

Ethical consumerism and wage level: evidence from an experimental market

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Abstract

We analyze repeated interactions occurring between workers, sellers and consumers within the framework of an experimental market. By successfully performing a task, workers allow sellers to offer a good through a market. Sellers set the price of goods and decide the wages of workers. Consumers enter the market sequentially and decide whether to accept one of the offers or to leave the market. Our data show that, especially in the first periods of the experiment, some sellers opt to pay high wages to their workers. However, this behavior is not rewarded by consumers, whose purchasing choices are almost exclusively driven by self-interest. In our interpretation, the connection between workers and sellers that connotes our experimental design, with workers who allow sellers to enter the market, may induce consumers to believe that eventual sacrifices for paying high wages to workers must be entirely on sellers. Our result suggests that the more salient is made the importance of some stakeholders in allowing the firm's activity, the less consumers' may be willing to sacrifice their monetary payoff to improve these stakeholders' condition.

Keywords: ethical consumerism; experimental market; pro-social behavior; information avoidance.

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Introduction

Ethical consumerism may be defined as the voluntary decision to buy goods and services by consumers that aim to positively affect certain social and/or environmental issues (Doane, 2001; Jones, 2017). The empirical evidence on ethical consumerism based on surveys (Hoogendoorn, Guerra and van der Zwan, 2015; Morgan et al. 2016; Jones 2017) or choice experiments (e.g., Mohr and Webb 2005; Marquina and Morales 2012) reveal a general consumers' willingness to pay premia for firms involved in social initiatives. The Nielsen Global Survey of Corporate Social Responsibility and Sustainability conducted in 2015 and polling more than 30.000 consumers in 60 countries shows that 66% of the interviewees declared to be willing to pay higher prices for goods and services produced by companies committed to having a positive social and environmental impact. However, according to some authors, traditional purchasing criteria such as prices, quality levels, and delivery times prevail among the large majority of consumers (Boulstridge and Carrigan 2000; De Pelsmacker et al. 2005; Boccia et al. 2018).

Thus, a gap seems to exist between consumers' intentions measured by surveys and their actual behavior (Vogel, 2005; Vermeir and Verbeke 2006; Smith, 2007; Claudy et al. 2013). This may be at least partly explained by confounding effects and misreporting that may affect survey questions and hamper their conclusions (e.g., Bertrand and Mullainathan, 2001; Glaeser et al., 2000; Anderson, Mellor and Milyo, 2004). In particular, the use of survey questions on pro-social attitudes, such as trust, has raised much criticism (Glaeser et al. 2000 Heap and Zizzo, 2009).

Using an experimental approach, this paper investigates the relation between firms' behavior and consumer choices by addressing problems associated with the presumed incoherence between consumers' declarations and their revealed preferences.

Moreover, consumers respond to firms' responsible behavior differently, depending on their attitudes and characteristics and on the social features of products (Auger et al. 2003; Bhattacharya and Sen 2004). Further investigations are needed to improve our understanding of consumers' behavior in response to different types of firms' social initiatives. With this respect, the issue

concerning wage levels and market surplus division is of utmost interest. Income inequality has been worsening since the 1970s, especially within advanced economies (Solow, 2014; Hoffmann et al., 2020) and the dynamics related to labor income inequality has received a renewed attention (Piketty, 2014, 2015a,b; Blume and Durlauf, 2015; Hoffmann et al., 2020). According to the latest available data, workers earning less than two-thirds of median earnings amounted to 15.4% in OECD countries in 2018 with percentages that vary from the 5.5% in Belgium to 23.4% in the United States (<https://data.oecd.org/earnwage/wage-levels.htm#indicator-chart>, accessed: 07.29.2021).

Firms' decisions have a crucial role in sustaining wage levels and theoretical contributions argue that consumers' purchasing choices may play a central role in promoting firms' responsible behavior towards their stakeholders, workers included (Baron, 2001; 2007; 2009; Baron and Diermeier, 2007; Teraij, 2009; Degli Antoni and Sacconi 2013). However, the existing contributions investigating the determinants of consumers' ethical behavior through experimental markets, surveyed in Section 2, does not consider the relation between firms' decision concerning wage levels and consumer purchasing choices.

This paper contributes to the literature on ethical consumerism by providing experimental evidence on consumer's willingness to reward sellers paying higher wages to their workers. We consider sellers who operate in a highly competitive posted offers market, offering a homogeneous good and making two choices: setting prices and deciding worker wages. Goods are generated by workers associated with each seller. Sellers may pay a high or low wage to their associated workers. Consumers enter the market sequentially and decide whether to accept one of the offers or to leave the market.

Our data show that consumers tend not to reward sellers who decide to pay high wages to workers. Conversely, sellers who pay high wages and ask higher prices for their goods are more likely not to sell their good. Period after period, this reduces the propensity to pay high wages and a market

scenario emerges in which workers receive the minimum wage, consumers' purchase decisions are driven by the level of price and sellers are exposed to a high price competition.

Our result does not disprove any possible effect on consumers' choices of sellers' behavior towards workers. It highlights a previously neglected psychological mechanism characterizing consumers in the process of attribution of responsibility within the market. In the next section, we highlight the specificity of our experimental approach in comparison with the existing experimental literature on ethical consumption. We argue that the connection between workers and sellers that characterizes our experimental design may induce consumers to believe that eventual sacrifices for paying high wages to workers must be entirely on sellers.

We know from the vast literature on pro-social behavior that communication favors deviation from self-interest in Dictator Games (Andreoni and Rao, 2011; Mohlin and Magnus, 2008; Charness and Rabin, 2005; Yamamori et al., 2008; Bruttel and Stolley, 2020), Prisoner's Dilemmas (Bohnet and Frey, 1999) and Public Good Games (Isaac and Walker, 1988); at the same time, providing information on experimental subjects' payoffs increases giving in Dictator Games (Small and Loewenstein, 2003). Conversely, our result does not change when workers are given voice and can send a message to consumers, or when the information provided to consumers highlights the low payoff for workers. This seems to suggest that in experimental markets pro-sociality may follow different patterns with respect to those characterizing other experimental contexts.

The remaining part of the article is organized as follows. Section 2 surveys the related experimental literature and highlights the peculiarity of our study. Section 3 presents the experimental design and procedures. Section 4 justifies and presents our operational hypotheses. The empirical results are presented in Section 5; section 6 discusses and concludes.

Related experimental literature

Recent studies have analyzed sellers' socially responsible behaviors and consumer willingness to pay for socially responsible products by replicating such behaviors in lab-based experimental

markets. Rode et al. (2008) consider triopolistic markets with six consumers. In all of their treatments, a producer incurs higher production costs than others. For a given treatment, the cost is generated through compliance with the conditions of a NGO internationally recognized as fighting child labor, while for a different treatment the cause of extra costs is unknown to consumers. The authors show that consumers are willing to pay premia for ethically differentiated products, but when ethical differentiation is absent consumers tend to purchase at the lowest price irrespective of the costs incurred by producers.

Vasileiou and Georgantzis (2015) study experimental markets with nine consumers and nine producers who interact for at least 36 periods. Their treatment condition involves asking producers to define not only the price (as in the baseline) but also the level of an energy-saving investment. The investment implies a higher fixed cost and is implemented to monotonically relate different contribution levels to a common fund that is equally divided among all consumers at the end of each period. While consumers tend to reward the socially responsible behaviors of sellers, their willingness to pay is not sufficient to compensate for the cost of the investment.

Kuhn and Uler (2019) investigate an experimental market in which six sellers and six buyers interact for five consecutive periods in the first part of the experiment and for ten periods in the second part. In each period, each participant can trade up to five units. The interaction replicates the double-auction with externalities used by Plott (1983). Each transaction concluded in the market generates a negative externality on all the participants. The second part of the experiments differs across the three treatments characterizing the study. In the Baseline, participants play the double-auction for another ten periods, without differences with respect to the first part of the experiment. In the Low and in the High treatment, each period consists of two stage. The first stage is exactly the same as the trading period in the Baseline. In the second stage participants are provided with an opportunity to offset the damages generated in the trading stage. This allows to reduce the damages that have been created in the trading stage. Buying damage offsets is voluntary. One unit of damage offset costs $1/6$ token in the Low treatment and $1/2$ token in the high treatment. Results show that

subjects are willing to pay positive amount to reduce damages associated with the transactions generated in the trading stage and the costs of the damages offsets significantly affect subjects' decision to opt for them.

Bartling et al. (2014), the work most closely related to our study, considers a laboratory market in which six sellers and five consumers repeatedly interact. In each period, sellers may decide to adopt low- or high-cost production. The former generates negative externalities for third parties. The experiment is conducted in Switzerland and China. Focusing on Switzerland, the authors show that both consumers and sellers show a preference for avoiding negative impacts on third parties. Almost 50% of products are generated at the higher (no externality) cost, and by the end of the experiment the cost of mitigating the externality is borne equally by both sellers and consumers. This result is generally resilient to market conditions, which vary according to the degree of competition present among sellers and the information provided to consumers. In China, the low-cost production that generates negative externalities is significantly more prevalent than in Switzerland.

With respect to the reviewed research, the present contribution presents a main original feature: the seller's behavior under consideration neither improves the welfare of consumers as in Vasileiou and Georgantzis (2015) nor impacts third parties without any opportunity to affect the sellers' surplus as in Rode et al. (2008) and Bartling et al. (2014). Transactions concluded in the market does not generate a negative effect on all market participants, as it is in Kuhn and Uler (2019). In our experimental design, sellers's behavior is analyzed with respect to the choice of paying a higher or a lower wage to workers. Through their job, workers allow sellers to enter the market and benefit from market interactions with consumers. In our opinion, this connection between workers and sellers alters the perception of consumers with respect to their role and responsibility in enforcing a fair behavior by sellers towards their workers. This induces consumers to focus on their self-interest, disregarding workers' conditions and the market surplus division.

Experimental Design and Procedures

In each session, subjects were randomly assigned to the role of seller, consumer and worker and interacted anonymously using PCs. The market included six sellers, six workers, and five consumers. At the beginning of the experiment, each worker was associated with a seller and performed a task to generate 15 goods that could be offered in the market by the seller. If a worker's level of production was too low (less than 15 goods in seven minutes), the seller associated to her could not enter the market and both the worker and the seller have to leave the experiment, receiving only the show-up fee. Market activity was initiated just after the task phase and involved 15 rounds of transactions. At the start of each round, each seller chose if paying a higher or a lower wage to the worker and the price of each good. Each consumer observed the price and wage set by each seller and chose either to purchase one good or not to buy in that round.

The experiment consisted of a *Baseline* condition, a *Voice* treatment, and a *Info* treatment (see supplementary online materials - Appendix 2 - for instructions, control questions and software screenshots).

The experiment was conducted at the CEEL Laboratory at the University of Trento and was programmed using zTree (Fischbacher, 2007). Subjects were paid a participation fee of 3 euros. No individual participated in more than one session.

We conducted three sessions (with one market per session) per treatment with 17 subjects participating in each session, for a total of 153 subjects. The participants were students at the University of Trento, 48% were female, 91% were Italian, and 61% were enrolled in Economics or Management programs.

The average payment to participants was 9.53 € (including the participation fee) and the sessions lasted approximately an hour and a half.

Participants were randomly assigned to terminals. Instructions were distributed in written form and were read aloud by the experimenter. Participants were required to answer several control

questions, and we did not proceed with the actual experiment until all of the participants had answered all of these questions correctly.

The Baseline Condition

At the start of the experiment, each worker was matched with a seller and was asked to perform a task that involved encoding words. Each word encoded by a worker corresponded to a unit of a good available to the seller. Workers were asked to encode 15 words over seven minutes with the understanding that those who failed to reach the target would be excluded from the experiment together with the sellers with whom they were paired. When a worker encodes the 15 words, the target is reached and she waits for the running out of the time. During this task, sellers and consumers waited. Note that both in the *Baseline* and in the two treatments, all workers succeeded in encoding the 15 words.

Sellers received an initial endowment of 100 tokens. In each of the 15 round, they put one of the 15 units of a homogeneous good into the market while posting a price and setting the wage for their worker. Prices must be chosen in the interval $[0,60]$ tokens (1 token = 0.02 €). Wages could be set as 10 or 20 tokens.

Consumers received an initial endowment of 100 tokens. In each round, they entered the market one by one in a random order. They were informed of the wage paid and the price posted by each seller. Consumers could select one of the offers and confirm their selection by pressing “CONFIRM” or pass this stage without purchasing the good. When a consumer accepted the offer, the offer was still displayed to the next consumers, but the “SELECT” button was removed (see Figure 1 for an example of a selection screen). To reduce the likelihood of reputation formation, the order in which offers were displayed was randomized and changed with every round. Sellers were not identified by any label.

[Figure 1 about here]

At the end of the round, all participants were presented with all offers and were informed of the offers that had been accepted and the order in which they had been accepted. Sellers and workers see their offers colored blue.

For each worker, the payoff of the current round was equal to her wage. The payoff for the consumer was equal to 60 minus the price when she had purchased the good and equal to zero otherwise. The payoff for the seller was equal to the price minus the wage paid to her worker when her offer was accepted, and equal to minus the wage otherwise. Sellers could accumulate negative final payoffs. In this case, their final payment for the experiment was equal to zero; this never happened in any session.

The Voice and Info Treatments

The *Voice* treatment was the same as the *Baseline* condition, but in each round, after having been presented with their wage level, workers were given the opportunity to send a message stating “do not buy” that would appear next to the offer made by the seller with whom she was matched. The structured and indirect form of pre-play communication adopted in the treatment is closer to actual forms of communication between workers and consumers, like strikes, usually not implying personal and direct interaction.

The *Info* treatment was the same as the *Baseline* condition, but consumers were presented on their screens not only with prices and current wages but also with the accumulated payoff for each worker (wages accumulated in previous rounds).

Hypotheses

In our experimental market, sellers have a material interest in paying low wages. Consumers have a material incentive to buy the product available on the market at the lowest price. Given their reservation price, consumers always have an advantage in purchasing products at the lowest price, when lower than 60 tokens, and they are indifferent to purchasing products sold at a price of 60 tokens. This should generate fierce price competition among sellers paying low wages.

However, if we recognize the possibility of pro-social and nonstrictly self-interested behavior, we may expect to observe different patterns of behavior both in the *Baseline* condition and in the *Voice* and *Info* treatments. Sellers may pay high wages because of pro-social concerns connected with altruism or warm glow (Andreoni, 1989 and 1990), conformity to social or moral norms and inequity aversion (Fehr and Schmidt 1999) if their payoff was initially higher than that of workers. Because of the same concerns, to enforce pro-sociality consumers may decide to reward sellers who pay high wages.

Nonetheless, in the remaining of this section we focus on three main motivations which may lead to a deviation from self-interested behaviors in our experiment: a) the strict connection between the seller and the worker; b) sellers' anticipation of consumer pro-social behavior; c) the effect of voice and information introduced in the two treatments. We argue that these motivations are the most strictly connected with the characteristics of our experimental design and we put forward specific hypotheses based on them, to be considered in the empirical analysis. We will interpret our empirical evidence also by taking into consideration the other motivational drivers mentioned above.

Hypotheses Concerning the Baseline Condition

A key feature of our experimental design relates to a strict connection between sellers and workers. When a worker's production is too low, the seller associated to her cannot enter the market and receives only the show-up fee. By contrast, workers who succeed in producing 15 products open to sellers the opportunity to make a profit. Since sellers who enter the market cannot obtain negative payoffs, having the possibility to enter the market is a net advantage for sellers.¹ Consequently, they may decide to reciprocate workers' effort in the task, which is not remunerated in any direct way, by paying them a high wage. In our view, this makes reciprocity a salient

¹ Sellers can make negative profit at the end of the 15 rounds; however, as explained in section 3.1, in this case they receive the show-up fee.

motivational driver capable of affecting sellers' behavior in the *Baseline* condition - and in the two treatments (on reciprocity based behavior, see Rabin 1993; Fehr and Gächter 1998; McCabe, Rigdon and Smith 2003; Cox, 2004). This feature, together with the fact that the matching between the seller and the worker lasts for the entire experiment, creates the conditions for the emergence of typical minimal group effects and ingroup pro-sociality between sellers and workers (Tajfel and Turner 1979; Hargreaves Heap and Zizzo 2009; Chen and Li 2009, Goette et al. 2012).

Under the *Baseline* condition there is no specific reason to expect any form of pro-social behavior by consumers. Therefore, we expect consumers to not reward sellers' choice to pay high wages.

We can then put forward the following hypotheses for the *Baseline* condition.

Hypothesis 1

In the *Baseline*:

H1.a. We are more likely to observe sellers who pay high wages than consumers willing to pay premia for these sellers, especially in the first rounds;

H1.b Consumers will not reward sellers' decision to pay high wages, opting for maximizing their payoff by selecting the cheapest good in the market. This will reduce the probability of observing sellers paying high wages. In fact, the unwillingness of consumers to share with sellers the burden of paying a high wage increases sellers' material incentive to opt for the low wage. Consequently, the equilibrium price should converge towards the low wage.

Hypotheses Concerning the Voice and Info Treatments

Under the *Voice* treatment, workers are allowed to send a message to consumers, and by doing this they can communicate their disappointment with seller strategy. Experimental evidence from Dictator Games, Prisoner's Dilemmas and Public Goods Games show that communication tends to increase pro-social and cooperative behavior (Isaac and Walker, 1988; Bohnet and Frey, 1999; Charness and Rabin, 2005; Mohlin and Magnus, 2008; Yamamori et al., 2008; Andreoni and Rao,

2011; Bruttel and Stolley, 2020). With specific respect to written one shot messages, Yamamori et al. (2008), Mohlin and Magnus (2008), Andreoni and Rao (2011) and Bruttel and Stolley, (2020) provide evidence that in Dictator Games in which the recipient can send a request to the dictator, offers are more generous (if requests are reasonable, i.e. less than half of the pie). In our treatment, the worker can use the message to request pro-social choices both to consumers and to the seller to which she is associated (who can see if the worker has sent the message).

Under the *Info* treatment, consumers receive information on the payoff accumulated by workers. By highlighting workers' payoffs, with the *Info* treatment we aim to rule out opportunities for consumers to relinquish responsibility by avoiding information on workers' conditions (Sweeny, Miller and Shepperd 2010; Feiler 2014; Thunström 2016; Golman and Loewenstein 2017). For the *Baseline* condition, consumers may decide not to focus on the computation of cumulative payoffs for workers to not feel guilty for their (eventual) selfish behaviors and to not perceive themselves as acting unfairly (Dana et al. 2007).

With respect to sellers' behavior in the *Voice* and *Info* treatments, if they anticipate pro-social consumers' behavior, the payment of a high wage may be a product differentiation strategy in a competitive market. Sellers will modify the possibly adopted strategy if consumers show to be not responsive to it.

Therefore, we put forward the following hypotheses:

Hypothesis 2

In the *Voice* and *Info* treatments:

H2.a Because of the anticipation of consumer pro-social behavior, sellers are more likely to pay high wages than under the *Baseline* condition, especially in the first rounds;

H2.b Consumers are expected to be significantly more likely to pay price premia to sellers paying high wages than under the *Baseline* condition;

H2.c Consumers' behaviors should support sellers' decision to pay high wages across the different periods;

H2.d. Sellers' and consumers' behaviors should sustain a market equilibrium reflecting a surplus division in which, more frequently than in the *Baseline* condition, workers receive the high wage and consumers pay premia to sellers paying high wages. This may allow to get closer to the equal division of the total surplus generated by the exchange in our experimental market, which emerges when the seller offers the good at a price of 40 tokens, a consumer purchases the good at this price, and the seller pays a wage of 20 tokens to the worker.

Results

In this section we analyze experimental data to investigate the hypotheses put forward in Section 4. Section 5.1 provides descriptive statistics concerning sellers' and consumers' choices made under the three experimental conditions. Section 5.2 presents our econometric findings.

Descriptive Statistics

Sellers: wage decisions.

Overall, when considering all the decisions made by sellers (6 sellers by 15 rounds by 9 sessions), we find that they pay high wages only 7.78% of the time (63 times out of 810). This percentage is higher for the *Info* treatment (11.11% - i.e., 30 times out of 270) than for the *Baseline* condition (6.67% - 18 times out of 270) and the *Voice* (5.56% - 15 times out of 270) treatment. Chi square tests reveal that the probability to observe a high wage in the *Info* treatment is significantly higher than in the *Voice* treatment (Pearson $\chi^2(1) = 5.4545$, $p = 0.020$), while it is not significantly different from the *Baseline*²; no significant differences emerge between the *Baseline* and the *Voice* treatment. However, the higher percentage observed in the *Info* treatment is essentially attributable to the behavior of a single seller who pays a high wage in each round (i.e., 15 times). Many sellers do not pay high wages in any round (they are 12 in the *Baseline* condition, 11 in the *Voice* treatment

² We set the threshold for statistical significance at 5%. Tests concerning non statistically significant results are omitted and available upon request to the authors.

and 8 in the *Info* treatment). Nonetheless, high wages paid by some sellers seem to reveal that other motivations different from self-interest are at work.

The percentage of high wages paid in the first rounds is higher than that of the last rounds (Figure 2). In the *Baseline* condition, the percentage of high wages paid in the first period is 16.67% (i.e., 3 high wages paid) and a peak is registered at round 6. For the *Voice* and *Info* treatments, the peak is at round 1 with percentages equal to 38.89% (7 high wages paid) for both treatments. In the two treatments, the probability of observing a seller paying a high wage in the first period is higher than it is in the aggregated subsequent periods (*Voice*: Pearson $\chi^2(1) = 40.8403$, $p < 0.001$; *Info*: Pearson $\chi^2(1) = 15.0670$, $p < 0.001$). In the *Baseline* the difference between the first period and the subsequent ones is not significant.

[Figure 2 about here]

Despite a higher percentage of sellers who opt for high wages in the first round in the *Voice* and *Info* treatments than in the *Baseline* condition, the differences do not result as statistically significant, with exactly the same distribution of choices in the *Voice* and *Info* treatments with respect to the *Baseline*.³

To correctly interpret the data on the *Voice* treatment, consider that workers send the “do not buy” message 188 times (69.63%). A chi-square test shows that, in case of a low wage paid, the probability that the sellers’ offer was not accepted is significantly higher when it is accompanied by the message (Pearson $\chi^2(1) = 13.1578$, $p < 0.001$). However, as it will be made clearer by the analysis provided in Section 5.2, this is not enough to contrast the effect of price competition and to induce a significant change in the market dynamics in terms of wages paid in the *Voice* treatment in comparison with the *Baseline* condition and the *Info* treatment. When we analyze the effect of the

³ Two-sample Wilcoxon rank-sum (Mann-Whitney) test performed.

message on the sellers' decision, we find that a message in round t does not significantly affect the probability to observe a high wage paid in $t+1$.⁴

Sellers: price decisions

The average selling price posted by firms, considering all rounds and all sessions, is equal to 26.64 tokens (std. dev. 6.58, min 10, max 60). In the *Voice* treatment (27.84 tokens on average) the distribution of selling prices has significantly larger values than those in the *Baseline* (25.90) and in the *Info* treatment (26.20) (*Voice* vs. *Baseline*: Wilcoxon rank-sum (Mann-Whitney) test: $z = 4.006$, $p = 0.0001$; *Voice* vs. *Info*: $z = 3.747$, $p = 0.0002$); while no difference characterizes the distribution of prices in the *Baseline* and in the *Info* treatment (in the remainder of the section, when not specified differently, the value of z and p refer to Wilcoxon rank-sum (Mann-Whitney) tests). All conditions are characterized by a decreasing dynamics of prices from the first to the last rounds (Figure 3).

[Figure 3 about here]

The distribution of prices has significantly larger values in the first round than in the last one, both in the *Info* and in the *Voice* treatment (*Info*: $z = 2.668$, $p = 0.0076$; *Voice*: $z = 4.015$, $p = 0.0001$). An interesting aspect concerns the slowness of the decrease of prices in the market. Mann-Whitney tests performed by comparing the distribution of prices in two consecutive rounds, from the first to the latter (e.g., 1st round vs 2nd round, 2nd round vs. 3rd round, etc.) reveal that prices in consecutive period are quite similar both in the *Baseline* and in the two treatments.

⁴ Chi square test performed.

Sellers: wages and selling prices

Wages and selling prices are strictly correlated. Firms post higher prices when they pay high wages. The average price when the high (low) wage is paid is equal to 33.56 tokens (26.06). The same happens across all the conditions, *Baseline*: 36.61 (25.13); *Info*: 31.63 (25.52); *Voice*: 33.73 (27.49) and the distribution of prices is significantly different when wages are high or low respectively (*Baseline*: $z = -5.812$, $p = 0.0000$; *Info*: $z = -5.279$, $p < 0.0001$; *Voice*: $z = -2.475$, $p = 0.0133$).

Consumers

Consumers opt for buying a product the great majority of the times they enter into the market. They do not buy only 6.67% of the times in the *Baseline* (15 times out of the 225 times consumers enter in the market and make their choice in the *Baseline*), 7.56% in the *Info* treatment (17 out of 225) and 8.0% in the *Voice* treatment (18 out of 225).

Consumers' purchasing decisions seem to be driven by the selling price alone. Across all conditions, the vast majority of consumers opt for the good sold at the lowest price available in the market: representing 98.57% for the *Baseline* condition, 98.10% for the *Info* treatment and 80.10% for the *Voice* treatment. The order in which the good is purchased is positively correlated with the selling price (*Baseline*: Spearman's $\rho = 0.3842$, $p = 0.0000$; *Voice*: Spearman's $\rho = 0.1926$, $p = 0.0040$; *Info*: Spearman's $\rho = 0.2962$, $p = 0.0000$). The average price of purchased goods is 25.64 tokens against the price of 31.44 tokens of goods which are not bought by any consumer. This difference is statistically significant ($z = 7.613$, $p < 0.0001$) and characterizes all the conditions: *Baseline* 24.83 vs. 31.22 ($z = 4.734$, $p < 0.0001$); *Info* 25.24 vs. 30.74 ($z = 4.186$, $p < 0.0001$); *Voice* 26.87 vs. 32.33 ($z = 4.506$, $p < 0.0001$).

As a whole, 174 times out of 675 consumers enter the market and observe (one or more) products offered by a seller paying a high wage and (one or more) products associated with a low wage. In these situations, which are 67 in the *Baseline*, 73 in the *Info* treatment, and 34 in the *Voice*

treatment, consumers buy products offered by sellers paying a high wage in a minority of instances: 10.44% for the *Baseline* condition, 24.32% for the *Info* treatment and 20.69% for the *Voice* treatment. When a product associated with a high wage is available along with one or more low wage products sold at a lower price, consumers tend to buy the high wage products in a great minority of cases. This never happens under the *Baseline* condition (0 out of 63 times), it happens two times out of 50 in the *Info* treatment and 5 times out of 27 in the *Voice* treatment. Finally, in the *Info* and in the *Voice* treatment happened that consumers had the opportunity to choose between a high and a low wage product sold at the same price; they opted for the former 4 out of 8 times in the *Info* treatment and 3 out of 8 times in the *Voice* treatment.

Surplus division

Figure 4 shows the surplus division among sellers, consumers and workers.⁵ Consumers' behaviors, driven by the price level, lead them to appropriate a vast share of the surplus under the *Baseline*, *Voice* and *Info* setting. On average, in each round, the consumer's surplus, measured as the difference between her willingness to pay (60 tokens) and the price paid for products purchased, is equal to 35.17 tokens for the *Baseline* condition, 34.76 tokens for the *Info* treatment and 33.13 for the *Voice* treatment. The surplus obtained by sellers on average ranges from 9.73 observed from the *Info* treatment to 10.03 observed for the *Baseline* condition and 11.54 observed from the *Voice* treatment and is very similar to the surplus obtained on average by workers, which is equal to 11.11 for the *Info* treatment, 10.67 for the *Baseline* condition and 10.56 for the *Voice* treatment.

[Figure 4 about here]

⁵ At each period, for each role, we computed the sum of individual payoffs and divided it by total payoff of the three roles (which is always equal to 900).

Descriptive Statistics and Hypotheses

Descriptive statistics tell us that, as expected from H1a, under the *Baseline* condition, sellers are more likely to pay high wages than consumers to reward this behavior, especially in the first rounds. In fact, as expected from H1.b, under the *Baseline* condition, consumers seem not to pay premia for the products associated with high wages.

With respect to H2.a, descriptive statistics seem to reveal that sellers are not more likely to pay high wages in the two treatments than under the *Baseline* condition. As it would be expected from H2.b, we do not find descriptive evidence of a clear pattern indicating a willingness to reward sellers paying high wages in the *Voice* and *Info* treatment. As a possible result of consumers' choices, we do not observe an increase of the number of sellers paying high wages in the two treatments either, differently from what would have been expected from H2.c. Finally, surplus division is not coherent with H2.d, according to which the *Info* and *Voice* treatments should generate a market equilibrium more closely reflecting an equal division of the total surplus than that observed under the *Baseline* condition.

Econometric Findings

In this section, we perform random effects estimation of panel data concerning sellers or consumers. Our results are virtually unchanged if we perform multilevel mixed-effects estimations considering the experimental sessions as a group variable.

In column 1 of Table 1, we analyze the decision made by sellers to pay high or low wages to workers. The dependent variable, *High wage*, is a dummy equal to 1 when the seller pays a high wage. The analysis clearly shows that the probability of paying high wages does not change across the three conditions. In fact, neither the dummy identifying subjects of the *Voice* treatment nor that for the *Info* treatment is statistically significant. Moreover, our t-test of the equality of *Voice* and *Info* coefficients reported in Table 1 shows that no difference characterizes the choices made by the sellers involved in these two treatments. The probability of paying a high wage significantly

decreases over time: the variable identifying the round in which the seller makes her choice (*Period*) has a negative and statistically significant coefficient (at 0.001%) with a marginal effect observed at the mean *Period* value equal to -0.172 (Std. Err.=0.028, $p < 0.001$). Regarding the sociodemographic controls (see Supplementary online materials - Appendix 1 - for a description of variables), at a 5% level of significance, we find a nonlinear effect of participants' age; a positive effect of subjects' incomes on the probability of paying high wages and a lower probability of choosing high wages when one is enrolled in courses on Economics or Management.

Column 2 analyzes the factors that affect the order in which sellers sell their products. The dependent variable is a categorical variable ranging from 1 (when the product offered by the seller is the first sold in that period) to 5 (when the product is purchased as the fifth choice). The Ordered probit estimate shows that the higher the selling price, the later on the product is sold. Moreover, the seller's decision to pay a high or low wage does not have any effect on the order in which the product is sold. This is confirmed also considering the possible effect of the interaction between paying a high wage and the involvement in one of the two treatments.

Column 3 investigates determinants of the probability of selling a product. The dependent variable is a dummy, taking a value of 1 when the seller sells her product and with a value of 0 otherwise. The analysis shows that the higher the selling price, the lower the probability of selling the product with a marginal effect computed at the mean of the selling price of -0.075 (Std. Err.=0.010, $p < 0.001$). Conversely, no effect on the probability of selling a product is associated with the payment of a high wage.

[Table 1 about here]

In columns 4 and 5 the dependent variable is a dummy equal to 1 when a consumer purchases a product sold by a seller paying a high wage. For these estimates, we focus on consumers observing in the market both (at least) one product sold by a seller paying a low wage and (at least) one

product sold by a seller paying a high wage. In no case does the probability of a consumer opting to purchase a product associated with a high wage increase in one of the two treatments with respect to the *Baseline* condition. Explanatory variables of main interest include the *Lowest price high wage* and *Lowest price low wage*, which define the lowest price available on the market for a product associated with a high or low wage, respectively. In column 4, coherently with the results given by Bartling et al. (2014), we find that consumers become progressively less likely to purchase a product sold by a seller who paid a high wage as the lowest price at which the product is made available increases, and conversely consumers become progressively more likely to buy such a product as the lowest price at which a product sold by a seller paying a low wage increases. Interestingly, the probability of purchasing a product sold by a seller paying a high wage is higher for consumers who are currently working or with past work experience (*Work experience*).

In column 5 we consider as an explanatory variable a dummy called *Lower price low wage* that captures situations in which the consumer sees in the market at least a product associated to a low wage which is offered at a lower price than the products associated with high wages. The statistical significance of the negative coefficient of this variable confirms the role of prices in affecting the consumers' decision to choose a product offered by firms who pay high or low wages.

As a whole, we find that sellers' and consumers' behaviors and the market equilibrium expected under the *Baseline* condition and captured by Hypotheses H1.a and H1.b characterize the other two treatments as well. In all treatments we observe sellers that begin reciprocating⁶ workers' efforts, paying high wages in initial periods⁷, (while we do not find clear evidence of sellers' decision to pay high wages as a possible anticipation of pro-social behavior of consumers in the *Voice* and *Info* treatments, as expected from H2.a). However, the self-interest of consumers, who tend to disregard sellers' decisions concerning the wage level and to essentially orient their consumption choices based on the selling price, induces sellers to focus on price competition. The result is an unfair

⁶ As highlighted in section 4, pro-social sellers' behaviour may be motivated also by altruism, warm glow, inequity aversion or social and moral norms.

⁷ Note that the interaction terms between the dummy variables *Info* and *Voice* and the variable *Period* included in the estimate presented in column 1 are not statistically significant.

division of the surplus, with workers and sellers obtaining, as shown in Section 5.1, less than 1/3 of the surplus enjoyed by consumers. Thus, we can conclude that Hypotheses H2.b, H2.c, H2.d are not supported by our data.

Discussion and Conclusion

In our experimental market some sellers opt to pay higher wages to their workers. However, this behavior is not rewarded by consumers, whose purchasing decisions are almost exclusively driven by self-interest. Consumers tend to purchase products sold at lower prices while disregarding the wage level paid by the sellers from which they buy. This exposes sellers to a high level of price competition. Period after period, sellers initially paying higher wages change their approach, creating market conditions in which workers receive the low wage while consumer surpluses are significantly higher than those of workers and sellers. Moreover, we show that this result does not change when the information provided to consumers highlights that workers are cumulating a low payoff or when workers are given voice by introducing the opportunity to send a message to consumers.

In our experiment, it seems that consumers did not feel responsible for workers, preventing the emergence of conditions that allow a more equal division of the surplus generated in the market. In our interpretation, the connection between workers and sellers that connotes our experimental design, with workers who allow sellers to enter the market, may induce consumers to believe that eventual sacrifices for paying higher wages to workers must be entirely on sellers.

An alternative explanation may be that consumers do not perceive the payment of a low wage equal to 10 tokens as unfair. With this respect, it is worth noting that the gap between the low and high wage in our design is lower than that produced by the negative externality suffered by the third parties in the design proposed by Bartling et al. (2014) where the externality may be equal to 0 or 60 and where it emerges that consumers are willing to sacrifice their payoff in order to mitigate negative impacts on third parties. However, in our experimental design workers are not provided

with the initial endowment (as it is for third parties in Bartling et al. 2014) and they have to perform a task which requests an effort. Moreover, especially in the *Info* treatment where consumers observe the dynamics of the cumulative payoff of workers, it is clear that workers tend to receive a low share of the total surplus.

A further element of our design is the weak market position of sellers. This is because of the high competition in the market that also implies the risk of not selling the good. Such a situation could justify, in the eyes of consumers, the payment of a low wage by sellers that would be aimed at sustaining their payoff. However, the market situation proposed in our experiment in terms of sellers' competition is virtually the same as in Bartling et al. (2014) where consumers seem to behave quite in a responsible way towards third parties, at least in the Switzerland context. Moreover, exactly because of behavior of consumers, who are essentially concerned with products' prices, sellers' final payoff in the different conditions results slightly higher than those of workers and significantly lower than those of consumers. On average, including the initial endowments received by consumers and sellers, the gap in final payoffs between sellers and workers ranges from 85 tokens in the *Voice* treatment to 121 tokens in the *Info* treatment, while the gap between consumers and sellers range from 332 tokens in the *Voice* treatment to 368 tokens in the *Baseline* condition. This seems simply to reveal that consumers do not care of the conditions of workers and sellers in our setting. As discussed above with respect to the experimental literature on ethical consumerism, we argue that consumers' self-interested behavior emerges in our experiment as a consequence of the connection characterizing workers and sellers. This paves the way to further research by highlighting a specific role that the relation between firms and some stakeholders may have in affecting consumers' willingness to reward firms' social initiatives towards these stakeholders. Our result seems to suggest that the more salient is made the relevance that the stakeholders have in allowing the firm's activity, the less consumers' may be willing to sacrifice their monetary payoff to improve these stakeholders' condition.

A more general conclusion of our analysis is that in experimental markets pro-sociality may follow different patterns with respect to those characterizing other experimental contexts. In our framework, we do not observe any effect either of the introduction of voice or of the provision of information about the workers' cumulated payoff. This is at odds with the experimental evidence showing that sending messages and providing more information on subjects' payoff increase contributions and cooperative behaviors. Our results pave the way for research also in this direction.

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Figures

Figure 1: The consumer selection screen

Wage	Price	
10	30	SELECT
20	35	SELECT
10	20	
20	42	SELECT
10	22	SELECT
20	36	SELECT
LEAVE		




Figure 2 Wages paid by sellers

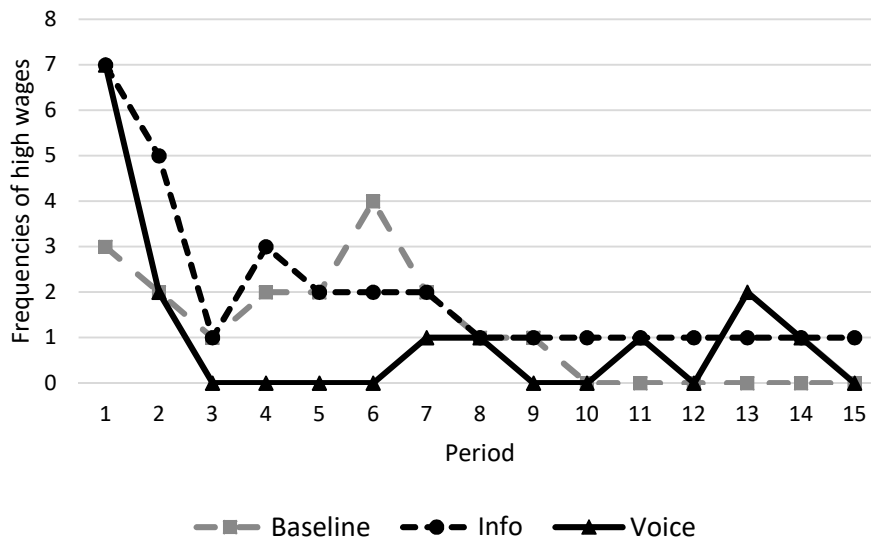


Figure 3 Dynamics of price across treatments

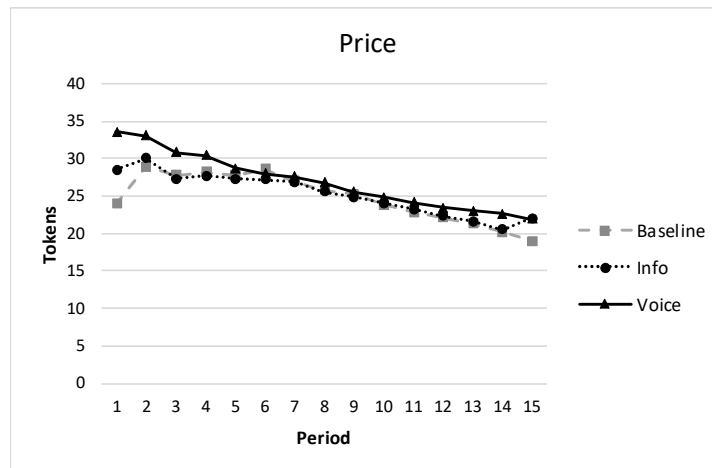
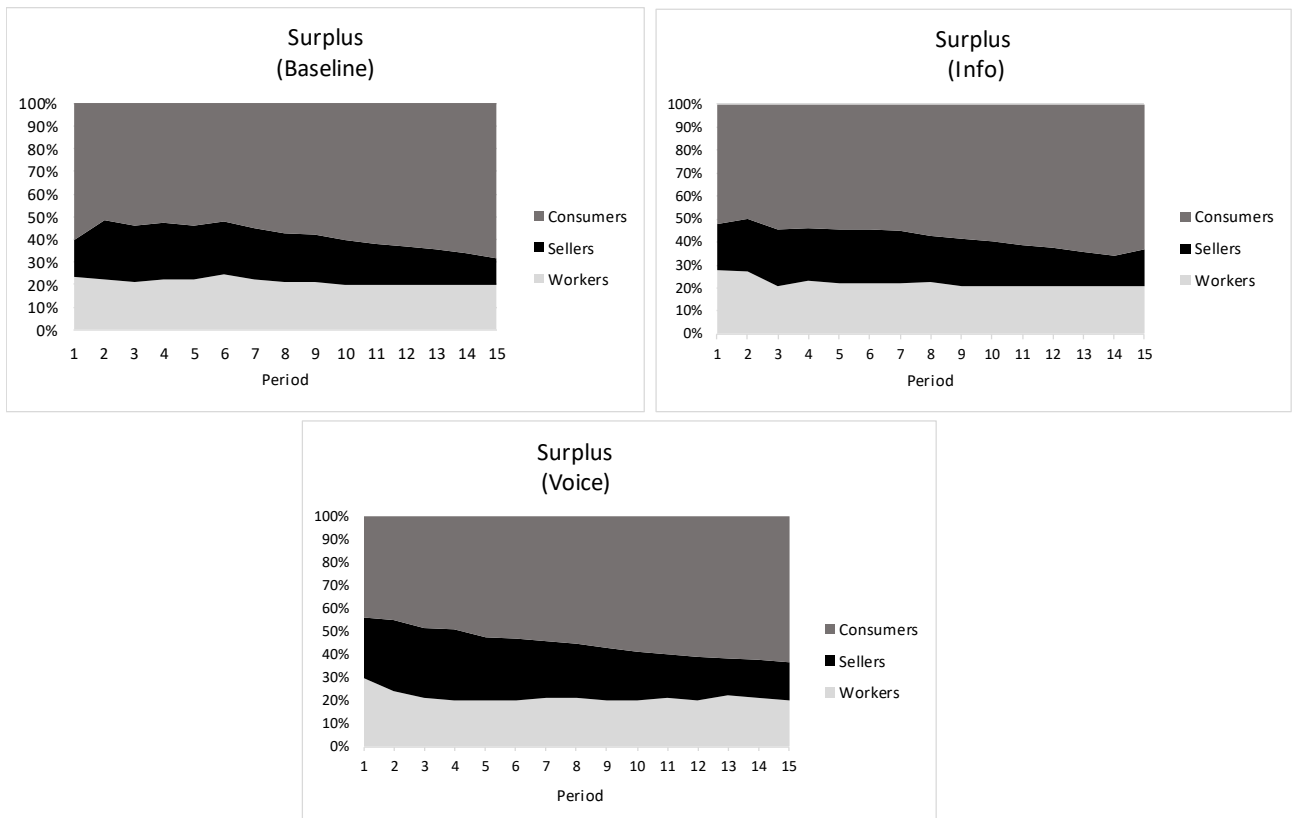


Figure 4. Distribution of surplus across treatments



Tables

Table 1. Sellers and consumers across treatments

Dependent variable	<i>High wage</i>	<i>Choice order</i>	<i>Offer Accepted</i>	<i>High wage product bought</i>	<i>High wage product bought</i>
	(1)	(2)	(3)	(4)	(5)
<i>Sample</i>	<i>Sellers</i>	<i>Sellers</i>	<i>Sellers</i>	<i>Consumers</i>	<i>Consumers</i>
<i>Model</i>	Probit	Ordered probit	Probit	Probit	Probit
<i>Info</i>	0.134 (0.538)	-0.043 (0.145)	-0.095 (0.181)	-0.273 (0.640)	-0.736 (0.621)
<i>Voice</i>	0.357 (0.565)	-0.118 (0.144)	0.043 (0.180)	-0.125 (0.691)	-0.076 (0.627)
<i>Period</i>	-0.172*** (0.028)			-0.003 (0.060)	0.064 (0.042)
<i>Lowest price high wage</i>				-0.515*** (0.102)	
<i>Lowest price low wage</i>				0.481*** (0.098)	
<i>Lower price low wage</i>					-3.318*** (0.536)
<i>Age</i>	9.132* (4.341)			-1.298 (1.089)	2.388 (4.535)
<i>Age²</i>	-0.210* (0.097)			0.024 (0.022)	-0.057 (0.101)
<i>Female</i>	0.944 (0.547)			0.513 (0.534)	-0.348 (0.494)
<i>Number of experiment</i>	0.035 (0.021)			-0.028 (0.031)	-0.071* (0.033)
<i>Italian</i>	0.744 (1.011)			0.758 (0.676)	0.139 (0.663)
<i>Economic or management course</i>	-1.501** (0.578)			-0.614 (0.499)	-0.586 (0.463)
<i>Risk aversion</i>	0.214 (0.114)			0.060 (0.128)	-0.246 (0.127)
<i>Income</i>	0.516* (0.262)			-0.029 (0.381)	0.191 (0.332)
<i>Work experience</i>	-0.385 (0.453)			1.128* (0.500)	0.770 (0.465)
<i>Selling Price</i>		0.065*** (0.009)	-0.075*** (0.010)		
<i>High wage</i>		0.510 (0.454)	-0.417 (0.383)		
<i>Information*High wage</i>		-0.563 (0.538)	0.471 (0.485)		
<i>Voice*High wage</i>		-0.891 (0.583)	0.286 (0.547)		
<i>Constant</i>	-103.351* (48.958)		3.111*** (0.304)	17.184 (13.548)	-22.540 (50.486)
<i>Cut 1</i>		0.681 (0.234)			
<i>Cut 2</i>		1.325 (0.237)			
<i>Cut 3</i>		1.889 (0.240)			
<i>Cut 4</i>		2.536 (0.246)			
<i>t-test equality of coeff.</i>	-0.223 (0.552)	0.074 (0.146)	-0.138 (0.179)	0.148 (0.6589)	-0.660 (0.663)

Table 1. Continued

Dependent variable	<i>High wage</i>	<i>Choice order</i>	<i>Offer Accepted</i>	<i>High wage product bought</i>	<i>High wage product bought</i>
	(1)	(2)	(3)	(4)	(5)
<i>Sample</i>	<i>Sellers</i>	<i>Sellers</i>	<i>Sellers</i>	<i>Consumers</i>	<i>Consumers</i>
<i>Model</i>	Probit	Ordered probit	Probit	Probit	Probit
Observations	810	670	810	174	174
Num. of Groups	54	54	54	44	44
Wald chi2	43.30	60.33	71.07	34.17	47.41
Prob > chi2	0.0000	0.0000	0.0000	0.0019	0.0000

Random effect estimations. Column 4 and 5 consider only consumers who see in the markets both (at least) one product sold by a producer who paid a low wage and (at least) one product sold by a producer who paid a high wage
 *** p<.001, ** p<.01, * p<.5. See supplementary online materials - Appendix 1 - for a description of variables.