDY 2

The objectives of Experiment 2 were dual: Firstly, Experiment 2 was designed to simultaneously manipulate various market reference prices on the part of prospective buyer and seller, thus permitting more rigorous tests of our hypothesis. Secondly, the problem was changed in an attempt to test the robustness of predicted effects.

Method

Design. Two hundred and fifty eight participants (142 females and 116 males) were involved in Experiment 2 as part of the course requirement. They were randomly and equally assigned to one of six grids of a 2 (ownership: owner vs. non-owner) x 3 (Reference price: low, high, no information) between-subjects design. The factor of reference price was designed into three levels: low, high, and no information. No information is the control condition in which neither the owner nor the non-owner knew the reference price. High or low reference price implies that the transaction price in the market is relatively higher or lower than the initial purchase price.

Procedure

Participants were given a 1-page questionnaire in which they were asked to consider a hypothetical CD purchase. The case varied in terms of who was described as the recent purchaser of the CD (either the participant or a person named Lee). For example, in the low-price-owner condition, participants read one of the following:

**A year ago, you bought a classical musical CD for $10. After listening to it, you really liked this CD. Lee, who hasn’t bought the CD yet, also listens to and likes it. Now, he wants to purchase it from you. You got information from Internet that there is a market price of $8 for same commodity (in the high-price was conducted in $12) for same commodity. How much would you be willing to sell the CD for?**

Others read the baseline version (no information condition):

**A year ago, you bought a classical musical CD for $10. After listening to it, you really liked this CD. Lee, who hasn’t bought the CD yet, also listens to and likes it. Now, he wants to purchase it from you. How much would you be willing to sell the CD for?**

Conversely, the non-owner condition describes Lee as having recently purchased the CD and the participant as having listened to it.

After reading the scenario, participants were asked to indicate the amounts for which they thought the owner was willing to sell the CD and that the non-owner was willing to buy the CD. For example, in the owner conditions, participants were asked to indicate the minimum amount for which they would be willing to sell the CD to Lee and they were asked to indicate the maximum amount they thought Lee would be willing to pay to buy the CD from them. Last, in order to understand whether participants were induced by the different reference price situation, participants were asked to respond to the question: “do you agree that market transaction price is higher than initial purchased price by you for the CD?” The scales were described with end point 1= “extremely disagreement” to 7= “extremely agreement.”

RESULT AND DISCUSSION

Manipulation checks

In this experiment, the manipulation of market reference price was operationalized by varying the description of scenarios. To assess the validity of this operational definition, we examined whether participants’ mean ratings of perceptive market price varied as a direct function of the reference price manipulations. As expected, mean perceptive market price for the CD differed significantly as a function of varying reference price, \( F(2,255)=619.2, p<0.0001 \). In Scheffe test, the high price condition (6.05) was a significantly higher perceptive market price than low price condition (2.06) and no information condition (3.94). On information condition, it was also a significantly higher perceptive market price than low price condition. These results indicate a significant variation in the perceptive reference price of market transaction under the three experimental conditions, showing that the manipulation was effective.

Effect of reference price

A two-way ANOVA was administered to evaluate the impacts of reference price (low, high, no information) and ownership status (owners vs. non-owners) on the perceived value for hypothetical CD. It found that the ownership status (F(1,252)=21.8, p<0.001) had a significant main effect on the estimated value of the CD, indicating that people perceived a significantly higher value on an owned the CD ($9.21) than on a not-owned-yet one ($8.48). This
result conceptually replicated previous evidence for the endowment effect (Bar-Hillel and Netter 1996; Thaler 1980) and was consistent with Experiment 1.

Moreover, as we predicted, a significant interaction was identified between ownership status and reference price states, F(2,252)=20.12, p<0.001. The mean selling and buying prices are indicated in Figure 1. As the figure shows, endowment effects were observed only when the reference price disappears. In that condition, mean selling price ($9.53) significantly exceeded mean selling price ($7.76), paired t(84)=6.34, SE=0.29, p<0.001. However, there is no significant difference between selling price ($10.95) and buying price ($10.79) when reference price was condition, t(84)=0.73, SE=0.22, p>0.5. There was also no significant difference between selling price ($7.15) and buying price ($6.91) when reference price was low condition, t(84)=0.99, SE=0.186, p>0.5. We examined a two-way(Owner–reference price states[absence vs. high]) ANOVA, showing that there is a significant interaction effect between owner states and reference price, F(1,168)=20.27, p<.05. We also examined a two-way(Owner–reference price states[absence vs. low]) ANOVA, showing that there is a significant interaction effect between owner states and reference price, F(1,168)=33.91, p<0.001. Only when we tested the relationship of owner and reference price (low vs. high), there was no interaction effect found, F(1,168)=1.44, p>0.1. These results also indicated that the impact of reference price on endowment effect was stable, seemingly because the effect of reference price will be accompanied by differences in reference price (high or low).

CONCLUSION

All other things being equal, sellers tend to pursue a higher selling price for an owned object than they would be willing to pay as buyers (e.g. Kahneman, Knetsch, and Thaler 1990). However, as demonstrated in this article, the presence of reference price can affect the magnitude of the endowment effect. The endowment effect only occurs when reference price is absent, and is absent when reference price is present. Hence, the presence of reference price can be classified as a moderator in the endowment effect.

Alternative explanation

In this study, the anchoring effect is often used to explain the influence of reference price upon product evaluation and perception of value and its effects on endowment effect. However, the anchoring effect is not the only explanation of the effect of reference price. Signaling theory is usually applied in explaining various marketing programs, which are based on information economics and the premise that two parties to a transaction frequently possess asymmetrical information (Kirman and Rao, 2000; Spence, 1974). Selling firms often possess important information that consumer does not, such as product quality and the dispersion of actual market price. When lacking important information, consumers must gather additional information or make inferences regarding the nature of the unknown or missing information. Reference price serves as important signal information to help consumers overcome this information asymmetry. Thus, the presence of reference price as signal helps consumers to understand a product’s perceptive value. A seller who wants to sell a product for more than its market price will not find a willing buyer in this situation. Thus, the seller is constrained to accept the reference price (market price). In contrast, for the buyer, appearance of reference price implies that the value of the product approaches the price and other buyers with maximum willingness to pay money also approximately are the price in the market. Thus, the presence of signal of reference price convinces buyers that the value of product is worth this one.

Future research

This research has explored reference price effect on endowment effect in a laboratory setting. However, it is not clear how many reference price categories consumers use in evaluating product value and endowment effects (Kalyanarm and Winer, 1995). Winer (1989) has argued that there may be as many as eight types of reference prices. Consumers may use multiple reference prices in a single judgment. Providing an understanding of the effects of various reference price types is an interesting avenue for future research.

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Advances in Consumer Research (Volume 33) / 241


