Research Article

The Seller Cost Effect

Tao Wang, Lixin Tan, Jianmin Zeng, and Yujie Yuan

Sino-Britain Center for Cognition and Ageing Research, Faculty of Psychology, Southwest University, Beibei District, Chonqing City, PR China

Abstract: Cost plays a crucial role in commodity transactions, influencing the decisions of both buyers and sellers. Previous studies have focused either on the impact of seller costs on seller decisions or the influence of buyer costs on buyer decisions. However, it remains unclear whether seller costs directly affect buyers' purchasing decisions. Across six experiments, participants consistently demonstrated a preference for items with higher seller costs. Experiment 1 had them choose between high and low seller cost items that were totally equal in other aspects, with a majority favoring the item with high seller cost. Experiment 2 involved participants pricing items, resulting in higher values for those with greater seller costs. In Experiment 3, when asked to predict others' choices, the consensus was again for high seller cost items. Experiment 4, which used a single reseller, showed a similar pattern. Finally, in Experiments 5 and 6, with stricter experimental design, the preference for higher seller cost items persisted. These findings indicate that irrelevant factors can influence consumers' valuation of products and their consumption decisions, and thus challenge traditional utility theories of decisions, which generally accommodate only relevant factors. Several nondecision theories (price unfairness perception, anti-profit belief, and zero-sum thinking) were also tested, and zero-sum thinking provides the best explanation.

Keywords: decision bias, psychological pricing, non-utility factors, consumer behavior, behavioral economics

In economics, cost refers to the total value-related losses incurred by an individual for any good (Phillips, 1905), which plays a crucial role in economic decision-making. Previous studies have primarily been one-sided, focusing either on the impact of seller costs (i.e., how much the seller paid to acquire an item) on seller decisions, or the influence of buyer costs (i.e., how much the buyer must pay to acquire an item) on buyer decisions. In this study, we pose an intriguing question: Can seller costs impact buyer decisions?

For buyers, the term cost generally refers to the price of goods or services, defined as the sacrifice made to acquire a product or service or product (Bei & Chiao, 2001). This is a key factor influencing consumer purchasing behavior. Compared to other factors, such as packaging, price has a significantly greater influence on consumer purchasing decisions (Abdullah et al., 2021; Pratama & Suprapto, 2017; Zhao et al., 2021). Especially in fiercely competitive markets, elevated prices may lead to permanent customer attrition (Zhao et al., 2021). The size of buyer costs, specifically the price level, significantly influences consumer purchasing behavior. When consumers perceive products as identical, they tend to favor items or services with lower prices, as rational decision-makers seek to maximize their utility (Savage, 1954; Von Neumann & Morgenstern, 1944).

Additionally, consumer purchasing behavior varies in response to changes in the costs they bear (e.g., price increases or decreases). Price increases worsen perceptions of service performance and decrease satisfaction, perceived value, and future patronage intentions (Calabuig-Moreno et al., 2014). However, when faced with a series of smaller price increases, buyers are more likely to make a purchase, assuming the price will rise if they wait (Anglin, 1994). Price discounts stimulate consumer purchasing intentions (Anglin, 1994; Teng, 2009), especially with a substantial single-time reduction (Anglin, 1994). In certain contexts, minor changes in buyer costs can also affect their purchase behavior, such as psychological pricing (Bizer & Schindler, 2005; Manning & Sprott, 2009; Strulov-Shlain, 2022). Pricing items at \$9.99 instead of \$10 can influence consumer perception and encourage purchases. Consumers often perceive these prices as significantly lower due to the left-digit effect (Sokolova et al., 2020). Taken together, buyer costs have been widely identified as influencing their purchasing decisions.

Seller costs include all expenses necessary to offer services or products. There is limited research on the impact of seller costs on decision-making, with the main focus on the impact of seller expenses on seller pricing strategies (Li et al., 2015; Rida et al., 2017; Schneider, 1985), as well as the strategies of seller rivals (Bakshi, 2020; Geng et al., 2022).

In conclusion, most prior studies have been one-sided. To date, no research has bridged the gap between seller costs

and buyer decision-making. In this research, we investigate a straightforward and surprising question: Do seller costs directly impact buyers' purchase preferences? The remaining part of the introduction will briefly describe the design of experiments and then articulate the predictions of the experimental outcomes by existent theories.

Overview of Experimental Design

This study includes six experiments designed to explore the impact of seller costs on consumer purchasing decisions. Each experiment addresses a unique research question and employs distinct experimental conditions and methods. A typical scenario is shown as follows:

> "Assuming you want to purchase a membership card for Gym A. You have found two offers that perfectly meet your requirements. Both Seller 1 and Seller 2 are selling their membership cards for this gym. The membership cards offered by both sellers have a remaining validity of one year and provide access to all the services of the gym. Due to market fluctuations, the price has dropped, and both sellers are offering the membership card for 1,000 yuan. The only difference is as follows:
>
> Seller 1 originally purchased the membership card for 1800 yuan.
>
> Seller 2 originally purchased the membership card for 1,200 yuan.
>
> Whose card would you prefer to purchase?
>
> • Seller 1
>
> • Seller 2"

Experiment 1 aimed to investigate how seller costs (higher vs. lower) and price fluctuations (price rise vs. price drop) influence consumer preferences when the selling price (i.e., buyer cost) remains constant. Experiment 2 aimed to explore how seller costs and price fluctuation influence consumers' willingness to pay (WTP) for identical products. Experiment 3 aimed to investigate how seller costs influence predictions of others' purchasing decisions. Experiment 4 aimed to explore how seller costs influence consumer preferences when both items are provided by the same seller. Experiment 5 aimed to eliminate any potential perception of quality differences based on seller costs by explicitly stating that the two options were identical. Experiment 6 replicated the procedures of Experiment 5, with one key modification: Both items were resold by the same person rather than by different resellers.

Predictions by Existent Theories

We use Utility theory, Price unfairness perception, Anti-profit belief, and Zero-sum thinking to make predictions (see Table 1).

Utility Theory

Utility theory is a foundational concept in economics, decision theory, and psychology, aiming to explain and model how individuals make choices under uncertainty and risk. Utility theory traces its roots to classical economics, where it was first proposed as a framework for understanding consumer behavior in terms of maximizing satisfaction from consumption (Starmer, 2000). The main models of utility theory are Expected Utility Theory (Edwards, 1954; Luce et al., 1963; Savage, 1954; Von Neumann & Morgenstern, 1944), Prospect Theory (Kahneman & Tversky, 1979), and Cumulative Prospect Theory (Tversky & Kahneman, 1992).

Expected Utility Theory is a cornerstone of modern decision theory, offering a formal framework for understanding how rational individuals make choices under uncertainty. However, its assumptions of rationality and risk neutrality have been criticized for failing to account for real-world decision-making behavior (Pope, 1978). Prospect Theory offers a more psychologically realistic account of decision-making under risk and uncertainty. Individuals evaluate potential outcomes relative to a reference point, rather than in absolute terms of wealth or utility, resulting in

Table 1. The prediction of existent theories

Theory	Prediction
Utility theory	Participants should feel indifferent between the two options.
Price unfairness perception	Participants will choose the product with seller cost closer to the current selling price. When the seller is the same person for both options, participants are likely to have no clear preference between the two options.
Anti-profit belief	Participants will prefer the product with higher seller cost in the price-rise situation. There will be no preference difference between the two options in the price-drop situation.
Zero-sum thinking	Participants will prefer the product with the higher seller cost.

loss aversion (Kahneman & Tversky, 1979). Cumulative Prospect Theory is an advanced and refined version of Prospect Theory. It uses a cumulative probability weighting function, rather than weighting individual probabilities separately for each outcome (Tversky & Kahneman, 1992). This allows for more accurate predictions in complex situations, addressing how people process risk when confronted with multiple potential gains or losses.

Notably, both Expected Utility Theory and Cumulative Prospect Theory calculate the utility or subjective value of an option based on potential outcomes and probabilities, excluding irrelevant factors. In our experiments, both options generally involve the same costs and benefits. According to utility theories, these options have identical utilities, and seller costs should be irrelevant to the decision. Therefore, based on Expected Utility Theory and Cumulative Prospect Theory, participants should feel indifferent between the two options.

Price Unfairness Perception

The perception of price fairness is part of a broader judgment of the overall merits of a deal (Haws & Bearden, 2006). It is natural for buyers to compare prices (Oxenfeldt & Monroe, 1980). These comparisons can be of two types: explicit, those in which a price is compared to another or with a range of prices; and implicit, based on the price that is hoped to be found (Andrés-Martínez et al., 2013). However, it is difficult for people to articulate what is fair, people know what is unfair when they see or experience it (Xia et al., 2004). Unfairness represents a form of inequality, which may be advantageous or disadvantageous to an individual. Advantageous inequality is associated with feelings of guilt, while disadvantageous inequality produces anger and indignation (Monroe & Xia, 2006). Additionally, perceived unfairness is less severe when inequality favors the buyer than when it disadvantages the buyer (Martins, 1995; Xia et al., 2004).

Factors influencing perceptions of unfairness include context, price justification, prior experiences, and general beliefs or knowledge (Xia et al., 2004). Perceived unfairness can result in negative outcomes, including reduced loyalty, decreased willingness to pay, complaints, and even revenge (Chung, 2010). Numerous studies show that fairness is distinct from satisfaction (Mohammad, 2012; Ordez et al., 2000; Xia et al., 2004), but dissatisfaction can lead to perceived unfairness (Bougie et al., 2003; Oliver & Swan, 1989). Unfairness can harm the buyer-seller relationship, so it is prudent for sellers to maintain fair pricing to prevent buyers from damaging this relationship (Dolan & Simon, 1996). Xia et al (2004) revealed that buyer emotions have a significant impact. For example, strong negative emotions may not be sufficiently addressed by economic compensation (Monroe & Xia, 2006). Additionally, the effect is stronger when comparing with other consumers than with other sellers or self-references. Perceptions of unfairness often lead to negative emotions directed toward the seller (Xia et al., 2004).

In summary, according to price unfairness perception theory, to avoid feelings of guilt when advantaged by inequality and anger or indignation when disadvantaged, participants tend to choose options perceived as fairer. The prediction based on price unfairness perception is as follows:

Participants will choose the product with a seller cost closer to the current selling price. Specifically, participants will be more inclined to choose the product with a lower seller cost when the selling prices are lower than the seller's costs (i.e., in the price-drop situation) and more inclined to choose the product with a higher seller cost when the selling prices are higher than the seller's costs (i.e., in the price-rise situation). Moreover, when the seller is the same person for both options, price unfairness perception becomes irrelevant, and participants are likely to have no clear preference between the two options.

Anti-Profit Belief

While profit-seeking promotes social development, it is often stereotyped as harmful to society (Bhattacharjee et al., 2017). Profit-seeking is frequently associated with moral and ethical concerns, social responsibility, and sustainability. Even when no harm is intended, individuals engaged in profit-seeking are often perceived as blameworthy. Specifically, people are judged as blameworthy when they benefit from another's misfortune (Inbar et al., 2012). Additionally, people tend to associate organizational size with ethicality and often stereotype profit-seeking as negative. People attribute greater profit-maximizing motives to large companies, and these attributions shape their subsequent judgments of ethicality (Freund et al., 2023). A comprehensive meta-analysis revealed that corporate virtue, in the form of social responsibility and, to a lesser extent, environmental responsibility, is likely to pay off. However, the positive relationship between corporate social/environmental performance (CSP) and corporate financial performance (CFP) is also influenced by how these performances are measured (Orlitzky et al., 2003).

According to the anti-profit belief, people are generally averse to sellers making a profit. In the context of our study, where one situation favors seller profit (when prices rise above seller costs) and the other results in a seller loss (when prices drop below seller costs), the prediction based on the anti-profit belief is as follows:

Participants will prefer the product with a higher seller cost in the price-rise situation (because it has lower seller profit). There will be no preference difference between the two options in the price-drop situation (because both sellers incur losses, with no profits).

Zero-Sum Thinking

People often perceive profit as a zero-sum game, where one party's gain comes at the expense of another's loss, leading them to neglect the potential for profit incentives to drive long-term societal benefits, such as innovation and social welfare (Bhattacharjee et al., 2017). This bias appears deeply ingrained and was consistent across various political and economic backgrounds, suggesting it may be widespread even in highly market-oriented societies (Różycka-Tran et al., 2015). The profit-seeking can affect people to zero-sum situations with a winner and a loser, in the condition of a win-win situation (Baron et al., 2006). The denial of transactions as win-win fits can explain zero-sum thinking – the belief that one party's gain is another party's loss (Johnson et al., 2022). Zero-sum thinking extends to various fields, including gender status (Kuchynka et al., 2018), national attitudes (Piotrowski et al., 2019), populist attitudes (Papaioannou et al., 2022), and political ideology (Davidai & Ongis, 2019).

According to zero-sum thinking, people view sellers' profits as their own losses and tend to prefer that sellers benefit less whenever possible, the prediction of zero-sum thinking is as follows:

Participants will prefer the product with the higher seller cost in both the price-rise and price-drop situations. In the price-rise situation, they will choose the higher seller cost option to minimize the seller's profit as if it can maximize their own gain. In the price-drop situation, they will choose the higher seller cost option to maximize the seller's loss as if it can maximize their own gain.

Experiment 1

Participants

Sixty participants (age range = 17–23 years, $M = 18.82$, $SD = 1.282$; 56 females) were recruited and received corresponding remuneration for answering the questionnaire on an online survey platform (https://www.wjx.cn/). We determined the sample size using G*Power software (3.1.9.7) with significance criterion of 0.05, a power of 0.80, and an effect size (w) of 0.36.

Materials and Procedure

The materials involved five types of items: computers, movie tickets, fitness cards, e-readers, and books. Two scenarios were set up for each type of items: the selling price was higher (or lower) than the seller costs. Therefore, we had 10 scenarios in total, with each scenario corresponding to one trial, resulting in a total of 10 trials. One scenario (wherein the selling prices were lower [higher] than the seller costs) is given below.

> "Assuming you want to purchase a computer of brand A [B]and model A [B]. You can now only purchase it on a certain trading platform, and you find two offers that meet your requirements perfectly. Both Seller 1 and Seller 2 are selling this brand and model, and the computers they offer are identical in quality, performance, and condition. Due to market fluctuations, the price has dropped [risen], and both sellers are offering the computer for 10,000 yuan. The only difference is as follows:
>
> Seller 1 originally purchased the computer for 18,000 [9,000] yuan.
>
> Seller 2 originally purchased the computer for 12,000 [6,000] yuan.
>
> Whose computer would you prefer to purchase?
>
> • Seller 1
>
> • Seller 2"

Each trial had two options: one was the item of high seller cost (18,000 yuan in the above example) and the other was the item of low seller cost (12,000 yuan in the above example). The cost of the high-cost item was 1.5 times higher than that of the low-cost item. In each trial, we highlighted three key pieces of information: (a) The items in the two options were identical in terms of quality, appearance, brand, etc.; (b) the selling prices in the two options were the same; (c) the only difference lay in the seller cost. We emphasized these points using red color. Additionally, the order of options in each trial was counterbalanced, and the order of trials was randomized for each participant.

Results

Counting the number of participants opting for the item with a high seller cost and for that with a low seller cost in each scenario, we presented descriptive statistics in Figure 1. Employing a Chi-square test for each scenario individually, we identified a highly significant difference between the number of participants opting for the high-cost item and that for the low-cost item for the seller: $\chi^2(1, N = 60)$ ranged from 26.667 to 52.267; all p's < .001.

Additionally, we implemented a scoring system. For each participant, choosing the high seller cost item in one trial resulted in a score of 1, while choosing the low seller

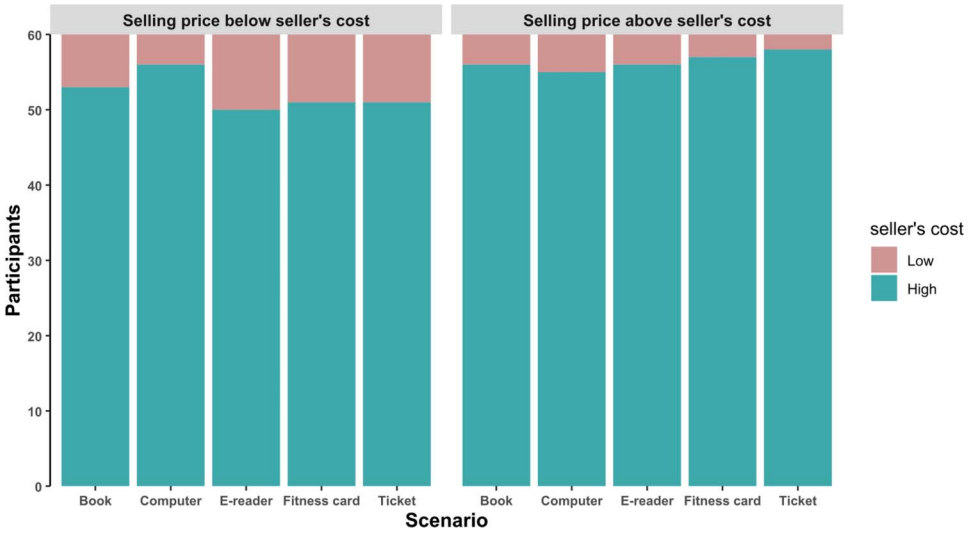

Figure 1. The number of participants choosing the high or low seller-cost item in each scenario.

cost item led to a score of 0. The sum for each participant, ranging from 0 to 10, was used for subsequent analysis. According to utility theories, individuals should be indifferent between the high seller cost item and low seller cost item. Therefore, the average sum should be 5. We conducted a one-sample *t*-test to compare the sum against 5: $t(59) = 19.619$, $p < .001$. The effect size (*d*) was 2.533; 95% confidence interval (CI) = [3.637, 4.463]. Then, we conducted a paired-sample *t*-test to compare difference between drop situation and rise situation, $t(59) = -1.750$, $p = .085$. The effect size (*d*) was 0.226, 95% confidence interval (CI) = [−.750, .050].

In summary, the majority of participants showed a preference for the high seller cost items over the low seller cost items, despite the items being identical in other aspects.

Experiment 2

Participants

We recruited 60 participants (age range = 18–23 years, $M = 20.12$, $SD = 1.439$; 48 females). A prior power analysis, as in Experiment 1, determined the sample size.

Materials and Procedure

Experiment 2 was similar to Experiment 1. The main difference was that Experiment 1 asked subjects to choose between two items (high seller cost vs. low seller cost) while Experiment 2 asked subjects to price (state their willingness to pay for) each item separately. One scenario (wherein the market prices were lower [higher] than the seller costs) is given below.

"Assuming you want to purchase a computer of brand A [B]and model A [B]. You can now only purchase it on a certain trading platform, and you find two offers that meet your requirements perfectly. Both Seller 1 and Seller 2 are selling this brand and model, and the computers they offer are identical in quality, performance, and condition. Due to market fluctuations, the price has dropped [risen]. The average price of similar products with the same quality in the current market is 10,000 yuan. The only difference is as follows:

Seller 1 originally purchased the computer for 18,000 [9,000] yuan.

Seller 2 originally purchased the computer for 12,000 [6,000] yuan.

For the computers listed by sellers 1 and 2, how much are you willing to pay for each?

Seller 1: _____ yuan

Seller 2: _____ yuan"

Results

After removing outliers (outside three *SD*s of the mean value), data were obtained from 59 participants. Figure 2 illustrates participants' pricing for items with high or low seller cost in each scenario. We conducted paired-sample *t*-test separately for each scenario, revealing highly significant difference between the pricing on the high seller cost item and that on low seller cost item (all *p*-values < .01).

Figure 2. Participants' pricing for items with high or low seller costs in each scenario.

Similar to Experiment 1, a scoring system was adopted. Participants received a score of 1 if they placed a higher price to the high seller cost item, a score of −1 for favoring the low seller cost item, and a score of 0 otherwise, across each scenario. The sum of scores across 10 scenarios for each participant, theoretically ranging from −10 to 10, was utilized for subsequent analysis. In accordance with utility theories, individuals are expected to be indifferent between the high and low seller cost items. Consequently, the average sum is expected to be 0. A one-sample *t*-test was employed to assess the comparison of the sum with 0. $t(58) = 20.974$, $p < .001$. The effect size (d) was 2.708, 95% confidence interval (CI) = [2.241, 3.162].

To summarize, people generally placed higher prices for high seller cost items than for low seller cost items, despite their complete equivalence in other aspects, such as quality.

Experiment 3

Participants

We intended to recruit 60 participants but actually got 62 participants. However, due to one participant failing to submit their answers successfully, our final sample consisted of 61 participants (age range = 18–22 years, $M = 19.89$, $SD = 1.439$; 45 females). A priori power analysis, as in Experiment 1, determined the sample size.

Materials and Procedure

In contrast to Experiment 1, where participants were tasked with choosing between two items based on the seller cost (either high or low), Experiment 3 required participants to predict which item others (e.g., Xiao Zhao) would choose. Additionally, we made updates to certain scenarios in Experiment 3. One scenario (wherein the selling prices were lower [higher] than the seller costs) is given below.

> "Xiao Zhao wants to purchase a second-hand piano. On a certain trading platform, Xiao Zhao found two listings that perfectly meet his requirements. Both Seller 1 and Seller 2 are selling their respective pianos, and the pianos they offer are identical in brand, model, quality, performance, appearance, age, and other aspects. Due to market fluctuations, the price has dropped [risen], and both sellers are offering the piano for 10,000 yuan. The only difference between the pianos offered by Seller 1 and Seller 2 is as follows:
>
> Seller 1 originally purchased the piano he is selling for 18,000 [9,000] yuan.
>
> Seller 2 originally purchased the piano he is selling for 12,000 [6,000] yuan.

Whose piano do you think Xiao Zhao is more inclined to purchase?

- Seller 1
- Seller 2"

Results

The descriptive statistics are presented in Figure 3. Employing the identical methodology as in Experiment 1, a χ^2 test was conducted for each scenario individually. The χ^2 values (1, N = 61) ranged from 13.7878 to 39.361, with each p-value < .001.

We utilized a scoring system, mirroring the methods employed in Experiment 1. We conducted a one-sample t-test to compare the sum against 5: $t(60) = 10.915$, with $p < .001$. The effect size (d) was 1.397, with 95% confidence interval (CI) of [2.678, 3.880]. Then, we conducted a paired-sample t-test to compare the difference between drop situation and rise situaion, $t(60) = .760$, with $p = .450$. The effect size (d) was .097, with 95% confidence interval (CI) of [−.134, .298].

In summary, the majority of participants predicted that others, similar to themselves, would favor high seller cost items over low seller cost items, despite these two items being identical except for their costs of seller.

Experiment 4

Participants

The participants in Experiment 4 were the same as those in Experiment 3. Two experiments were separated by irrelevant materials.

Materials and Procedure

Experiment 4 asked participants to choose between high seller cost items and low seller cost items, both provided by the same seller in each scenario, differing from the setup in Experiments 1–3 where different sellers were involved. The materials and procedures were similar to those in Experiment 1. One scenario (wherein the selling prices were lower [higher] than the seller costs) is given below.

"Assuming you want to buy a used piano. On a certain trading platform, you found a store that perfectly meets your requirements. This store previously acquired two pianos, Piano A and Piano B, and both pianos are identical in brand, model, quality, performance, appearance, age, and other aspects. Due to market fluctuations, the prices of both Piano A and Piano B have dropped [risen] to 10,000 yuan. The only difference between the two pianos is as follows:

The store purchased Piano A for 18,000 [9,000] yuan.

The store purchased Piano B for 12,000 [6,000] yuan.

Which piano are you more inclined to purchase?

- Piano A
- Piano B"

Results

The analytical approach mirrored that of Experiment 1. The descriptive statistics were shown in Figure 4. For each

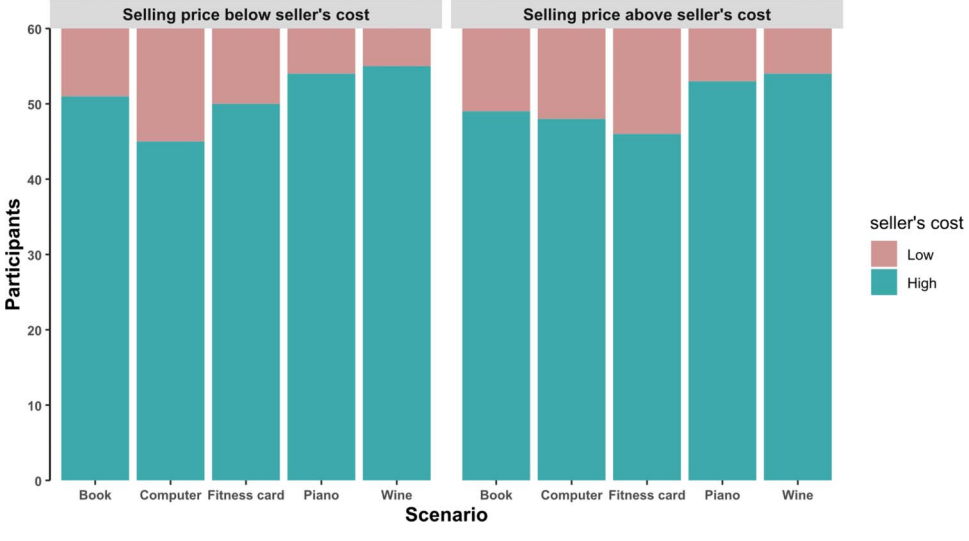

Figure 3. The number of participants choosing the high or low seller-cost item in each scenario.

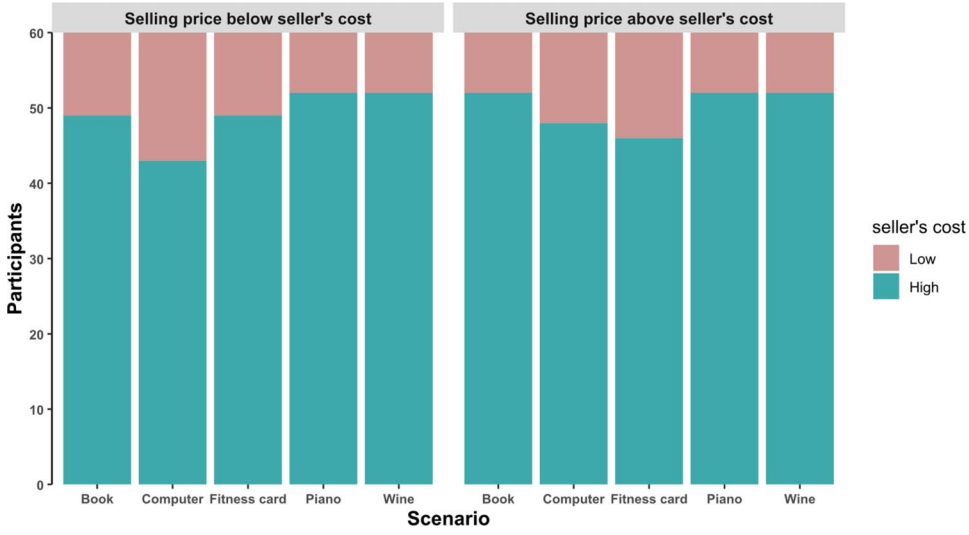

Figure 4. The number of participants choosing the high or low seller-cost item in each scenario.

scenario, χ^2 (1, N = 61) ranged from 10.246 to 30.331, all p's < .001.

We employed a scoring system, following the methods utilized in Experiment 1. We conducted a one-sample t-test to compare the sum against 5: $t(60) = 8.635$, $p < .001$. The effect size (d) was 1.106, 95% confidence interval (CI) = [2.393, 3.86]. Then, the paired-sample t-test between drop situation and rise situation yielded a statistic of $t(60) = -1.093$, with $p = .279$. The effect size (d) was .140, with 95% confidence interval (CI) of [−.232, .068]. What's more, we conduct a paired-sample t-test between experiment 3 and experiment 4, $t(60) = -.662$, with $p = .510$. The effect size (d) was .085, with 95% confidence interval (CI) of [−.659, 0.331].

In summary, similar to experiment 3, regardless of whether the seller was the same person or not, the majority of participants chose the high seller cost items over the low seller cost items.

Experiment 5

In Experiments 1–4, participants were informed that the two options were identical. However, it is conceivable that some participants may still perceive the higher seller cost option as having better quality, and therefore, deserving a higher selling price. To further eliminate this possibility, we conducted Experiments 5–6, wherein the identical nature of the two options was explicitly communicated to participants and embedded in the scenario.

Participants

Altogether 60 participants were recruited (age range = 18–23 years, M = 20.57, SD = 1.198; 54 females).

Materials and Procedure

The experiment comprised five scenarios: computer, watch, stamp, wine, and gift box. An example scenario is provided below:

> "A store printed and distributed some flyers to promote a limited-edition computer. After distribution, the store noticed that some flyers had the correct price of 9,999 yuan, while others had an incorrect price of 6,999 yuan. According to local regulations, the store must sell the product at the price shown on the flyer the customer presents. As a result, some customers bought the identical computer for 6,999 yuan, while others paid 9,999 yuan.
>
> Suppose you really want to buy this limited-edition computer. When you arrive at the store, it is already sold out. Fortunately, two individuals, A and B, who just purchased the computer and have not opened it, are willing to sell theirs. Both are asking for 12,000 yuan. The only difference between the two computers is:
>
> A previously paid 6,999 yuan for the computer.
>
> B previously paid 9,999 yuan for the computer.

Whose computer would you be more inclined to purchase?

- A's
- B's"

It is important to highlight that, in contrast to Experiments 1–4, the two seller costs for the items in this experiment were not predetermined by the preceding sellers (the store in this case). Instead, they were essentially arbitrarily assigned, thereby reinforcing the identical nature of the two items and further exclude the possibility of a correlation between the price and the quality of items.

Results

The analytical approach mirrored that of Experiment 1. The descriptive statistics were shown in Figure 5. For each scenario, $\chi^2(1, N = 60)$ ranged from 38.400 to 45.067, all p's < .001.

Additionally, we also calculated a score of preferring the higher seller cost item for each participant and then did a one sample t-test against 2.5 (see Experiment 1 for details). $t(59) = 14.891$, $p < .001$. The effect size (d) was 1.922, 95% confidence interval (CI) of = [1.818, 2.382].

In summary, the majority of participants chose the high seller cost items over the low seller cost items, even though we have further excluded the possibility of a link between price and item quality.

Experiment 6

Experiment 6 replicated the procedures of Experiment 5, with the exception that in Experiment 6, both items were resold by the same person.

Participants

Sixty participants were recruited (age range = 18–23 years, $M = 20.08$, $SD = 1.197$; 52 females).

Materials and Procedure

Experiment 6 replicated Experiment 5 except that Experiment 6 set the resellers of the two items to be one person. One scenario is given below:

"A store printed and distributed some flyers to promote a certain limited-edition computer. After the distribution, the store noticed that some flyers had the correct price of 9,999 yuan, while others had an incorrect price of 6,999 yuan. According to local regulations, the store must sell the product at the price shown on the flyer the customer presents. As a result, some customers bought the identical computer for 6,999 yuan, while others paid 9,999 yuan.

Suppose you really want to buy this limited-edition computer. When you arrive at the store, it is already sold out. Fortunately, there is a person in the store

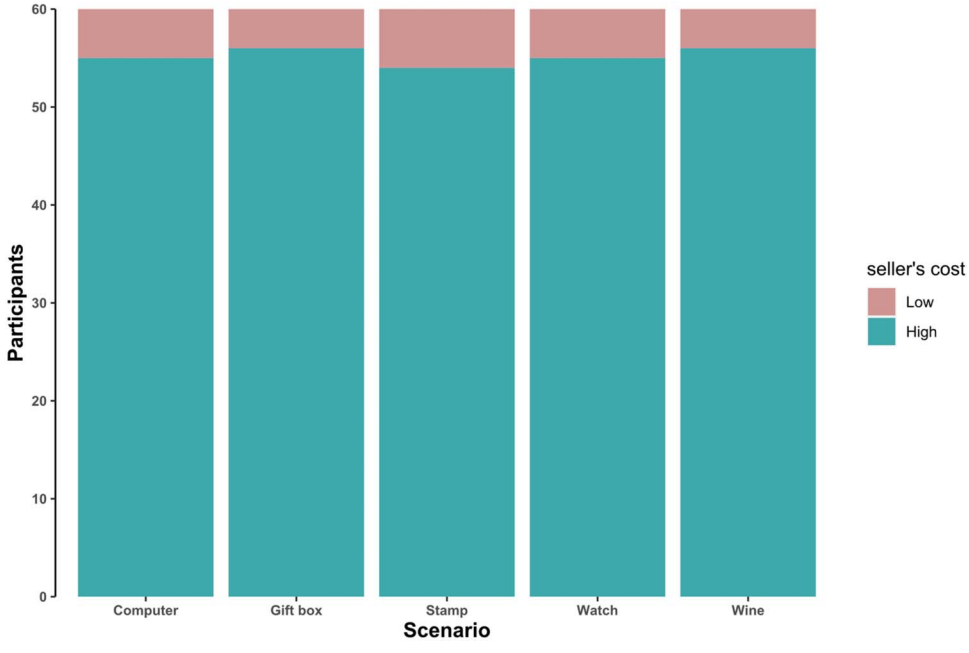

Figure 5. The number of participants choosing the high or low seller-cost item in each scenario.

who just bought two units, has not opened them, and is willing to sell one for 12,000 yuan. The two computers this person bought are identical, except for the price he originally paid.

Which computer would you be more inclined to purchase?

- The computer purchased with the 6,999 yuan flyer
- The computer purchased with the 9,999 yuan flyer"

Results

The analytical approach mirrored that of Experiment 1. The descriptive statistics were shown in Figure 6. For each scenario, χ^2 (1, N = 60) ranged from 29.400 to 41.667, all p's < .001.

Additionally, we computed a score reflecting the preference for the higher seller cost item for each participant and subsequently conducted a one-sample t-test against 2.5 (refer to Experiment 1 for specific details). $t(59) = 12.510$, $p <$ .001. The effect size (d) was 1.615, 95% confidence interval (CI) = [1.666, 2.301]. Then, we conduct an independent sample t-test between experiment 5 and experiment 6, $t(118) = .550$, with $p = .583$. The effect size (d) was .100, with 95% confidence interval (CI) of [−.304, .537].

In summary, despite the arbitrary assignment of two seller costs to identical items and the consolidation of resellers into one person, the majority of participants chose the high seller cost items over the low seller cost items. Furthermore, whether the seller is a single person or not had no significant impact on the choice of high seller cost items.

Discussion

Through six experiments, we observed a consistent trend: Participants generally preferred items with a higher seller cost over those with a lower seller cost, despite the items being identical. In Experiment 1, participants were asked to choose between items with high and low seller costs. The majority of participants showed a preference for the item with the higher seller cost. In Experiment 2, participants were instructed to price each item separately, and it was observed that they tended to set a higher price for items with a higher seller cost. Experiment 3 involved participants predicting the choices of others between the two options. Overall, participants anticipated that others would choose the item with the higher seller cost. In Experiment 4, where it was assumed the items were provided by the same seller, a similar trend was observed. In Experiment 5, the two identical items were assigned arbitrarily different seller costs. Despite this, the majority of participants still preferred the item with the higher seller cost. Finally, in Experiment 6, the two identical items with arbitrarily different seller costs were resold by the same person. Again, the majority of participants preferred the item with the higher seller cost.

Across all experiments, participants consistently preferred items with higher seller costs, even when the items themselves were identical. This result is intriguing, particularly when considering the theoretical predictions from utility

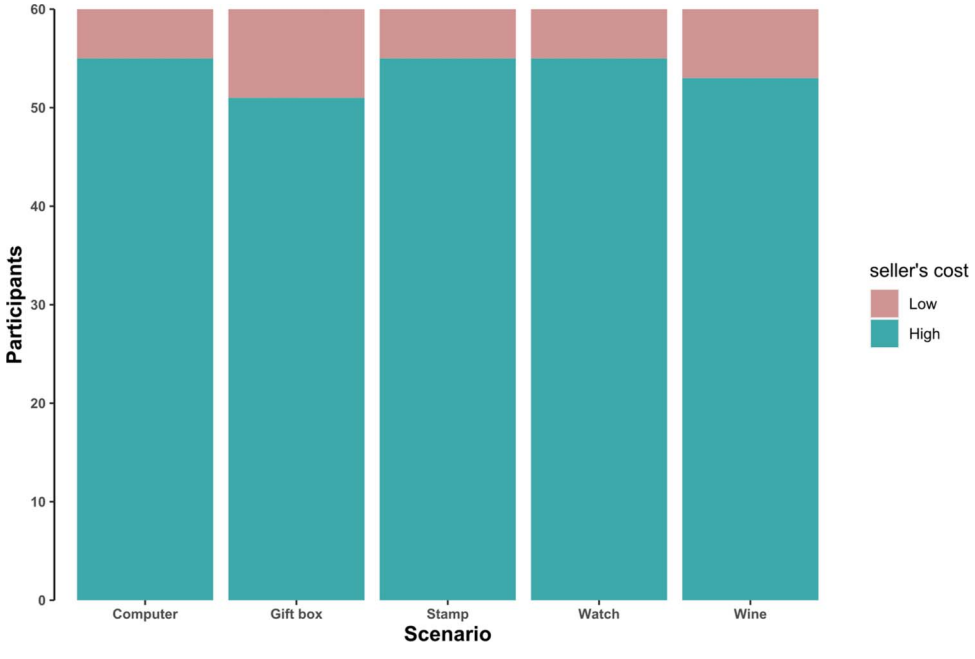

Figure 6. The number of participants choosing the high or low seller-cost item in each scenario.

theory, price unfairness perception, anti-profit belief, and zero-sum thinking. In this discussion, we will analyze the findings in light of these theoretical frameworks.

Utility theory, particularly Expected Utility Theory (Edwards, 1954) and Prospect Theory (Kahneman & Tversky, 1979), posits that rational individuals make decisions based on maximizing utility. In our experiments, both seller costs and item qualities were held constant across options, suggesting that the options should theoretically offer the same utility to participants. According to utility theory, we would expect participants to be indifferent between the two options, as both items provided equal utility. However, the results from our experiments contradicted this expectation. Participants consistently preferred the item with the higher seller cost, implying that factors beyond simple utility maximization were influencing their choices. This suggests that psychological factors, such as fairness or moral judgments, may have played a significant role, rather than rational utility alone.

Price unfairness perception suggests that individuals are likely to avoid situations where they perceive a transaction as unfair, either to themselves or the seller (Andrés-Martínez et al., 2013; Monroe & Xia, 2006; Xia et al., 2004). Based on this theory, we predicted that participants would prefer items with seller costs closer to the current selling price. Specifically, in a price-drop situation, participants would prefer the item with the lower seller cost, while in the price-rise situation, they would prefer the item with the higher seller cost. The results, however, did not fully align with these predictions. While concerns about fairness may have played a role, participants overwhelmingly preferred the item with the higher seller cost, regardless of whether the price was rising or falling. This suggests that perceptions of fairness were not the primary factor in their decision-making. Additionally, in Experiment 4 and Experiment 6, where both items were sold by the same store or individual, participants still favored the higher seller cost item. This further implies that fairness concerns were not the dominant driver of their choices. Instead, other psychological factors, as discussed below, may have had a stronger influence.

The anti-profit belief suggests that individuals may harbor negative attitudes toward profit-seeking behavior, associating it with moral or ethical concerns (Bhattacharjee et al., 2017). In the context of our experiments, where one situation favored seller profit and the other resulted in a seller loss, we hypothesized that participants would avoid choices that appeared to promote profit-seeking behavior. Specifically, in the price-rise situation, participants might prefer the item with the higher seller cost, as it would result in a lower seller profit; in the price-drop situation, participants might have no specific preference, as both sellers have mere loss but no profit at all. Interestingly, the findings from our experiments did not support this hypothesis. Participants consistently chose the item with the higher seller cost, even when it implied a greater loss for the seller. This suggests that the anti-profit belief could not well explain decision-making in this context. Based on the results of Experiment 2, participants may have been willing to pay a higher price for items with higher seller costs, but this price remained lower than the market price and approached the market price as the seller cost increased. Alternatively, participants may have been more influenced by other cognitive biases, such as zero-sum thinking, which we discuss below.

Zero-sum thinking, the belief that one party's gain comes at the expense of another's loss, could have been a significant factor in shaping participants' preferences (Davidai & Tepper, 2023; Johnson et al., 2022). In this framework, participants may have perceived the seller's gain as their own loss, leading them to prefer minimizing the seller's profit whenever possible. This could explain why participants consistently chose the higher seller cost items: they may have believed that selecting the higher cost items minimized the seller's profits, or in the case of the price-drop situation, maximized the perceived loss for the seller. The results from our experiments strongly align with this prediction. In both the price-rise and price-drop situations, participants preferred the item with the higher seller cost. This can be interpreted as an attempt to either minimize or maximize the seller's gain or loss, respectively. Such preferences reflect zero-sum thinking, where participants' choices seem motivated by a desire to maximize their perceived benefit from the seller's minimized gain or maximized loss.

Additionally, anchoring effect, which suggests that initial irrelevant information can influence later judgment, might provide a possible explanation (Liu et al., 2021; Tversky & Kahneman, 1974; Zeng et al., 2020). In experiments of this article, the higher and lower seller cost might serve as anchors, influencing participants' pricing decisions. Nevertheless, previous experiments on anchoring effect generally involved only one number as the anchor. Our experiments involve several numbers (the high seller cost, low seller cost, current selling price or market price). These numbers could interact with or even cancel each other. Therefore, it's unclear whether the anchoring effect can really lead to the results of the six experiments.

Another potential explanation is the cost-quality inferences. Specifically, higher-cost goods are associated with better quality (Akerlof, 1970; Wolinsky, 1983), and this belief could have impacted participants' judgments. Therefore, participants might perceive the high-price item as an high-quality item and thus choose it or price it higher. Nevertheless, we emphasized that the product quality of both items was identical in all experiments and this identity was even determined by a random mechanism in some experiments. This design can largely rule out this explanation.

In summary, the results of our experiments provide compelling evidence that participants' decisions were

driven by psychological factors beyond simple utility maximization. While utility theory would predict indifference between the two options, our findings suggest that price unfairness perception, anti-profit belief, and zero-sum thinking played a more significant role, among which zero-sum thinking provides the most robust explanation for the observed choices.

References

Abdullah, M. I., Huang, D., Sarfraz, M., Naseer, J., & Sadiq, M. W. (2021). Signifying the relationship between counterproductive work behavior and firm's performance: The mediating role of organizational culture. *Business Process Management Journal*, *27*(6), 1892–1911. https://doi.org/10.1108/BPMJ-12-2020-0546

Akerlof, G. A. (1970). The market for "Lemons": Quality uncertainty and the market mechanism. *The Quarterly Journal of Economics*, *84*(3), 488–500. https://doi.org/10.2307/1879431

Andrés-Martínez, M. E., Gómez-Borja, M. Á., & Mondéjar-Jiménez, J. A. (2013). A review of the price fairness perception concept. *Academia Revista Latinoamericana de Administración*, *26*(2), 318–342. https://doi.org/10.1108/arla-06-2013-0067

Anglin, P. M. (1994). Contracts for the sale of residential real-estate. *Journal of Real Estate Finance and Economics*, *8*(3), 195–211. https://doi.org/10.1007/bf01096991

Bakshi, S. (2020). Limits of price competition: Cost asymmetry and imperfect information. *International Journal of Game Theory*, *49*(4), 913–932. https://doi.org/10.1007/s00182-020-00717-1

Baron, J., Bazerman, M. H., & Shonk, K. (2006). Enlarging the societal pie through wise legislation: A psychological perspective. *Perspectives on Psychological Science: A Journal of the Association for Psychological Science*, *1*(2), 123–132. https://doi.org/10.1111/j.1745-6916.2006.00009.x

Bei, L.-T., & Chiao, Y.-C. (2001). An integrated model for the effects of perceived product, perceived service quality, and perceived price fairness on consumer satisfaction and loyalty. *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, *14*(1), 125–140.

Bhattacharjee, A., Dana, J., & Baron, J. (2017). Anti-profit beliefs: How people neglect the societal benefits of profit. *Journal of Personality and Social Psychology*, *113*(5), 671–696. https://doi.org/10.1037/pspa0000093

Bizer, G. Y., & Schindler, R. M. (2005). Direct evidence of ending-digit drop-off in price information processing. *Psychology & Marketing*, *22*(10), 771–783. https://doi.org/10.1002/mar.20084

Bougie, R., Pieters, R., & Zeelenberg, M. (2003). Angry customers don't come back, they get back: The Experience and behavioral implications of anger and dissatisfaction in services. *Journal of the Academy of Marketing Science*, *31*(4), 377–393. https://doi.org/10.1177/0092070303254412

Calabuig-Moreno, F., Nunez-Pomar, J., Prado-Gasco, V., & Ano-Sanz, V. (2014). Effect of price increases on future intentions of sport consumers. *Journal of Business Research*, *67*(5), 729–733. https://doi.org/10.1016/j.jbusres.2013.11.035

Chung, J. Y. (2010). *The antecedents and consequences of price fairness in tourism* (Doctoral dissertation, Texas A&M University). Texas A&M University Libraries. https://hdl.handle.net/1969.1/ETD-TAMU-2010-12-8918

Davidai, S., & Ongis, M. (2019). The politics of zero-sum thinking: The relationship between political ideology and the belief that life is a zero-sum game. *Science Advances*, *5*(12), Article eaay3761. https://doi.org/10.1126/sciadv.aay3761

Davidai, S., & Tepper, S. J. (2023). The psychology of zero-sum beliefs. *Nature Reviews Psychology*, *2*(8), 472–482. https://doi.org/10.1038/s44159-023-00194-9

Dolan, R. J., & Simon, H. (1996). *Power pricing: How managing price transforms the bottom line*. Free Press

Edwards, W. (1954). The theory of decision making. *Psychological Bulletin*, *51*(4), 380–417. https://doi.org/10.1037/h0053870

Freund, A., Flynn, F., & O'Connor, K. (2024). Big is bad: Stereotypes about organizational size, profit-seeking, and corporate ethicality. *Personality & Social Psychology Bulletin*, *50*(6), 924–941. https://doi.org/10.1177/01461672231151791

Geng, X., Krishnan, H., & Sohoni, M. G. (2022). Operational collaboration between rivals: The impact of cost reduction. *Production and Operations Management*, *31*(4), 1856–1871. https://doi.org/10.1111/poms.13651

Haws, K. L., & Bearden, W. O. (2006). Dynamic pricing and consumer fairness perceptions. *Journal of Consumer Research*, *33*(3), 304–311. https://doi.org/10.1086/508435

Inbar, Y., Pizarro, D. A., & Cushman, F. (2012). Benefiting from misfortune: When harmless actions are judged to be morally blameworthy. *Personality & Social Psychology Bulletin*, *38*(1), 52–62. https://doi.org/10.1177/0146167211430232

Johnson, S. G. B., Zhang, J., & Keil, F. C. (2022). Win–win denial: The psychological underpinnings of zero-sum thinking. *Journal of Experimental Psychology: General*, *151*(2), 455–474. https://doi.org/10.1037/xge0001083

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, *47*(2)263–292. https://doi.org/10.2307/1914185

Kuchynka, S. L., Bosson, J. K., Vandello, J. A., & Puryear, C. (2018). Zero-sum thinking and the masculinity contest: Perceived intergroup competition and workplace gender bias. *Journal of Social Issues*, *74*(3), 529–550. https://doi.org/10.1111/josi.12281

Li, H. L., Sun, Q., Zhang, Q., & Wallin, F. (2015). A review of the pricing mechanisms for district heating systems. *Renewable & Sustainable Energy Reviews*, *42*(2), 56–65. https://doi.org/10.1016/j.rser.2014.10.003

Liu, M., Zeng, J., & Gao, Z. (2021). The interval anchoring effect. *Experimental Psychology*, *68*(6), 295–304. https://doi.org/10.1027/1618-3169/a000534

Luce, R. D., Bush, R. R., & Galanter, E. (1963). *Handbook of mathematical psychology: I*. John Wiley.

Manning, K. C., & Sprott, D. E. (2009). Price endings, left-digit effects, and choice. *Journal of Consumer Research*, *36*(2), 328–335. https://doi.org/10.1086/597215

Martins, M. O. B. (1995). *An experimental investigation of the effects of perceived price fairness on perceptions of sacrifice and value* (Doctoral dissertation). University of Illinois at Urbana-Champaign. https://www.ideals.illinois.edu/items/23048

Mohammad, H. (2012). Evaluation of factors affecting customer loyalty in the restaurant industry. *African Journal of Business Management*, *6*(14), 5039–5046. https://doi.org/10.5897/ajbm11.2765

Monroe, K. B., & Xia, L. (2006). The price is unfair! Reforming pricing management, in does marketing need reform? In J. N. Sheth & R. S. Sisodia (Eds.), *Does marketing need reform? Fresh perspectives on the future* (pp. 158–165). M.E. Sharpe.

Oliver, R. L., & Swan, J. E. (1989). Equity and disconfirmation perceptions as influences on merchant and product satisfaction. *Journal of Consumer Research*, *16*(3), 372–383. https://doi.org/10.1086/209223

Ordez, L. D., Connolly, T., & Coughlan, R. (2000). Multiple reference points in satisfaction and fairness assessment. *Journal of Behavioral Decision Making*, *13*(3), 329–344. https://doi.org/10.1002/1099-0771(200007/09)13:3

Orlitzky, M., Schmidt, F. L., & Rynes, S. L. (2003). Corporate social and financial performance: A meta-analysis. *Organization Studies*, *24*(3), 403–441. https://doi.org/10.1177/0170840603024003910

Oxenfeldt, A. R., & Monroe, K. B. (1980). Pricing: Making profitable decisions. *Journal of Marketing*, *44*(1), Article 107. https://doi.org/10.2307/1250041

Papaioannou, K., Pantazi, M., & van Prooijen, J. W. (2023). Unravelling the relationship between populism and belief in conspiracy theories: The role of cynicism, powerlessness and zero-sum thinking. *British Journal of Psychology*, *114*(1), 159–175. https://doi.org/10.1111/bjop.12602

Phillips, U. B. (1905). The economic cost of slaveholding in the cotton belt. *Political Science Quarterly*, *20*(2), 257–275. https://doi.org/10.2307/2140400

Piotrowski, J., Różycka-Tran, J., Baran, T., & Żemojtel-Piotrowska, M. (2019). Zero-sum thinking as mediator of the relationship of national attitudes with (un)willingness to host refugees in own country. *International Journal of Psychology*, *54*(6), 722–730. https://doi.org/10.1002/ijop.12538

Pope, R. D. (1978). The expected utility hypothesis and demand-supply restrictions. *American Journal of Agricultural Economics*, *60*(4), 619–627. https://doi.org/10.2307/1240246

Pratama, H., & Suprapto, B. (2017). The effect of brand image, price, and brand awareness on brand loyalty: The rule of customer satisfaction as a mediating variable. *Global Journal of Business & Social Science Review*, *5*(2), 52–57. https://doi.org/10.35609/gjbssr.2017.5.2(9)

Rida, N. A., Ibrahim, M. I. M., Babar, Z. U. D., & Owusu, Y. (2017). A systematic review of pharmaceutical pricing policies in developing countries. *Journal of Pharmaceutical Health Services Research*, *8*(4), 213–226. https://doi.org/10.1111/jphs.12191

Różycka-Tran, J., Boski, P., & Wojciszke, B. (2015). Belief in a zero-sum game as a social axiom. *Journal of Cross-Cultural Psychology*, *46*(4), 525–548. https://doi.org/10.1177/0022022115572226

Savage, L. J. (1954). *The foundations of statistics* (Publications in Statistics, Vol. 11). Wiley.

Schneider, A. (1985). Cost-plus pricing when joint costs are present. *Omega-International Journal of Management Science*, *13*(6), 555–559. https://doi.org/10.1016/0305-0483(85)90043-x

Sokolova, T., Seenivasan, S., & Thomas, M. (2020). The left-digit bias: When and why are consumers Penny wise and pound foolish? *Journal of Marketing Research*, *57*(4), 771–788. https://doi.org/10.1177/0022243720932532

Starmer, C. (2000). Developments in non-expected utility theory: The hunt for a descriptive theory of choice under risk. *Journal of Economic Literature*, *38*(2), 332–382. https://doi.org/10.1257/jel.38.2.332

Strulov-Shlain, A. (2022). More than a penny's worth: Left-digit bias and firm pricing. *The Review of Economic Studies*, *90*(5), 2612–2645. https://doi.org/10.1093/restud/rdac082

Teng, L. (2009). A comparison of two types of price discounts in shifting consumers' attitudes and purchase intentions. *Journal of Business Research*, *62*(1), 14–21. https://doi.org/10.1016/j.jbusres.2007.11.014

Tversky, A., & Kahneman, D. (1992). Advances in prospect theory: Cumulative representation of uncertainty. *Journal of Risk and Uncertainty*, *5*(4), 297–323. https://doi.org/10.1007/bf00122574

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, *185*(4157), 1124–1131. https://doi.org/10.1126/science.185.4157.1124

Von Neumann, J., & Morgenstern, O. (1944). *Theory of games and economic behavior* (1st ed.). Princeton University Press. https://archive.org/details/in.ernet.dli.2015.215284/page/n507/mode/2up

Wang, T., Tan, L., Zeng, J., & Yuan, Y. (2025). *The seller cost effect* [Data]. https://osf.io/h9a5r/?view_only=77f55bb8231d43faa78250d7562f0f05

Wolinsky, A. (1983). Prices as signals of product quality. *The Review of Economic Studies*, *50*(4), 647–658. https://doi.org/10.2307/2297767

Xia, L., Monroe, K. B., & Cox, J. L. (2004). The price is unfair! A conceptual framework of price fairness perceptions. *Journal of Marketing*, *68*(4), 1–15. https://doi.org/10.1509/jmkg.68.4.1.42733

Zeng, J., Liu, M., Hou, X., Zhang, Q., Chen, H., & Su, L. (2020). Can genes modulate anchoring effect? *International Journal of Psychology: Journal International De Psychologie*, *55*(6), 1011–1015. https://doi.org/10.1002/ijop.12669

Zhao, H., Yao, X., Liu, Z., & Yang, Q. (2021). Impact of pricing and product information on consumer buying behavior with customer satisfaction in a mediating role. *Frontiers in Psychology*, *12*, Article 720151. https://doi.org/10.3389/fpsyg.2021.720151

History
Received February 21, 2024
Revision received March 5, 2025
Accepted March 6, 2025
Published online May 19, 2025

Acknowledgments
We sincerely appreciate Dr. Raymond M. Klein and reviewers of this journal for their beneficial comments, and Dr. Hal R. Arkes for his valuable suggestion in designing Experiments 5 and 6.

Conflict of Interest
There are no interests or activities for myself or my coauthors that might be seen as influencing the research.

Authorship
The first three authors made contributions of same importance and thus were co-first authors.

Open Science
Open Data: The data that support the findings of this study are openly available in the "The seller cost effect" repository at https://osf.io/h9a5r/?view_only=77f55bb8231d43faa78250d7562f0f05 (Wang et al., 2025).

Funding
This research was supported by Ministry of Education of China - Humanities and Social Sciences Foundation (23YJA190001) and Foundational Research Funds for Central Universities (SWU1609115).

ORCID
Tao Wang
https://orcid.org/0000-0003-1257-1444
Lixin Tan
https://orcid.org/0009-0002-5490-6011
Jianmin Zeng
https://orcid.org/0000-0003-0440-6684
Yujie Yuan
https://orcid.org/0000-0001-8274-9207

Jianmin Zeng
Sino-Britain Center for Cognition and Ageing Research
Faculty of Psychology
Southwest University
Beibei District
400715 Chongqing City
PR China
james_psych@yeah.net