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Francisco B. Galarza

Gabriella Wong

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# The Impact of Price Information on Consumer Behavior: An Experiment\*

Francisco B. Galarza  
Department of Economics  
Universidad del Pacífico

Gabriella Wong  
Innovations for Poverty Action

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## Abstract

We conduct blind tests to examine the connection between consumer's choices and price differentials, for two goods with different levels of observable quality, bottled spring water and toilet paper (we pose that toilet paper's quality is more easily observable). We gave subjects two samples of those goods, with no labels for their brands, but with two different prices. Given that the samples were exactly the same, we aimed at testing whether the price differentials influenced their perceptions of quality, for a given level of quality observability. The most striking result is that quality information inferred via price differentials have significant effects on consumer choices, when such difference is relatively high *and* quality is not easy to observe. Moreover, in such a case, prices shape the perceptions of quality: "*If it is expensive, it tastes good*". In contrast, when quality is easy to observe, we find no significant relationship between price differentials and perceived quality.

**Key Words:** Price-quality · *Experimental Economics* · *behavioral pricing* · *placebo effect* · *consumer decision-making*

JEL classification numbers: C91, D03, D81, D89

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# 1 Introduction

At the time of purchasing a product, consumers do not always have the time or ability to process all available information in order to make a seemingly rational economic decision (Brañas, 2011).<sup>1</sup> In practice, faced with little information or the difficulty to process it at a rapid pace, consumers may use price as a quality indicator, which may increase or decrease their surpluses (Bornemann & Homburg, 2011). Experimental evidence shows that this perception of quality may be affected by price information. For instance, by only changing prices, higher-priced aspirin is considered, on average, as more effective in “curing” a headache by buyers than a regular priced aspirin (Duke University, 2008).<sup>2</sup>

Other related studies include Shiv, Carmon, and Ariely (2005) on mental performance and price discount. The authors find that when consumers pay a lower price for an energy drink thought to increase mental sharpness, they perform worse (in terms of solving fewer puzzles) than those who consume the same drink for a regular price. The authors conclude that it appears that expectations about the efficacy of the product trigger performance. Moreover, using functional magnetic resonance imaging (fMRI), Plassmann et al. (2008) find that marketing actions involving price changes affect neural activity associated with pleasantness :high-priced wines are reported to be more subjectively pleasant, although the wines were the same.

Another strand of the literature reveals other mechanisms underlying the consumers’ choices, such as social norms or affection. Thus, we can observe that consumers purchase goods with higher prices only because of social status (conspicuous consumption) (Leibenstein, 1950). These anomalies in the decision-making process may generate a negative long-term impact on the consumer well-being, for instance, through the loss of wealth (or unplanned expenditure).

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<sup>1</sup> A decision maker can make a rational choice with little information, or viceversa, not all complete information suggests making a rational decision.

<sup>2</sup> The experiment was led by the Massachusetts Institute of Technology (MIT), and finds that an aspirin of \$2.50 shows a greater performance to relieve headache, as compared to a pill of \$0.10.

Based on these ideas, this paper examines whether price differentials can affect the willingness to consume, under different degrees of quality observability.<sup>3</sup> Little or no research has been found using convenience goods as primary source of consumer behavior. In order to examine the relationship between price differences and perceived quality,<sup>4</sup> we evaluate two goods: spring water (a good whose inherent quality is not easy to discern at first sight) and toilet paper (an everyday good for which quality may be easily observable).

We propose the following hypotheses:

**Hypothesis 1:** *When the quality of the good is difficult to observe, the price difference is correlated with a greater willingness to buy it. No such correlation is thus expected when the quality of the good is easy to observe. This is consistent with using price as a good signal for quality.*

**Hypothesis 2:** *When the quality of the good is difficult to observe, the perceived quality varies according to the price difference. No such correlation between perceived quality and price variation exist, then, when the quality of the good is easy to observe.*

Thus, the relevance of this paper comes from knowing how the consumers process price information, develop their perceptions about quality and use them to shape their preferences. The variation in price differences will be our source of information for the analysis. We find that it exists price differentials in which consumers are willing to pay more for goods with identical but not observable qualities. In addition, as price differential increases, perceptions become better for higher priced goods, whereas observable quality or not.

The remainder of the paper is organized as follows. Section 2 examines the related literature. Section 3 introduces the data, section 4 explains the methodology we use. Section 5 discusses our main results and section 6 concludes.

## 2 Related Studies

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<sup>3</sup> We refer to all easily perceived (by our biological senses) characteristics. That is, texture, smell, taste or color of a good. So in this case, if a good has greater exposure of these characteristics, it is said to be easily observable.

<sup>4</sup> For example, just because a good is more expensive, agents may think that it has superior qualities than one of similar characteristics.

## 2.1 Making decisions under uncertainty

Quoting Herbert A. Simon (1978), McFadden (2001) states that "*The rational man in economics is a maximizing being, who will do everything to satisfy nothing less than his own interest.*" Under the assumption of the rational consumer, we assume that people avoid making inaccurate decisions and try to obtain the best possible outcome given a selected choice. That is why, in a context of asymmetric information, in which consumers do not know the true quality of the good, they may end up using its price as an indicator of it.

On the other hand, the choice of many goods involves certain degree of uncertainty, which is related to the consumer's inability to accurately anticipate the consequences of their behavior on their well-being after purchase (Bauer, 1960). This is particularly true for those goods called "experience goods" (for which quality can be ascertained only after consuming it). Take spring water or toilet paper, as examples. In a context in which people cannot taste the bottled water or try the toilet paper before the purchase, we may expect certain price - quality relationship to exist.

The relationship between price and perceived quality has been extensively studied (see Gabor & Granger, 1966, Monroe & Krishnan, 1986, Ding, Ross, & Rao, 2010). On the one hand, the increase in prices reduces utility, since it requires a greater monetary expenditure. On the other hand, it can increase utility via a greater perceived consumer's value of the product, which may be interpreted as higher quality (Monroe & Krishnan, 1985). Thus, quality refers to the set of inherent properties of a good which are used to make a judgement about its value, compared to similar goods.

The other central piece in the purchase decision is the price of the good, defined as the monetary sacrifice that the consumer makes in order to obtain the set of benefits coming from the attributes of the good (Erickson & Johansson, 1985). As a result of this exchange between quality and price, the concept of value arises: a subjective magnitude that captures the consumers's preference about a good. We can distinguish two types of value: intrinsic and extrinsic. The former represents a characteristic of the product that guarantees the fulfillment of its expected function. This is responsible for the level of the product quality and is the type of value that is relevant to this paper. The latter describes the attributes from which the consumer usually extracts information about the quality, despite not being a direct cause of it

(Gutiérrez, 1996). In the case of bottled water, the intrinsic value is the entire cost of production necessary to ensure that water complies with a minimum standard of quality: that it is chemically pure or that it has sufficient minerals. The extrinsic value of bottled water refers to the external characteristics, like the marketing expenses which positions the product in the market.

In addition to the usual trade-off between quality and price in every purchase, we can consider that people also make price comparisons, setting some price benchmark (or reference). This reference point argument suggests that examining the relationship between the price difference of any pair of goods and their quality could be a useful approach. We follow this in our empirical analysis (section 4).

## **2.2 Do we get what we pay for?**

What happens to the perceived quality of the goods when their prices increase? Do we think that the toilet paper, for instance, will be perceived as softer if it costs relatively more? Or will the spring water be perceived as more crystalline when it has a higher price? The phrase "*Consumers get what they pay for*" (taken from "*Cat's Cradle*", K. Vonnegut (1963)) makes us think that if one buys a good for a lower price, a lower-value good is being consumed. While this may be true in perfectly competitive markets, it is not the case in contexts with asymmetric information, in which the sellers may use prices to signal quality. If buyers believe in this signal, and create a habit around it, they may end up paying more than what the good is actually worth (Lichtenstein & Burton, 1989).

More recently, there has been an increasing interest in introducing behavioral aspects in decision making, such as automatic judgements, shortcuts, or heuristics.<sup>5</sup> While these mechanisms may involve effortless thinking, in the long run, they could also lead to sub-optimal spending decisions. Think of the placebo effect for the aspirin, mentioned earlier, which is just a series of expectations for a given treatment (Kirsch, 1997). In that case, what seems to have worked is the belief that the effectiveness of the aspirin is guided by its price (Houser &

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<sup>5</sup> Tversky & Kahneman (1974) define "heuristics" as an alternative to the rational decision model, which implies that individuals make decisions through mental shortcuts based on the difficulty of taking adequate and more complex calculations. However, heuristics may lead to suboptimal decisions that affect humans' well being.

McCabe, 2008). And this, can be seen as a self-fulfilling prophecy, in which beliefs guide choices, and choices make those beliefs to come true (Merton, 1948).

### 3 Data

Our dataset consists of 298 observations collected in 9 blind tests conducted at the Universidad del Pacífico (UP), in Lima, Peru, between August 17 and August 23 of 2016.<sup>6</sup> Recruitment was performed at common areas at different times of the day, inviting students to “participate in a decision-making experiment”. The reward consisted in chocolates.<sup>7</sup> Our sample is composed by undergraduate students 51% of whom are females; with ages ranging from 16 to 27 years, with an average of 20 years, 40% on average of them are majoring in Business and Economics. This suggests that we have captured a large variety of students, although we cannot guarantee our sample is random. In any case, alternative recruitment methods (such as mail invites) will also be prone to some sort of bias. See Appendix 1 for details about our experimental design.

The goods selected for our analysis are spring water and toilet paper. We chose bottled spring water because (1) it is a frequently purchased good; (2) the consumers under scrutiny (undergraduate students) are familiar with the good, and (3) the information about its quality is not fully observable. In addition to the first two aforementioned reasons for selecting spring water, a third reason for choosing toilet paper is that it does not have complex characteristics, thus making it easier to perceive its attributes. In choosing those goods, we favored their frequency of purchase, instead of their durability, under the premise that people tend to pay more attention to the external features of goods even if they are consumed more frequently. And, more importantly, we chose goods with different degree of quality observability, being water the one whose quality is more easily observable, because we want to examine the relationship between that feature and price differentials.

Regarding the brand names, we chose *Icelandic* for the spring water and *Boreal* for the toilet paper, because these brands are relatively low-purchase brands in the Peruvian market, so it should not be easy for our participants to relate them with top brands in the market. In a pilot

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<sup>6</sup> See instructions and format of surveys in Appendix 2 and 3, respectively.

<sup>7</sup> While this could be a limitation of our study, some testing conducted later on reveals that choices appear not to be random, which is expected in non-incentivized experiments.

study, we learned what the students consider to be the best brands for each good; those were excluded from our analysis

## 4 Methodology

We conducted choice experiments, in order to test the effects of price differentials on perceived quality. The experiments consisted in providing two samples of each good to every participant. Every set of samples included a baseline price (1.20 PEN), which was the same for each good, and another randomly chosen price, from the set: 1.60, 2.60, 4.50 and 7.70 PEN. These prices were set after a pilot conducted with the same goods.<sup>8</sup> The order of presentation of those goods was also randomly assigned to each participant. The prices were assigned randomly both for sample A or B, and labeled with stickers indicating that each sample represented the given price tag.

For each quality observation specification, we constructed a variable *Water* and *Paper*, which takes the value of 1, if the individual prefers the higher-priced good, and 0, if she choose the baseline price. Each price difference (treatment) is thus our dependent variable in the regression analysis (see Appendix 4 for details on these variables).

After choosing their preferred good, we asked participants to rate on a Likert scale-type their subjective perceptions of those goods.<sup>9</sup> A sample question that used this rating is: "*The glass with spring water A tastes like plain water*," with the possible answers being: "I Strongly Disagree" (1 point), "I Disagree" (2), "I Neither Agree nor Disagree" (3), "I Agree" (4), and "I Strongly Agree" (5). All Likert-type questions had the same directions and alternative answers.

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<sup>8</sup> The pilot was conducted during the week of June 20 with 10 participants (2 sessions with 5 participants each). This yielded a range of price differences, which was divided into two groups: low difference (0.10 - 2.00 PEN) and high difference (more than 2.10 PEN). As a result for spring water, 83% of the sample decided to choose the best price among the first range of differences; and in the case of toilet paper, 67%. In addition, 14% of participants chose the high price difference (more than 2.10 PEN) for toilet paper, while no one chose a high difference price for spring water.

<sup>9</sup> The Likert scale serves to measure attitudes or degree of conformity in a predetermined situation, such as knowing what they think about whether water is more natural or pure (Likert, 1932).

Regarding the robustness of the sample, a possible concern is that responses in each session may be correlated. We run a One Way ANOVA test, in order to examine correlations between sessions and within each session. The results, shown in Table 1, indicate that there is no evidence to reject the null hypothesis (that populations from which the samples were drawn are normally distributed or their variances are equal) between sessions, thus indicating that all the sessions have the same distribution of responses, but that there is dispersion of responses within each session.<sup>10</sup>

**Table 1. Analysis of Variance**

<b>Source</b>	<b>SS</b>	<b>GI</b>	<b>MS</b>	<b>F</b>	<b>Prb &gt; F</b>
<i>A. Bottled Spring Water</i>					
Between sesion	2.818	8	0.352	1.43	0.1852
Within sesion	71.409	289	0.247		
Total	74.228	297	0.249		
<i>B. Toilet Paper</i>					
Between sesion	1.666	8	0.208	0.86	0.553
Within sesion	70.203	289	0.242		
Total	71.869	297	0.241		

In addition, we carried out balancing tests using kruskal Wallis test that allowed us to verify the existence of a similar distribution of observable characteristics across different treatments. This gives us some confidence that any response of our dependent variable must be the result of the treatment and not the observable characteristics, since these are distributed in a similar way between each given price difference.

We want to estimate the following regression equation (model 1) choosing the higher priced good or the perceived characteristics of each good:

$$Y_i = \beta_0 + \beta_1 DiffP1_i + \beta_2 DiffP2_i + \beta_3 DiffP3_i + \beta_4 Male + \beta_5 X + \varepsilon_i,$$

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<sup>10</sup> Previous to the ANOVA testing, we run the Kolmogorov–Smirnov to evaluate normality of the distributions on water and toilet paper preferences. Both tests were conducted separately, indicating that both variables distribute as normal. Being said that, we proceeded testing the Anova to identify if the responses are correlated between and within sessions.

where  $Y_i$  is a dummy variable for individual “ $i$ ” choosing the higher priced good or the perceived characteristics of each good,<sup>11</sup>  $DiffP_j$  are dummy variables for each price difference considered, with  $j = 1$  for the smallest difference, 0.40 PEN;  $j = 2$  for the difference of 1.40 PEN;  $j = 3$ , for the difference of 3.30 PEN; and  $j = 4$  for the largest difference of 6.50 PEN.  $Male$  is a dummy variable for gender (= 1, if male), and vector  $X$  includes  $Age$  and  $Experience$  as control variables, in addition to session fixed effects.<sup>12</sup>

Model 2 adds interactions with our gender variable, in order to examine the marginal effect of being a male/female on consumer’s choices.

$$Y_i = \beta_0 + \beta_1 DiffP1_i + \beta_2 DiffP2_i + \beta_3 DiffP3_i + \beta_4 Male * DiffP1_i + \beta_5 Male * DiffP2_i + \beta_6 Male * DiffP3_i + \beta_7 Male + \beta_8 X + \varepsilon_i,$$

We estimate model 1, excluding each price difference in every column. By changing the baseline price, we are comparin any two choices with respect to such baseline, thus providing estimates for sections of the demand curve.

## 4 Results

### 4.1 When the quality is difficult to observe: spring water

From the total number of observations, 47% of the sample chose the higher-priced good (recall that the baseline price is 1.20 PEN). A possible explanation for this high proportion is that, the little information about the quality of the spring water that subjects have at the beginning of the experiment (which may shape a prior of “I cannot tell if samples have different quality”) does not change much after tasting the samples, thus guiding their choices towards the higher-price option. This argument is consistent with a higher proportion of subjects choosing "Totally Agree" and "Totally Disagree" for the Likert-type questions about the perceived characteristics of the goods: “tasting like plain water (natural water)” and “spotting some impurities”, respectively, when the price difference is the greater (see Appendix 5 and 6 for full results).

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<sup>11</sup> The dependent variables of study are: Water, Paper, Expbetter (natural and impurities), Expbetter (soft and white), Natural, Impurities, Soft and White (See Appendix 4 for more information).

<sup>12</sup> For a detailed review of the variables to be used, see Appendix 4.

As shown in Table 2, we find a nonlinear relationship between the price differences and the probability of choosing the higher-priced good. Columns (2) & (4) show a significant coefficient for the (intermediate) difference in prices (of 3.30 PEN), albeit marginally. This result means that the probability of choosing the higher-priced good fluctuates around 15 percentage points when such intermediate difference in prices is compared to a small difference (1.40 PEN, *DiffP2*) or a big one (6.50 PEN, *DiffP4*).<sup>13</sup> Similar results were found when Model 1 was regressed using Probit model (see Appendix 10).

**Table 2. Probability of Choosing the Higher-Priced Good**

Variables	Spring Water				Toilet Paper			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DiffP1 = 0.40		0.0750 (0.0837)	-0.089 (0.083)	0.0490 (0.082)		0.072 (0.085)	0.073 (0.086)	0.214*** (0.083)
DiffP2 = 1.40	-0.075 (0.084)		-0.164* (0.084)	-0.026 (0.083)	-0.072 (0.085)		0.001 (0.084)	0.142* (0.081)
DiffP3 = 3.30	0.089 (0.083)	0.164* (0.084)		0.138* (0.083)	-0.073 (0.086)	-0.001 (0.084)		0.141* (0.081)
DiffP4 = 6.50	-0.049 (0.082)	0.0262 (0.083)	-0.138* (0.085)		-0.214* (0.083)	-0.142* (0.082)	-0.141* (0.081)	
Constant	0.592* (0.333)	0.517 (0.332)	0.681** (0.338)	0.543 (0.336)	0.565 (0.345)	0.493 (0.346)	0.492 (0.341)	0.352 (0.341)
N	291	291	291	291	292	292	292	292
R <sup>2</sup>	0.063	0.063	0.063	0.063	0.052	0.052	0.052	0.052

Notes: Heteroskedasticity robust standard errors in parenthesis.

All regressions include the following control variables: Age, Gender, Experience, and session fixed effects.

\* (\*\*) [\*\*\*] Significance at 1% (5%) [10%] levels.

#### 4.2 When the quality is easy to observe: toilet paper

In the case of toilet paper, 41% of the sample chose a price higher than the baseline, 1.20 PEN. At the descriptive level, the price difference where participants chose high-priced item was 0.40 PEN, and no statistical effect was found on the remaining price differentials. Regarding the quality rating, toilet paper with higher and lower prices were rated differently, especially in the case of larger prices difference, of 3.30 PEN and 6.50 PEN, with percentages of 28% and 27%, respectively (see Appendix 7).

<sup>13</sup> For full results of the estimated model, see Appendix 9.

Looking at column (8), we see a negative relationship between prices and the willingness to buy the higher-priced good. Columns (5) to (7) tell a similar story, as shown by the coefficients on the *DiffP4* variable, all of which are negatively significant. Using those estimates, we plotted an approximation of the demands for each good. As shown in Appendix 8, the demands are fairly similar to what was expected. On the one hand, for the spring water, having a greater skepticism of the relationship between "the more expensive, the better", a slope with positive sections was obtained, precisely revealing that the participants are advised to choose more expensive goods when the difference Price ratio is higher. On the other hand, for the toilet paper, a negative slope was obtained in all sections of the various price differences, indicating that they always prefer to have smaller differences, after having tested the two samples of the good. The relatively small sample prevents us from having more accurate estimates.

### **4.3 Simulations**

We conducted a series of simulations in order to show that choices made in the experiment were not product of randomness. This is a standard check, which intends to rule out the case in which subjects do not really make a choice. We ran 1,000 replications of the main regression (Model 1) and then plotted the results to compare them with the observed value for each price difference. The results show that our variables of interest are indeed within the rejection zone of the density graphs, thus confirming that choices were not a result of random decision making (with the sole exception of the price difference of 1.40 PEN for toilet paper)<sup>14</sup>. For further analysis, see Appendix 11 on the detailed distribution of the percentiles versus the actual value of the coefficients.

### **4.4 If I choose the higher price, Do I get better quality? Analyzing perceptions about the goods**

One of the motivations of this paper is to find out whether prices affect the perceptions about certain characteristics, related to the quality of the good. We estimate an ordered logistic

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<sup>14</sup> We have to remember that we are evaluating fix points within the demand curve. With this in mind, as 1.40PEN is an outlier response of the four price differentials we are looking for, that leaves interesting results for further analysis. What might happen to the marginal left and right of this point, and why consumers are price sensitive or leave random answers when 1.40PEN is presented.

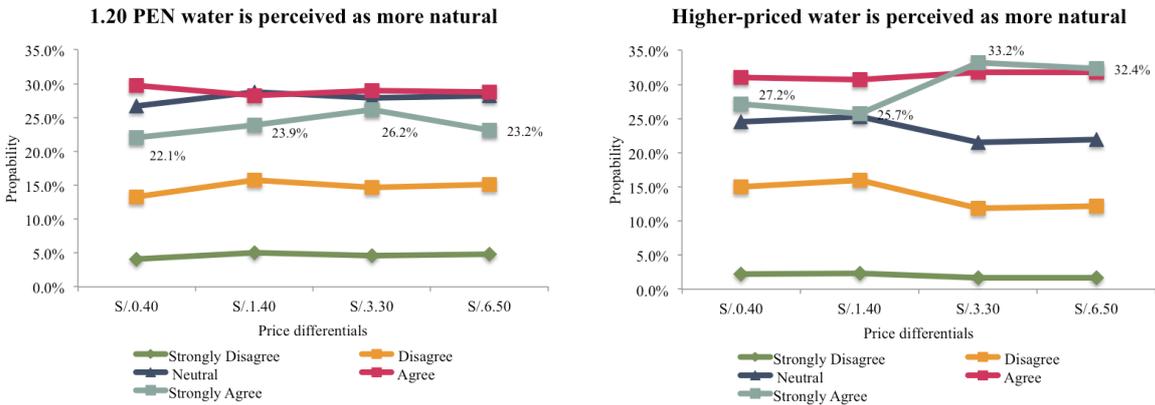
regression model in order to account for the probability of purchasing a good for each price difference and each category. This ordered logistic model exploits the nature of the dependent variable, quality perception, which takes values from 1 to 5 (1 = Totally disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Totally agree).

After estimating the ordered logit model, we plotted the marginal effects for each response. All effects are statistically significant at 99%. Figure 1 shows the comparative results between the ratings for the lowest price sample versus the highest price sample. And analogously for the cases in which the omitted variable is each price differential, respectively.

**Water and perception of natural taste<sup>15</sup>**

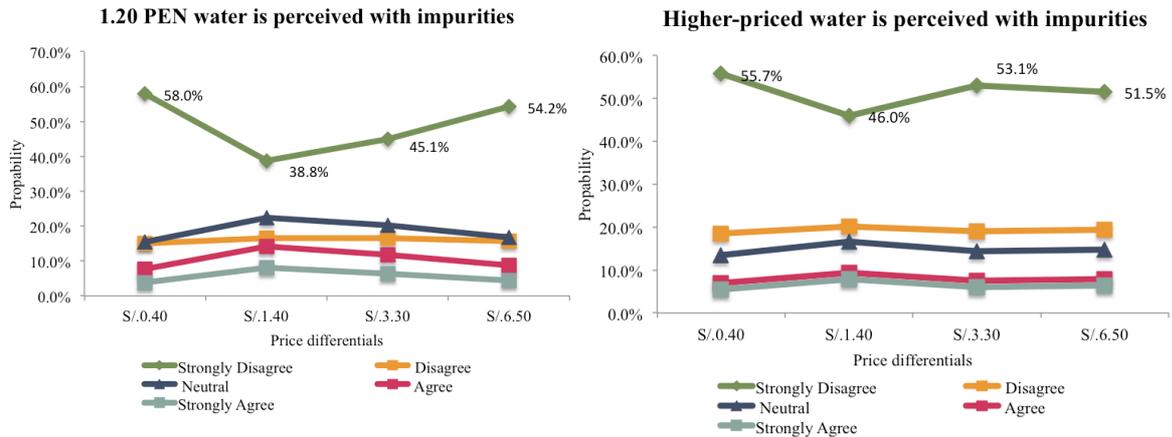
Figure 1, panel A, shows that the predicted probabilities of the two most positive perceptions ("I Strongly Agree" and "I Agree") are higher in responses for higher priced goods, compared to responses to the baseline price. This result favors our hypothesis that prices shape the participants' perceptions, indicating that in the face of any greater price difference (at any level), the more expensive samples will have a better perception than the samples with a baseline price of 1.20 PEN.

**Figure 1: Quality perceptions for spring water**  
**A. More natural**



<sup>15</sup> This is not to taste any chemicals in the water, which is related to low quality water.

## B. Water with impurities



### Water and perception of impurities

In this case, as shown in panel B above, we find a more clear pattern, of assigning a greater probability to the categories "I Strongly disagree" and "I Disagree" when asked about the impurities the spring water may contain for the higher priced water (right panel), with respect to the base price of 1.20 PEN (left panel).

### Toiler paper and perception of softness

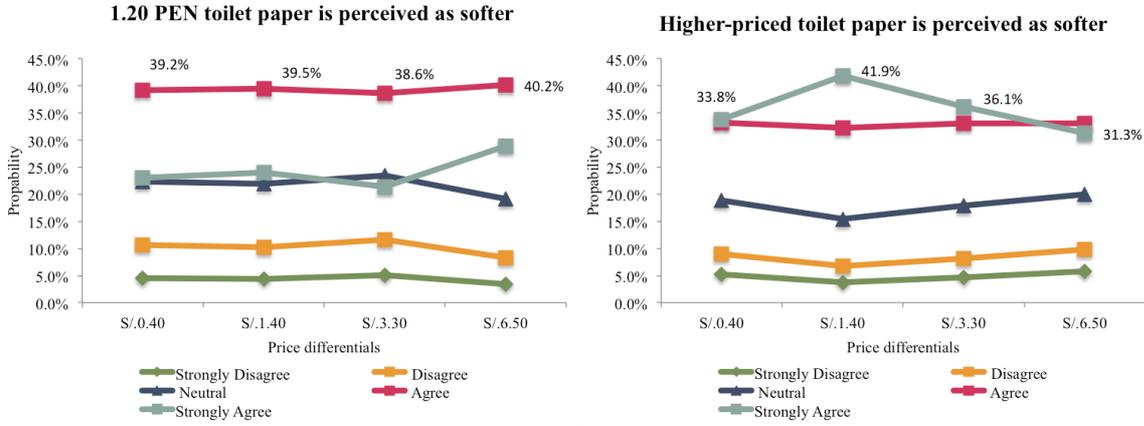
Figure 2 shows that it is more likely that participants will say "I Strongly Agree" on the perception of softness of the good that costs 4.50 PEN (because the price difference is 3.30) in comparison with the omitted variable of 6.50 PEN and in greater magnitude contrasting it with the same probability but for the cheap paper. However, in terms of perceptions for toilet paper, they showed a greater inclination to perceive similar or better features than the baseline price when the price difference was 0.40 and 6.50 PEN (comparing the figure to the left with the one to the right), probably because it is in the face of these differences where no justified perceived quality price is found.

### Toilet paper and perception of whiteness

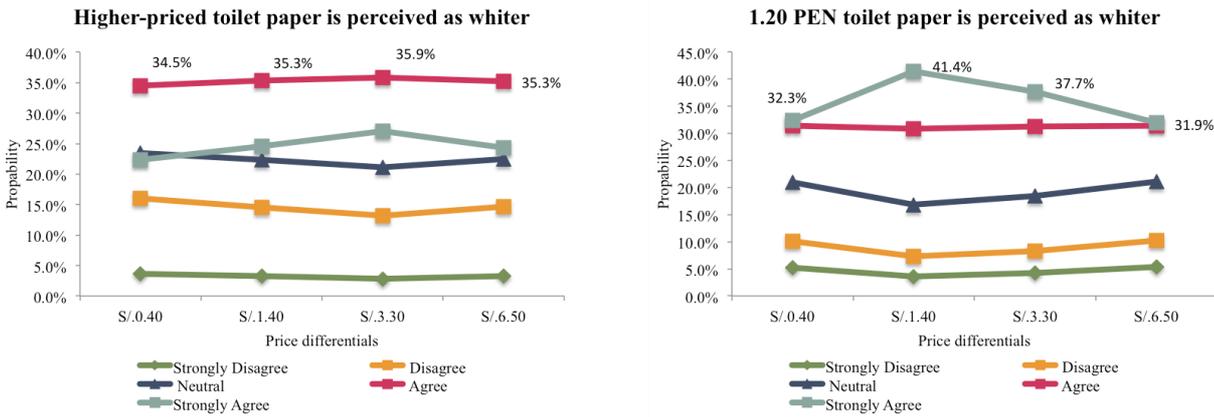
Finally, the results on the perception of whiteness were similar between the responses for each price considered, including the baseline one (see Figure 2, panel B). As expected, it is hard to tell a difference in whiteness in relatively homogenous goods.

**Figure 2: Quality perceptions for toiler paper**

**A. Softness**



**B. Whiteness**



**4.5 Gender interaction**

As mentioned earlier, we aim to test for any difference in decision making among females and males for the selected goods. Table 3 reports the results from estimating model 2. As shown below, the probability of choosing the higher-priced spring water is statistically significant in each model from (1) to (4), indicating that this relative high pair of price differentiation leads to an increase in preference for the higher-priced good. Regarding the gender interaction, column (3) shows that men are more willing to buy the higher-priced good, only when they face low price differential. As for the toilet paper, no statistical results were found regarding difference of decision making between men and women, leading to understand that when

preferring convenience goods with observable quality, there is no evidence of difference in cognitive bias. The main reason might be that both, men and women are exposed to the same amount of convenience purchase, leading to no differences in buying more or less of a product.

**Table 3. Probability of choosing the higher-priced good, with gender interactions**

Variables	Spring Water				Toilet Paper			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DiffP1 = 0.40		-0.029 (0.116)	-0.235** (0.116)	0.047 (0.113)		0.127 (0.12)	0.153 (0.118)	0.272** (0.115)
DiffP2 = 1.40	0.029 -0.116		-0.206* -0.121	0.076 -0.118	-0.127 -0.12		0.026 (0.114)	0.145 (0.111)
DiffP3 = 3.30	0.235** -0.116	0.206* -0.121		0.282** -0.118	-0.153 -0.118	-0.026 -0.114		0.119 (0.109)
DiffP4 = 6.50	-0.047 -0.114	-0.076 -0.118	-0.282** -0.118		-0.272** -0.115	-0.145 -0.111	-0.119 (0.109)	
DiffP1*Male		0.254 -0.168	0.306* -0.166	0.035 -0.166		-0.135 -0.169	-0.205 (0.169)	-0.137 (0.162)
DiffP2*Male	-0.254 -0.168		0.051 -0.168	-0.219 -0.167	0.135 -0.169		-0.071 (0.166)	-0.003 (0.16)
DiffP3*Male	-0.306 -0.166	-0.051 -0.168		-0.27 -0.164	0.205 -0.169	0.071 -0.166		0.068 (0.159)
DiffP4*Male	-0.035 -0.166	0.219 -0.167	0.27 -0.164		0.137 -0.162	0.003 -0.16	-0.068 (0.159)	
Constant	0.481 -0.471	0.51 -0.471	0.716 -0.479	0.435 -0.479	0.588 -0.434	0.46 -0.424	0.434 (0.426)	0.315 (0.457)
Obs	291	291	291	291	292	292	292	292
R squared	0.08	0.08	0.08	0.08	0.082	0.082	0.082	0.082

Notes: Heteroskedasticity robust standard errors in parenthesis.

All regressions include the following control variables: Age, Gender, Experience, and session fixed effects.

\* (\*\*) [\*\*\*] Significance at 1% (5%) [10%] levels.

## 5 Conclusion

We study the connection between quality perceptions and price differentials. We find that price differences determine, to some extent, the consumer's choices. Small price differences have no effect on the decision to purchase the higher priced goods. This was clearly observed in the case of the spring water, where the differences of 0.40 PEN and 1.40 PEN were found to be statistically non-significant. We can then conclude that small price differences are not seen as

good signals of a better quality, but when the price difference is 3.30 PEN, the consumer is highly willing to buy the more expensive good. In the case of the toilet paper, for which we assume that the quality is more easily observed (participants have a direct experience seeing, touching, and smelling the perfume, testing it), we expected that, for any price difference, the cheapest good would always be preferred.

We interpret these results as a kind of self-fulfilling prophecy: when the quality of a good is not easily observable, subjects may base their choices on prices, thus being vulnerable to the placebo effect. Imagine now that our subjects buy everyday spring water or toilet paper, how much extra money are they letting out of their wallets by using such mental shortcuts?

Our results with respect to giving a better rating to some features of the goods under scrutiny implies that the individual's perceptions of quality can be influenced. Marketing campaigns may thus induce purchase decisions, especially in a context where quality is not easily observable. This is not to say that providing more accurate information about any given goods is the solution to this problem. Information has to be provided in a way that subjects can easily process it. Finally, we see our experiment as a benchmark for other research conducted on a larger scale and with different goods. Regarding policy implications related to regulation, further analysis could be drawn from it, even if this is an experimental setting with a particular environment of low-search cost for consumers. The results of such future research may have interesting implications for regulation policies as these findings support the idea of not so rational consumers facing price-quality perceptions volatilities that may encourage bad behaviors in other fields.

Perhaps, the main limitation of this study is the small number of observations ( $N = 75$  for each price difference), which could affect the level of significance of the variables. This could have been solved if only three price differences were used, or the sample size were larger. Second, when dealing with a sample of students, we usually cannot generalize the results to other samples (external validity). However, in our case, our participants are also consumers of those goods, making it easier to extrapolate our estimates. Third, we could not observe if our subjects were thirsty, hungry, in a hurry, and so on, at the time of the experiment. These individual non-observable features may have biased our results. Fourth, the experiment did not use real money to ensure more salient real choices, due to budgetary constraints. This could affect the decisions of the participants, since it reduces the realism of the experiment. Also, we used hypothetical

questions, which does not guarantee that the choices made in the experiment will be the same in the real life.

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# Appendix

## Appendix 1. Experiment design

### Detailed laboratory experiment description

#### **Step 1: Recruitment**

Agents who participated in the experiment were the undergraduate students from Universidad del Pacifico because of cost and time issues were the most accessible for the study. Benefits from working with college students is that they have low opportunity cost of time and level of stress because the experiment took place in the first week of classes 2016-II, making it much easier to participate voluntarily in our experiment. The test was performed in different classes of the university<sup>16</sup>, both morning, noon and night in order to have a more representative sample dispersed.

Data collection was performed during 9 sessions that were given during the first and second week of class, specifically from August 17 to 23, 2016. These dates were chosen, since the cycle had just begun and there is generally low academic work, no exam or assessments, which makes students more available and with more time to participate. This contributed to the fact that most of the people who were asked to participate in the experiment accepted, as mentioned above. On the other hand, students were recruited directly, that is, we approached each student personally and asked if they would like to be part of the experiment in exchange for a non-monetary incentive. It should be noted that only one of us was going to recruit participants, while the other person stayed in the room to conduct the experiment. Additionally, this was responsible for explaining the instructions and rules of the experiment. Because of the dynamics, we tried not to fill the room completely because otherwise, it would not be possible to control all the people who take the experiment to prevent them from talking to each other or looking sideways. As for the incentive we give, chocolate was chosen because it is the second motivation for which they would attend an experiment like ours (although the first is to give

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<sup>16</sup> Even if the experiment took place in different classes at different times, all were similar in environment (colors, number of chairs, among other possible variation that could harm data quality).

money, this was not possible for budget restrictions) for what it did more attractive to participate.

### **Step 2: Presentation of the study**

Once the students were placed in their chairs, they could find the guidelines/instructions, survey and samples for both toilet paper and spring water with their respective labels and prices. It should be mentioned that the location of the participants also tried to be random, avoiding that if they came with their friends, they sit together. Then the laboratory scientist start asking if they knew what was a blind test. Luckily, almost everyone was unaware of this methodology and had never been in one, so this also aided the attendance of the experiment.

### **Step 3: List of rules**

The dialogue that was used was the following one, after asking them if they had already participated in a blind test:

*"Thank you for participating in this experiment. This is a blind test, which is characterized by giving two samples of spring water, and two samples of toilet paper. A blind test is characterized by having only the product but the brands are not revealed in this case, that is why they will not know which is which. Also, each good has its respective prices that can be found within the survey. Two spring water samples and two toilet paper samples can be found at your site, each labeled "A" and "B".*

*Within the instructions, good 1 is spring water and good 2 is toilet paper. In the next paragraph you can find out how well they should start. Then you will find a context. And finally, the following sheets are the survey to fill out. The first part seeks to capture your information such as sex and age. Then come the specific questions for each good. The survey is quite simple and will not take more than five minutes.*

*Finally, we have two rules: the first one is that they can not talk among you, since one's preferences can influence the partner; And the second is that they can not comment on the air because in the same way, they can end up influencing the whole room.*

*Thank you very much in advance."*

## **Appendix 2. Instructions for the experimental study**

### **Instructions for the experimental study A**

Welcome and thank you for participating in this academic experiment! Today we want to know some characteristics about your consumption decisions.

On your table you will find two products: Two samples of spring water (item 1) And two sheets of toilet paper (item 2). Each one has two samples that will find them with labels A and B, respectively. In addition, goods differ in both brand and price. You should start sampling good 1 and then good 2.

For them the following context is presented:

*Imagine that you just moved to a country where you do not know the brands, the language, nothing at all. In his first week, he is in a supermarket and needs to buy bottles with spring water and toilet paper.*

*Serve the cups with spring water (do not finish it in a sip, as you may need it later) and start filling out a short survey. Once the section of the water is filled, proceed to do the same with the toilet paper.*

Thank you!

## **Instructions for the experimental study B**

Welcome and thank you for participating in this academic experiment! Today we want to know some characteristics about your consumption decisions.

On your table you can find two products: two samples of spring water (item 1), and two sheets of toilet paper (item 2). Each one has two samples that will find them with labels A and B, respectively. In addition, goods differ in both brand and price. You should start sampling good 2 and then good 1.

For them the following context is presented:

*Imagine that you just moved to a country where you do not know the brands, the language, nothing at all. In his first week, he is in a supermarket and need to buy bottles with spring water and toilet paper.*

*Now touch the toilet paper samples and start filling out a short survey. Once the section of paper is filled, proceed to do the same with the cups with spring water (do not finish the water in a first sip, you may need it later).*

Thank you!

### Appendix 3. Survey Questionnaire

→ # Session Number

# Participant Number. ←

#### Survey (A/B)

District of residence: \_\_\_\_\_

Sex: F  M

Age: \_\_\_\_\_

Career:

- |               |                            |                           |
|---------------|----------------------------|---------------------------|
| a) Business   | d) Economy                 | g) Business Engineering   |
| b) Accounting | e) Finance                 | h) Marketing              |
| c) Law        | f) Information Engineering | i) International Business |

Cycle: \_\_\_\_\_

¿Are you currently working? :  Yes  No

What would you estimate is your income earned per month? (In case of not working give an approximation of the allowance that receives):

Less than 900 PEN  Between 900 y 1800 PEN  More than 1800 PEN

#### Questionnaire 1 (Spring water)

1. Given the characteristics of both goods, if you had to drink one of the two presented, ¿Which of them would you prefer? Will tell us if participant choose the higher priced

A  B

2. I feel that sample A of spring water tastes natural: Know objective quality

1 = Strongly Disagree  
2 = Disagree  
3 = Neutral  
4 = Agree  
5 = Strongly Agree

1  2  3  4  5

3. I feel that sample **B** of spring water tastes natural: :

1       2       3       4       5

4. I Identify some grime in the sample **A** of spring water:

1       2       3       4       5

5. I Identify some grime in the sample **B** of spring water:

1       2       3       4       5

6. Given your choice in (1), ¿Are you willing to pay more for that good? **Seek availability to pay**

Yes       No

7. ¿Is the chosen product is often used for you? **Interaction with product**

Yes       No

8. ¿Which of the following is the best bottled water brand you consider to be the best in the peruvian market?

- |               |                   |              |
|---------------|-------------------|--------------|
| a) San Carlos | e) Evian          | i) Yaqua     |
| b) Cielo      | f) Icelandic      | j) San Mateo |
| c) Vida       | g) Voss           | k) Otros     |
| d) San Luis   | h) San Pellegrino |              |

9. ¿Do you remember any product marketing advertisement (either on TV, radio, social network, others?)

I remeber       I don't remember

10. ¿In the last 7 days, have you personally bought the product?

Yes       No

## Questionnaire 2 (Toilet paper)

1. Teniendo en cuenta las características del bien, si tuvieras que utilizar una de ellas ¿Cuál de los dos bienes preferirías?

A  B

2. I feel that sample **A** of toilet paper is soft:

1 = Strongly Disagree

2 = Disagree

3 = Neutral

4 = Agree

5 = Strongly Agree

1  2  3  4  5

3. I feel that sample **B** of toilet paper is soft:

1  2  3  4  5

4. I feel that sample **A** of toilet paper is white:

1  2  3  4  5

5. I feel that sample **B** of toilet paper is white:

1  2  3  4  5

6. Given your choice in (1), ¿Are you willing to pay more for that good?

Yes  No

7. ¿Is the chosen product is often used for you?

Yes  No

8. Which of the following is the best toilet paper brand you consider to be the best in the peruvian market?

a) Paracas

b) Elite

c) Boreal

d) Suave

e) Casa Natura

f) Kleenex

g) Otros

9. ¿Do you remember any product marketing advertisement (either on TV, radio, social network, others)?

I remeber  I don't remember

10. ¿In the last 7 days, have you personally bought the product?

Yes  No

#### Appendix 4. Variables used

<b>Dependent Variable (<math>Y_i</math>)</b>	
<b>Name</b>	<b>Description</b>
<i>Water</i>	1, if the chosen good was the higher price; And 0, otherwise.
<i>Paper</i>	1, if the chosen good was the higher price; And 0, otherwise.
<i>Expbetter_a1</i>	Variable describing the qualification regarding the perception of water with natural flavor: (i) 1, gave a better rating relative to the higher cost good, (ii) 0, otherwise.
<i>Expbetter_a2</i>	Variable describing the rating on the perception of water with impurities: (i) 1, gave a better rating relative to the higher cost good, (ii) 0, otherwise.
<i>Expbetter_b1</i>	Variable that describes the rating relative to soft paper perception: (i) 1, gave a better rating relative to the higher cost good, (ii) 0, otherwise.
<i>Expbetter_b2</i>	Variable that describes the rating relative to the perception of white paper: (i) 1, gave a better rating relative to the higher cost good, (ii) 0, otherwise.
<i>Natural_i</i>	Variable that takes the values of 1 to 5, being 1 "Totally disagree" and 5 "Totally agree". Rate what was the rating that got the good i (1 = expensive, 2 = cheap) on whether the water knows natural.
Impurities_i	Variable that takes the values of 1 to 5, being 1 "Totally disagree" and 5 "Totally agree". Rate what was the rating that got the good i (1 = expensive, 2 = cheap) on whether the water has impurities.
<i>Soft_i</i>	Variable that takes the values of 1 to 5, being 1 "Totally disagree" and 5 "Totally agree". Rate what was the rating that got the good i (1 = expensive, 2 = cheap) on whether the paper is smooth.
<i>White_i</i>	Variable that takes the values of 1 to 5, being 1 "Totally disagree" and 5 "Totally agree". Rate what was the rating that got the good i (1 = expensive, 2 = cheap) on whether the paper is white.

<b>Explanatory variables of interest</b>	
<b>Name</b>	<b>Description</b>
<i>DiffP1</i>	<i>Dummy that takes value of 1 if the price difference is S / .0.4; And 0, otherwise.</i>
<i>DiffP2</i>	<i>Dummy that takes value of 1 if the price difference is S / .1.4; And 0, otherwise.</i>
<i>DiffP3</i>	<i>Dummy that takes value of 1 if the price difference is S / .3.3; And 0, otherwise.</i>
<i>DiffP4</i>	<i>Dummy that takes value of 1 if the price difference is S / .6.59; And 0, otherwise.</i>
<i>Gender</i>	It takes two values: 1, if it is male; And 0, if it is female.

<b>Control variables</b>	
<b>Nombre</b>	<b>Descripción</b>
<i>Age</i>	Age of the interviewee.
<i>Career</i>	Variable that describes the course you are attending.
<i>Cycle</i>	Variable that describes the cycle in which it meets.
<i>District</i>	Variable that describes the district in which the participant lives.
<i>Work</i>	It takes two values: (i) 1, if the individual works; And (ii) 0, otherwise.
<i>Ing<sub>i</sub></i>	Variable that describes the average income of the individual: (i) 1, if he chooses income level i (ii) 0, otherwise.
<i>Expert<sub>i</sub></i>	Variable describing the experience of use with the good: (i) 1, if you have previous experience (ii) 0, otherwise.
<i>Freq<sub>i</sub></i>	Variable that describes the frequency of purchase of the good: (i) 1, if purchased during the last week (ii) 0, otherwise.

## Appendix 5. Survey results

	Obs	Total
<b>Spring water</b>		
% Of participants who chose the most expensive good	298	0.47
% Of participants who assigned different qualifications to the quality of natural water	298	0.69
% Of participants who assigned different qualifications to the grime quality	298	0.36
% Of participants who rate the water of higher price as more natural *	298	0.39
% Of participants qualifying for higher price water with less grimes*	298	0.21
% Of participants willing to pay more for water	297	0.40
% Of participants familiar with water	296	0.89
% Of participants who remember some water advertisement	298	0.79
% Of participants who have personally purchased water	298	0.77
<b>Toilet paper</b>		
% Of participants who chose the most expensive good	298	0.41
% Of participants who assigned a different grade to the soft paper quality	298	0.6
% Of participants who assigned a different grade to the quality of white paper	298	0.19
% The highest price paper is softer *	298	0.30
% The highest price paper is white *	298	0.10
% Of participants willing to pay more for paper	295	0.36
% Of participants familiar with the paper	297	0.95
Of participants who remember some publicity of the toilet paper	282	0.76
% Of participants who personally bought the paper	298	0.46

\*These statements have been filtered based on the following criteria: (i) they have granted a different rating between the higher and lower price (ii) that the rating for the higher price is strictly higher than the lower price . It should be noted that they do not include whether or not the participant chose the most expensive good.

## Appendix 6. Dissagregated results from questionnaire

	No. Obs	PEN 0.40	PEN 1.40	PEN 3.30	PEN 6.50
<b>Spring water</b>					
% Of participants who chose the most expensive good	140	0.25	0.24	0.29	0.23
% Of participants who assigned different perception to the quality of natural water	206	0.26	0.29	0.25	0.20
% Of participants who assigned different perception to water with impurities	107	0.18	0.31	0.24	0.27
% Of participants who rate the water of higher price as more natural *	116	0.23	0.29	0.27	0.21
% Of participants qualifying for higher price water with less impurities*	63	0.14	0.33	0.25	0.27
% Of participants willing to pay more for water	119	0.30	0.28	0.21	0.22
% Of participants familiar with water	263	0.25	0.24	0.26	0.25
% Of participants who remember some water advertisement	235	0.25	0.27	0.22	0.25
% Of participants who have personally purchased water	229	0.27	0.23	0.25	0.26
<b>Toilet paper</b>					
% Of participants who chose the most expensive good	121	0.30	0.26	0.27	0.17
% Of participants who assigned a different grade to the soft paper quality	179	0.21	0.25	0.28	0.27
% Of participants who assigned a different grade to the quality of white paper	57	0.24	0.12	0.34	0.31
% The highest price paper is softer *	89	0.22	0.23	0.35	0.20
% The highest price paper is white *	30	0.20	0.13	0.33	0.33
% Of participants willing to pay more for paper	106	0.19	0.22	0.23	0.36
% Of participants familiar with the paper	282	0.25	0.25	0.25	0.25
Of participants who remember some publicity of the toilet paper	214	0.24	0.25	0.27	0.25
% Of participants who personally bought the paper	137	0.24	0.21	0.30	0.24

\*These statements have been filtered based on the following criteria: (i) they have granted a different rating between the higher and lower price (ii) that the rating for the higher price is strictly higher than the lower price . It should be noted that they do not include whether or not the participant chose the most expensive good.

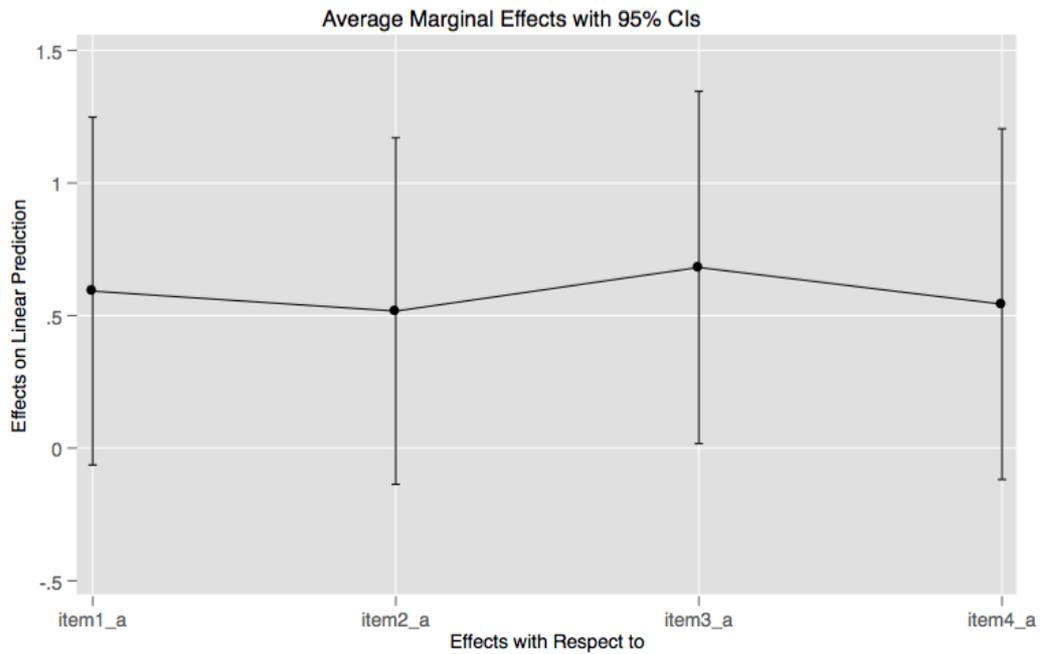
## Appendix 7. Dissagregated perception analysis

	High-cost nantural water		Low-cost nantural water		High-cost impurities in water		Low-cost impurities in water	
	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent
Strongly Disagree	7	2.35	14	4.7	153	51.52	147	49.33
Disagree	41	13.76	45	15.1	54	18.18	45	15.1
Neutral	67	22.48	80	26.85	45	15.15	54	18.12
Agree	92	30.87	85	28.52	24	8.08	33	11.07
Strongly Agree	91	30.54	74	24.83	21	7.07	19	6.38
Total	298	100%	298	100	297	100%	298	100

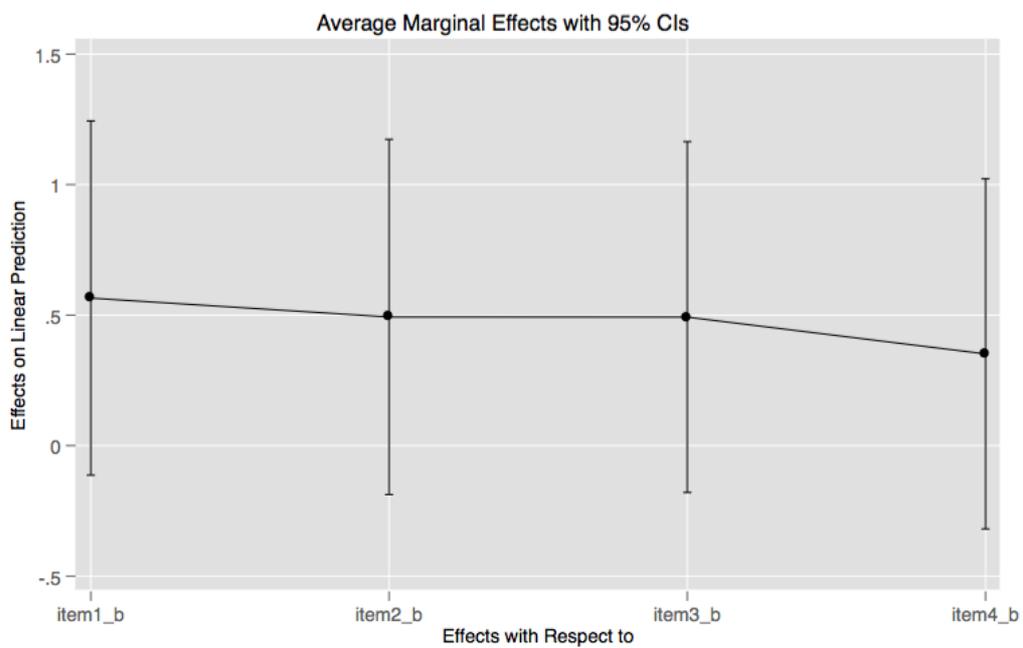
	Higher-priced soft paper		Lower-priced soft paper		Higher-priced white paper		Lower-priced white paper	
	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent
Strongly Disagree	10	3.38	13	4.36	16	5.41	15	5.03
Disagree	44	14.86	31	10.4	26	8.78	28	9.4
Neutral	64	21.62	63	21.14	52	17.57	56	18.79
Agree	101	34.12	116	38.93	94	31.76	90	30.2
Strongly Agree	77	26.01	75	25.17	108	36.49	109	36.58
Total	296	100%	298	100	296	100%	298	100

## Appendix 8. Demand graphs

### Appx 8.1. Demand for spring water



### Appx 8.2 Demand for toilet paper



## Appendix 9. OLS model with control variables

Variables	Spring Water				Toilet Paper			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DiffP1 = 0.40		0.075 (0.084)	-0.089 (0.083)	0.049 (0.082)		0.072 (0.085)	0.073 (0.086)	0.214** (0.083)
DiffP2 = 1.40	-0.075 (0.084)		-0.164* (0.084)	-0.026 (0.083)	-0.072 (0.085)		0.001 (0.084)	0.142* (0.082)
DiffP3 = 3.30	0.089 (0.083)	0.164* (0.084)		0.138* (0.083)	-0.073 (0.086)	-0.001 (0.084)		0.141* (0.081)
DiffP4 = 6.50	-0.049 (0.082)	0.026 (0.083)	-0.138* (0.083)		-0.214** (0.083)	-0.142* (0.082)	-0.141* (0.081)	
Sex	-0.031 (0.061)	-0.031 (0.061)	-0.031 (0.061)	-0.031 (0.061)	0.008 (0.060)	0.008 (0.060)	0.008 (0.060)	0.008 (0.060)
Gender	-0.007 (0.016)	-0.007 (0.016)	-0.007 (0.016)	-0.007 (0.016)	-0.007 (0.016)	-0.007 (0.016)	-0.007 (0.016)	-0.007 (0.016)
Experience	-0.097 (0.094)	-0.097 (0.094)	-0.097 (0.094)	-0.097 (0.094)	-0.123 (0.125)	-0.123 (0.125)	-0.123 (0.125)	-0.123 (0.125)
Constant	0.592* (0.333)	0.517 (0.332)	0.681** (0.338)	0.543 (0.336)	0.565 (0.345)	0.493 (0.346)	0.492 (0.341)	0.352 (0.341)
Observations	291	291	291	291	292	292	292	292
R-squared	0.063	0.063	0.063	0.063	0.052	0.052	0.052	0.052
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

\* (\*\*) [\*\*\*] Significance at 1% (5%) [10%] levels.

Heteroskedasticity robust standard errors in parenthesis.

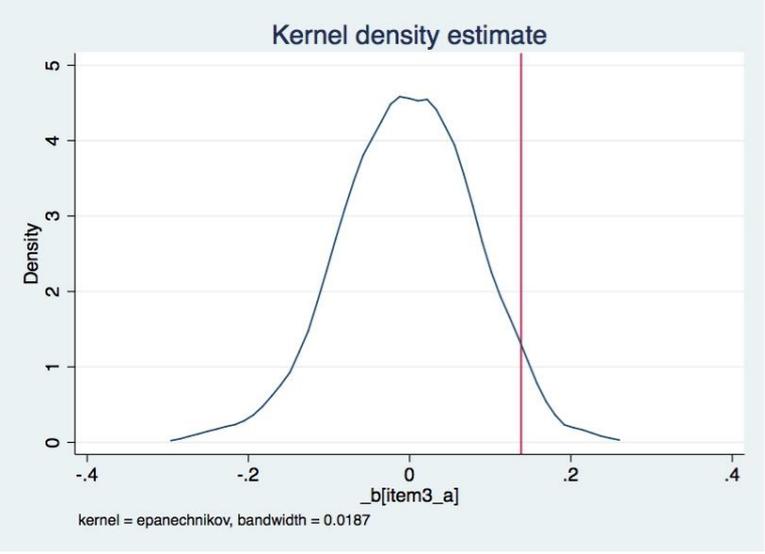
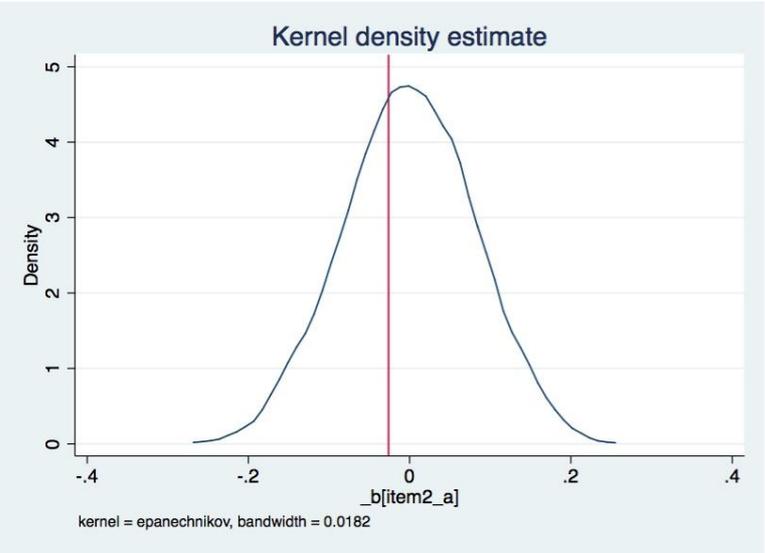
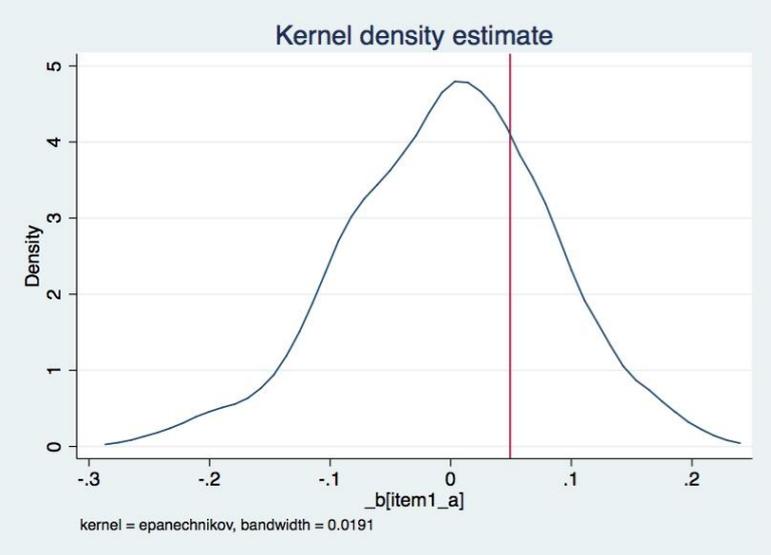
All regressions reported comes with session fixed effects.

**Appendix 10. Probit model (marginal effects)**

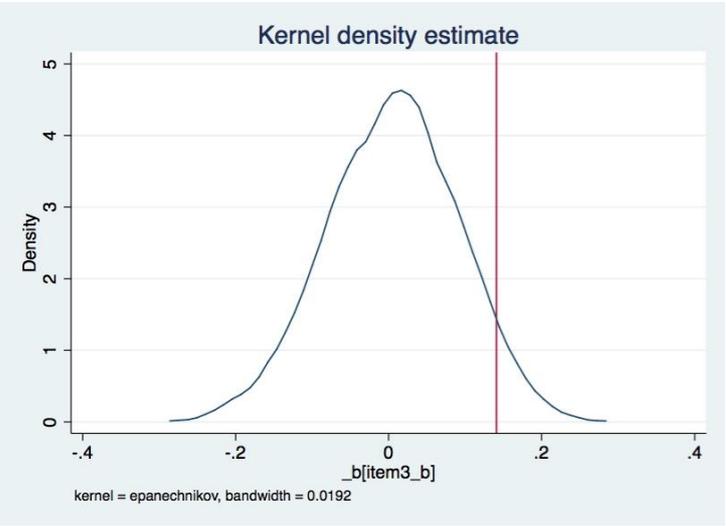
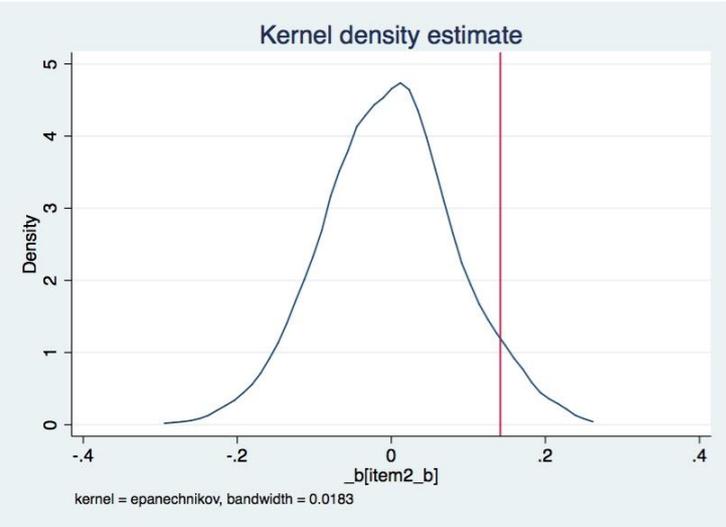
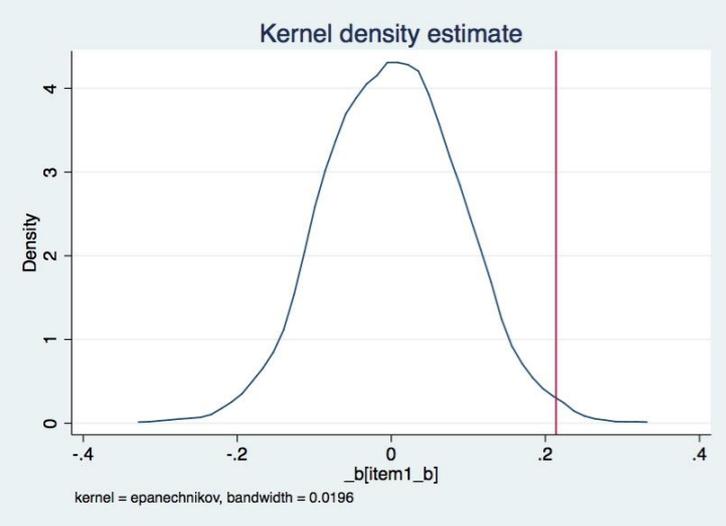
Variables	Spring Water				Toilet Paper			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DiffP1 = 0.40		0.077 (0.085)	-0.094 (0.084)	0.052 (0.084)		0.076 (0.084)	0.076 (0.085)	0.221*** (0.082)
DiffP2 = 1.40	-0.077 (0.085)		-0.170** (0.085)	-0.025 (0.084)	-0.076 (0.084)		-0.000 (0.083)	0.145* (0.080)
DiffP3 = 3.30	0.094 (0.084)	0.170** (0.085)		0.145* (0.084)	-0.076 (0.085)	0.000 (0.083)		0.145* (0.080)
DiffP4 = 6.50	-0.052 (0.084)	0.025 (0.084)	-0.145* (0.084)		-0.221*** (0.082)	-0.145* (0.080)	-0.145* (0.080)	
N	291	291	291	291	292	292	292	292

# Appendix 11. Simulation

a. Bottled water



b. Toilet paper



**Detailed distribution for price differential when 6.50 PEN is omitted**

**Detailed distribution of the price differential 1: S/.0.40 (Water)**

	Percentiles	Negative		
1%	-0.2163	-0.2674		
5%	-0.1432	-0.2632		
10%	-0.1085	-0.2428		
25%	-0.0597	-0.2419		
50%	0.0008		Obs	1000
		<b>Positive</b>	Average	-0.0021
75%	0.0554	0.2027	Est. dev	0.0843
90%	0.1025	0.2114	Variance	0.0071
95%	0.1347	0.2200	Asymmetry	-0.1973
99%	0.1841	0.2208	Curtosis	3.0066

**Detailed distribution of the price differential 2: S/.1.40 (Water)**

	Percentiles	Negative		
1%	-0.1891	-0.2500		
5%	-0.1412	-0.2325		
10%	-0.1050	-0.2150		
25%	-0.0545	-0.2045		
50%	0.0000		Obs	1000
		<b>Positive</b>	Average	-0.0008
75%	0.0542	0.1925	Est. dev	0.0803
90%	0.1013	0.2033	Variance	0.0065
95%	0.1313	0.2113	Asymmetry	-0.0475
99%	0.1810	0.2370	Curtosis	2.7645

**Detailed distribution of the price differential 3: S/.3.30 (Water)**

	Percentiles	Negative		
1%	-0.2152	-0.2774		
5%	-0.1410	-0.2600		
10%	-0.1072	-0.2586		
25%	-0.0576	-0.2513		
50%	-0.0005		Obs	1000
		<b>Positive</b>	Average	-0.0022
75%	0.0540	0.2172	Est. dev	0.0831
90%	0.1050	0.2253	Variance	0.0069
95%	0.1305	0.2333	Asymmetry	-0.1552
99%	0.1883	0.2414	Curtosis	3.0737

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**Detailed distribution of the price differential 1: S/.0.40 (Paper)**

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Percentiles		Negative		
1%	-0.1957	-0.3086		
5%	-0.1368	-0.2695		
10%	-0.1045	-0.2623		
25%	-0.0599	-0.2390		
50%	0.0020		Obs	1000
		<b>Positive</b>	Average	0.0024
75%	0.0613	0.2457	Est. dev	0.0870
90%	0.1136	0.2505	Variance	0.0076
95%	0.1447	0.2518	Asymmetry	0.0181
99%	0.2045	0.3119	Curtosis	3.0547

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**Detailed distribution of the price differential 2: S/.1.40 (Paper)**

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Percentiles		Negative		
1%	-0.2037	-0.2762		
5%	-0.1421	-0.2594		
10%	-0.1108	-0.2379		
25%	-0.0598	-0.2262		
50%	-0.0026		Obs	1000
		<b>Positive</b>	Average	-0.0025
75%	0.0499	0.2258	Est. dev	0.0860
90%	0.1081	0.2286	Variance	0.0074
95%	0.1460	0.2383	Asymmetry	0.0399
99%	0.2005	0.2433	Curtosis	2.9892

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**Detailed distribution of the price differential 3: S/.3.30 (Paper)**

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Percentiles		Negative		
1%	-0.2002	-0.2667		
5%	-0.1371	-0.2401		
10%	-0.1027	-0.2189		
25%	-0.0522	-0.2157		
50%	0.0097		Obs	1000
		<b>Positive</b>	Average	0.0053
75%	0.0633	0.2199	Est. dev	0.0846
90%	0.1114	0.2205	Variance	0.0072
95%	0.1425	0.2279	Asymmetry	-0.1026
99%	0.1929	0.2651	Curtosis	2.8474