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Consumer Social Responsibility

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We investigate the emergence of socially responsible (SR) production through consumer decisions. Our experimental treatments vary market competitiveness and consumers' information on social responsibility in production. We show that—irrespective of consumers' information—SR production reduces monopolistic supplier's profit and is therefore unlikely to emerge. With supplier competition, SR production positively influences consumers' buying decisions and suppliers offering SR products achieve significantly higher profits, as long as their price is not too high. Our results yield valuable insights into the possibilities and limitations of promoting SR production through consumer behavior, and they provide evidence for positive effects of competition on moral behavior.

Data, as supplemental material, are available at https://doi.org/10.1287/mnsc.2015.2279.

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1. Introduction

Socially responsible (SR[1]) production is not a new topic. Poor working conditions and insufficient wages were already debated during times of industrial revolution more than a century ago. The new facet in today's discussion is that increased globalization and highly decentralized production processes have added more complexity to the problem. Recently, insufficient SR in production was prominently discussed when Apple Inc. was accused of poor working conditions in the factories of Foxconn leading to workers' suicides,[2] or when fires in garment factories in Pakistan and Bangladesh, that produced for Western companies, killed hundreds of workers.[3] "Fair" prices for coffee, cocoa, and bananas or the usage of child-labor in production (e.g., rugs, soccer balls, or cocoa; see Burke 2012) are recurrent discussions in recent decades. In reaction, the public as well as politicians call for stronger regulations on the producer side. But what about the other market side? Do consumers care about SR production, and, if so, do they try to influence the social dimension of production through their consumption decisions?

Stated preferences in questionnaires and hypothetical consumption decisions indicate that a substantial fraction of consumers would honor socially responsible or environmentally friendly production, even by paying higher prices (Carrigan and Attalla 2001, Devinney et al. 2010, Öberseder et al. 2011). In this light, the market for those goods seems relatively small. Is this a market failure or do consumers not put their money where their mouth is? Understanding the causes of this discrepancy is essential for efficiently using consumers' social responsibility in production.

The literature offers four predominant explanations for the differences between stated preferences and actual consumption decisions. One explanation lies in the *opaqueness of the production process*: consumers do not know whether the mark-up for SR products actually reaches the intended addressees or whether the money dissipates on the way (Balineau and Dufeu 2010, Enste et al. 2012). Eckhardt et al. (2010) conduct in-depth interviews across eight countries and offer three other (not mutually exclusive) explanations: *economic rationalization* (consumers want to get the most value for their money, regardless of their ethical beliefs), *institutional dependency* (consumers believe that institutions such as the government are responsible to ethically regulate what products can be sold), and finally *developmental realism* (consumers believe that some unethical behaviors on the part of corporations must exist in order for macro level economic development to occur).

Although this already helps shed light on the discrepancy between stated preferences and actual consumption behavior, the impact of each explanation and their possible interactions remain unclear. Consequently, Eckhardt et al. (2010) state that their study "reinforces the need for nonsurvey-based research to

[1] Depending on the context, we use SR for both "socially responsible" and "social responsibility."

[2] See, for example, *The Economist* (2010).

[3] See, for example, *The Economist* (2012).

understand nuanced consumer reactions and behaviors in ethical consumerism" (p. 427). Our study aims at filling this gap by examining small economies with both production and consumption decisions involving real monetary consequences under controlled conditions. Our setup allows for investigating the effects of various market characteristics on SR consumption decisions and the impact of their interactions. The novelty of our approach lies in analyzing SR consumption in a variety of relevant market settings by focusing on consumers as well as producers.

In our laboratory experiment, consumers and firms interact in a market. Firms offer a good with a fixed induced monetary value to the consumers. Next to the good's price, the only other attribute is the wage, which is paid to the firm's worker for producing the good. The wage is our proxy for SR. The experimental treatments vary this basic design in two (orthogonal) dimensions. One dimension varies the opaqueness of the SR in the production process, i.e., the availability and precision of the wage information to the consumer. In this dimension we have five different treatment variations. In the *Baseline* treatment consumers have no information on the worker's wage and are not able to acquire this information. In the *Full Info* treatment, the wage is fully transparent. Moreover, we conduct three treatments with an endogenous information transmission. In treatment *Choice* ex ante uninformed consumers choose whether they acquire information on the wage or whether they remain ignorant. This condition mirrors the situation of uninformed consumers that may surf the Web for detailed information about the firms' SR policies or may decide to remain ignorant. In treatment *Label* firms have the possibility to acquire a label that assures that the firm follows minimal standards in SR production, i.e., a minimum wage. Hence, in this treatment imperfect wage information can be transmitted by the firms. Finally, in treatment *Face*, workers can signal wage information to the consumers by showing their satisfaction with the wage to the consumers. This condition mirrors cases in which workers use mass media to call attention to their poor working conditions, as happened at Amazon or Foxconn, or stitch SOS notes in clothes, as reported to have happened at Primark. Our second treatment dimension studies how the competitiveness of the market influences consumers' SR behavior. We compare all five information treatments described above for a monopolistic supplier (*No Competition*) and for suppliers in Bertrand duopoly (*Competition*). By studying SR consumption decisions in the 10 treatment conditions (5 information $\times$ 2 competitiveness conditions), we are able to draw an elaborate picture on the determinants of consumer social responsibility. In the laboratory experiment, we cannot tackle the explanation of *developmental realism*. But we ask whether consumers indeed always go for the lowest price or whether they—and if so under which conditions—take the SR in the production into account (*economic realization*). Additionally, we ask whether consumers take responsibility for the kind of products on the market by banning products not produced in a socially responsible way, thus tackling the question of *institutional dependency*. Moreover, we can determine how the *opaqueness* of the information on SR and the way in which this information is transmitted influences consumption decisions and in which way these factors interact with the competitiveness of the market. By doing so, we provide the first study systematically varying conditions for consumer social responsibility.

Our findings are striking. In the absence of competition, consumers are predominantly interested in buying cheap and do not care for SR production, irrespective of the information on SR. Consequently, SR production significantly reduces the profit of monopolistic suppliers. This seems to indicate that with a monopolistic supplier the chances of consumer induced SR production are rather low. When suppliers compete, however, we find that consumers take SR in production as a decision criterion and go for the SR-produced good whenever the price premium for SR is not too high. Interestingly, not only full wage information, but also imperfect wage information (in treatment *Face*) or the possibility of acquiring wage information (in treatment *Choice*) suffices to achieve significantly higher wages than without any wage information. Accordingly, in competitive settings, suppliers with higher levels of SR even achieve significantly higher profits, as long their price is not higher. Our results exhibit a positive effect of competition on consumer social responsibility, but at the same time demonstrate that a regulatory focus on the producers is necessary to increase the overall level of SR in production.

2. Related Literature

To overcome the problem of nonincentivized questionnaire studies, several field experiments on consumption decisions study consumers' preferences for labeled products manipulating the supply side. Arnot et al. (2006), for example, manipulate the prices of fair-trade and conventional coffee in a university campus cafeteria and study the consumption behavior. Fair-trade-coffee demand in a U.S. grocery store is analyzed by Hainmueller et al. (2015). Hiscox et al. (2011) and Hiscox and Smyth (2011) analyze the effects of labels certifying fair working conditions on the sales of polo shirts on eBay, respectively, on candles, towels, and dolls in a store in New York. These studies conclude that there is a fraction of consumers

with rather low price sensitivity who are willing to pay for SR produced goods, whereas another fraction of consumers are very price sensitive. Auger et al. (2008, 2010) experimentally examine how consumers value specific social attributes on different products. The former study measures the price premium consumers are willing to pay for ethical features on products (shoes and soap). The willingness to pay such a premium is much higher when there is no dilemma between the ethical and a "normal" product feature. The latter, a multicountry comparative study, shows that social attributes are more important in developed countries than in emerging ones. Tagbata and Lucie (2008) measure consumers' willingness to pay for organic and fair-trade products using the Becker-DeGroot-Marschak mechanism (Becker et al. 1964) with real consumption consequences. They show that for a specific cluster of consumers, labels increase consumers' willingness to pay. The advantage of these studies is that decisions with real monetary consequences close the attitude-behavior gap between questionnaires and real markets, but they only analyze one market side. Kraft et al. (2014) investigate consumers' willingness to pay (WTP) in monopolistic markets both with random noise in workers' wage information and in entirely randomly determined wages. They find that lower noise increases consumers WTP and that this interacts with the prosocial orientation of the consumers.

Laboratory experiments studying SR production in competitive markets address this issue. Rode et al. (2008) experimentally analyze tripolistic markets with ethical differentiation. While two firms set prices for a homogeneous good, the third producer bears an extra cost. For every unit sold the cost difference is donated to a non-governmental organization (NGO) fighting child labor. They find that many consumers are willing to pay higher prices to buy the product with the extra cost. Remarkably, the price premium is higher than the extra cost. Though the experiment has the advantage of modeling both market sides, producers cannot compete in social responsibility. Its degree is experimenter imposed and randomly attached to one of the three producers. This problem is partially solved by Etilé and Teyssier (2016) as well as Feicht et al. (2014) by endogenizing the level of the donation to an NGO. The treatments vary the credibility of signals on donations. Results show that SR behavior demands credible signals and offering SR products does not increase firms' profits. Also in these two experiments, however, SR is only indirectly attached to the production process by donations to a third party, not involved in production.

In the experiments mentioned so far, donations are made per unit sold. When consumers "punish" socially less-responsible producers by refusing to buy their products, they automatically reduce the social benefits. This may induce consumers to refuse from punishing non-SR producers. Similar effects are reported in Danz et al. (2012). They study the effect of minimal wage standards on consumers' SR. In their experimental duopoly market, a consumer buys up to 10 units of a good. The two producers pay a piece wage to their assigned worker for producing an otherwise identical good. Consumers often just split their demand equally between both firms in order to support both workers even when prices and wages differ.

Bartling et al. (2015) analyze SR in competitive markets where each producer can offer one unit of two possible products: a "normal" one and one with lower production cost that reduces the payoff of a third person. The visibility of the goods' impact on the third party is varied between treatments. SR is measured as the share of products without negative impact. In their experiment, producers offer the costly normal goods and consumers accept a price premium for these goods. Although increased firm competition (eight instead of six firms) lowers prices, SR behavior is not affected. Also in this experiment, the negative externality toward the third party only occurs when the good is traded. Bartling et al. (2015) interpret this as a negative externality that arises by consumption or as "production on demand." It is very likely, however, that consumers of soccer balls or shirts do not consider the situation in this way. The good is already produced, and by refusing to buy the offered good, a consumer may at best affect future working conditions.

With our design, we aim at closing important gaps in the literature on SR production by combining the following characteristics: First, we study both market sides (consumers and producers) in an experimental market with real monetary consequences. Second, the production process is transparent and there is no uncertainty as to who is affected by SR production. Third, by affecting another participant, the SR is directly connected to the production process, independent of whether or not the good is actually traded. This implies that workers cannot be used as a "hostage," as they receive their wage irrespective of the good being sold. Consumers can only honor or punish the managers with their purchase decisions.

3. The Market Model

In our experiment, we study a simple market environment. Firms offer a good on the market, and consumers may purchase at most one unit of the good. Each firm has one manager and one worker. Each manager determines the wage $w \in [0, 1, \ldots, 30]$ of the worker and the price $p \in [0, 1, \ldots, 30]$ of the good. Managers can neither condition the wage on sales nor

price discriminate between consumers. The worker receives the wage and produces the units of the good at zero cost. Consumers' valuation of the good is 30. Thus, trade generates a surplus of 30 and payoffs are as follows:

$$\Pi_{Manager} = -w + p \cdot \text{number of units sold}, \quad (1)$$

$$\Pi_{Worker} = +w, \quad (2)$$

$$\Pi_{Consumer} = \begin{cases} 30-p & \text{if consumer buys one unit of the good} \\ 0 & \text{if consumer does not buy one unit of the good.} \end{cases} \quad (3)$$

The wage paid to the worker will be our proxy for SR in production. To serve our research focus, we vary the competition environment as well as the information on the SR of production.

3.1. The Competition Environments

We study two competition environments. The *noncompetitive market* is a bilateral monopoly, consisting of one firm and one consumer. The *competitive market* is a Bertrand duopoly with two firms and two consumers, where each firm may serve both consumers. First, both firms decide simultaneously (on wage and price) and then consumers decide simultaneously on whether, and if so at which firm to buy. Focusing on these two conditions seems appealing both from a theoretical and an applied perspective. Under standard preferences these two environments yield extreme predictions: whereas in monopoly the firms receive the entire gains from trade, the consumers have the market power in duopoly. In practice, some of the goods in the focus of SR production (like trendy smart phones or fashionable sneakers) seem to be produced in monopoly-like situations, whereas other products (like coffee or basic shirts) seem to be produced in Bertrand-like markets. Moreover, the consequences resulting from "punishing" a non-SR producer are different for the consumer. Whereas in monopoly the consumer can only punish by not buying at all, resulting in zero payoff; in duopoly the consumer may just buy at the other firm.

3.2. The Information on the SR of Production

In addition to varying the competitiveness of the market environment, we vary the observability of the social responsibility of production (i.e., the worker's wage) in the following ways:

Baseline (*No Info*). The worker's wage is private information of the manager and the worker of the firm. Neither the consumer nor the other firm (in duopoly) are or can be informed of the wage.

Full Info. The consumers are fully informed about the wage(s) when making the buying decision.

Figure 1 **Scale of Worker Satisfaction**

In the other conditions information is subject to choice and in two conditions it is even imperfect.

Choice. The consumer is a priori not informed about the wage(s), but may acquire this information at no cost. This condition mirrors the situation of uninformed consumers who may surf the Web for details about the firms' SR policies or may decide to remain ignorant. Firms are not informed whether or not consumers acquire information.

Label. Prior to setting the wage, the firm decides whether or not to acquire a label (in duopoly both firms decide simultaneously). A firm acquiring a label agrees to pay at least an exogenously defined minimum wage of $w_{\min}$ to the worker. The consumers receive the information on whether or not a firm has a label together with the firm's price for the good. Thus, the label signals that the firm is following a minimum requirement, but does not reveal the exact wage of the worker. This condition mirrors the case of SR labels. To reflect the costs of certification, acquiring a label incurs costs of c_{label} for the firm.[4]

Face. Each worker communicates satisfaction with the wage on a five-point scale by sending a face to the consumer(s) (see Figure 1). The consumers receive this information together with the price for the good. This condition mirrors cases in which workers may send imperfect signals; for example, by stating dissatisfaction with their poor working conditions or by airing testimonials of job satisfaction.[5] Firms are also informed about the workers' signals.

4. Theoretical Considerations on Consumer SR for Our Experimental Game

4.1. Stage Game Equilibria Under Selfish Preferences

Without competition, the stage game is strategically equivalent to an ultimatum game with a bystander. By setting wage and price, the manager makes a proposal (w, p) on how to divide the gains of trade (i.e., 30) between the three players. When the consumer accepts

[4] In the experiment, the minimum wage was set to 4 and the cost for acquiring a label was set to 1. It was determined such that the total cost of 5 for a label firm was (slightly) higher than the average voluntary wage payment observed in the no-competition *Baseline* treatment (which is 4.7).

[5] For the effects of employee testimonials, see, for example, Van Hoye and Lievens (2007) and Walker et al. (2009).

(buys), the 30 points are divided as follows: the manager gets $p - w$, the worker gets w, and the consumer gets $30 - p$. When the consumer rejects, the manager receives $-w$, the worker receives w, and the consumer receives 0. Under common knowledge of selfish preferences, a profit maximizing consumer just considers p, since the wage w does not influence the profit. The consumer accepts any (w, p) with $p < 30$ and is indifferent between accepting and rejecting $p = 30$. The manager's best response to the consumer's behavior is to charge the highest price that is accepted by the consumer and to pay a wage of zero. Thus, we derive two subgame perfect Nash equilibria in pure strategies: (1) the manager proposes $(w = 0, p = 30)$ and the consumer accepts all manager proposals and (2) the manager proposes $(w = 0, p = 30 - \varepsilon)$ and the consumer accepts all offers with $p \leq 30 - \varepsilon$, where $\varepsilon > 0$ is the smallest money unit (which is 1 in our experimental setting). Hence, the manager has the market power to receive (almost) the entire rent.

Under competition, each firm may serve both consumers. When prices differ, selfish consumers buy the cheaper good. If both firms set the same price, assume that consumers randomly choose where to buy. Again, selfish consumers do not care for wages, so that selfish managers pay zero wages. Then there is a subgame perfect Nash equilibrium with $p = w = 0$ for both firms and consumers that always buy. This results in zero profits for managers and workers and the entire market surplus going to consumers. Since our design only allows for integer prices, there are two additional subgame perfect equilibria, one where both firms set $(w = 0, p = 1)$ and another where both firms set $(w = 0, p = 2)$.[6]

Hypothesis 1 (Nonselfish Preferences).

No competition. *With selfish preferences the manager pays zero wage, sets the maximal price, and the consumer buys. The manager earns the entire market rent, whereas the worker and the consumer make zero profits.*

Competition. *Under selfish preferences, managers pay zero wages, set the minimal price, and the consumers buy the cheaper good. The consumers earn all the market rent, whereas managers and workers make zero profits.*

In the experiment, we repeat the stage game for 30 periods. Under common knowledge of selfish preferences this does not change the results. Backward induction predicts equilibrium behavior in every period.

[6] In equilibrium, $p = 1$ occurs, since any deviation (decreasing the price to zero or increasing the price) would reduce the deviating manager's expected profit from one to zero. If both managers charge a price of $p = 2$, they both receive an expected profit of 2. A unilateral price increase is not profitable because it would lead to a profit of zero. A unilateral price decrease to $p = 1$ does not increase the deviating manager's profit, but keeps it at two.

Related experiments that also use a market framing (Rode et al. 2008, Feicht et al. 2014, Bartling et al. 2015, Etilé and Teyssier 2016) have shown that subjects' allocation behavior is not as extreme as expected under common knowledge of selfish preferences and that deviations may be explained by social preferences. The next section will discuss the predictions of prominent social preference theories for our setups.

4.2. Stage Game Equilibria Under Nonselfish Preferences

Devinney et al. (2006) understand consumer social responsibility as "one component of the complex consumer decision-making process" and define it as "the conscious and deliberate choice to make certain consumption choices based on personal and moral beliefs" (p. 32). According to their definition, it may show up as the "expressed activity in terms of purchasing or nonpurchasing behavior" (p. 32). In our simple experimental model, we strongly reduced the complexity of the consumer decision-making process. In case of monopoly, the consumer's purchasing decision determines the payoff allocation between the three players. Given the manager's decision on wage and price (w, p), the consumer decides between $(w, p - w, 30 - p)$ (in case of buying) and $(w, -w, 0)$ (in case of not buying) as payoffs to the worker, the manager, and the consumer, respectively.[7] This decision situation is close to the Güth and van Damme (1998) ultimatum game with a bystander; however, with the difference that in their game a rejection leads to zero payoffs for all three players. Güth and van Damme observe very low bystander payoffs, low rejection rates, and no single rejection that can be attributed to a low bystander share.

Bolton and Ockenfels (1998) show that the low bystander payoffs in Güth and van Damme (1998) are in line with the inequality aversion model ERC (equity, reciprocity, and competition), introduced in Bolton and Ockenfels (2000). This model assumes that individuals are motivated by their absolute and their relative monetary payoff within the group. Applied to our situation, the ERC model would predict the worker's wage not to be relevant for the consumer's purchasing decision, since solely the price determines the consumer's absolute as well as relative payoff. The wage just distributes payoff between manager and worker, but changes neither the absolute nor the relative payoff of the consumer.

Another prominent model of allocative preferences is the inequity aversion model by Fehr and Schmidt

[7] Notice, that the worker's wage is not influenced by the purchasing decision. This is meant to reflect the fact that the good is already produced and an immediate benefit to the worker cannot be the reason for acceptance or rejection (as, e.g., in Bartling et al. 2015).

(1999). In this model, a player receives utility from monetary payoff and disutility from advantageous as well as disadvantageous payoff differences to each of the other players. In particular, this means that the consumer also compares the payoff to the worker and may gain disutility from too large deviations between the two payoffs. In §A2 of the online appendix (available as supplemental material at https://doi.org/10.1287/mnsc.2015.2279), we calculate the stage game equilibria depending on different levels of inequity aversion. We show, that for low inequity averse consumers, Fehr-Schmidt equilibria still specify a wage of zero. However, if consumers are highly inequity averse, positive wages occur in equilibrium, even when the manager is selfish.

Consumer social responsibility may not only come as distributional preferences between the participants. The consumer's "personal and moral beliefs" may also address more general aspects, like an aversion to having certain members of society with very low payoffs or a concern for the overall payoff of all participants. Charness and Rabin (2002) include these concerns in their model of quasi-maximin preferences, which describes that a participant is motivated by their own monetary payoff, but also by the lowest payoff in the group and the sum of all payoffs. When facing a given proposal (w, p), a consumer would never reject, since this would result in a personal payoff of zero, a minimum payoff of $-w$, and a joint payoff of zero. Thus, rejecting would yield an overall negative value, whereas accepting a given proposal would lead to a positive utility. Hence, a consumer with quasi-maximin preferences would never reject an offer, irrespective of the wage.

With competition, the strategic situation gains complexity. Nonetheless, consumers with inequality aversion as modelled in ERC (Bolton and Ockenfels 2000) would only be concerned about the price and not the workers' wage, as the wage does not influence the consumer's relative payoff standing. Consumers with Fehr Schmidt preferences, in contrast, take the wage into account. They are concerned about inequity not only to the workers, but to all market participants, including the managers and the other consumer. Yet, in the duopoly case, we find the same equilibrium outcomes as under selfish preferences, even if some or all market participants are inequity averse (see §A2 in the online appendix for a more detailed discussion). Consumers with quasi-maximin preferences (Charness and Rabin 2002) may accept the more expensive offer, driven by a concern for the manager of the more expensive firm and not by a concern for the worker. A manager's loss of $-w$, which is the minimal payoff among all participants in case both consumers buy at the other firm, strongly reduces the consumer's utility.

Hypothesis 2 (Nonselfish Preferences).

No competition. *Without competition, models of other-regarding preferences leave little room for consumers rejecting offers because of too low wages. Whereas the models of Bolton and Ockenfels* (2000) *and Charness and Rabin* (2002) *exclude refusals to buy because of too low wages, consumers with Fehr and Schmidt* (1999) *preferences may forgo "extreme" allocations, in particular those with a too high price that do not come with a high wage, only if they are highly inequity averse.*

Competition. *With competition, equilibrium outcomes are as under selfish preferences, even if some or all market participants are inequity averse* (*Fehr and Schmidt* 1999). *Following the Charness and Rabin* (2002) *model, consumers may indeed buy the more expensive good; however, they are not only motivated by concerns for the workers, but also for the managers.*

The considerations leading to Hypotheses 1 and 2 have shown that in our stage game we cannot expect consumer social responsibility in the sense of banning products with low wages on large grounds. In the experiment, we repeat the stage game for 30 periods. SR consumers, who aim at positively influencing the wage in the long run, may accept instantaneous losses in payoff or utility to achieve their long-term goal. In the repeated setting, managers may learn the demanded level of SR and consumers may signal their preferences through their consumption behavior. Obviously, this signaling and learning process may depend on the precision of the provided wage information, discussed in the next section.

4.3. Information Treatment Effects

In the analyses so far, we have focused on full wage information. An important aspect of our study is that the treatments vary the wage information, inspired by market settings in which consumer SR is an issue. In this section, we discuss how these variations in information may influence behavior.

In the *Baseline* treatment the price of the good is the only available characteristic. Managers know that consumers cannot condition their purchase on wages and thus do not condition their wage decision on potential consumer preferences. Consequently, we expect wages to be rather low. Hence, any observed positive wages in *Baseline* should be attributed to inequity aversion, altruism, or warm glow (Andreoni 1989) of managers rather than SR concerns of consumers.

In all other treatments, more (potentially implicit) information is available. Consumers intending to include SR information in their consumption decision should value any piece of information they can achieve about the worker's wage. In *Full Info*, SR consumers may not only base their consumption decision on the price but also on the worker's

wage. Anticipating this, managers will pay higher wages to workers than in *Baseline*. In the *Choice* condition, a consumer may acquire the wage information at no cost. A consumer who includes workers' wage info into a consumption decision acquires this information. However, it has to be expected that not all consumers choose to acquire information. Recent experimental findings show that deliberate ignorance occurs in different environments (e.g., Dana et al. 2007, Conrads and Irlenbusch 2013, Grossman and van der Weele 2016) and suggests that consumers might prefer to not learn the wages. Managers anticipating this pay higher wages than in *Baseline*; however, consumers' possibility of remaining ignorant may lead to lower wages than in *Full Info*. In *Label* a manager who is intrinsically motivated to pay a wage of at least 4 may do so without acquiring a label. However, the label provides the opportunity of credibly signaling SR production. The signal is particularly strong, as the exogenously determined level "certifies" a sufficient SR level and thus removes any uncertainty of what is an appropriate wage level, which may be present in *Full Info*. If managers expect SR consumers to include whether or not the firm has a label into the consumption decision, they will acquire a label to increase their expected revenue if the fraction of SR consumers is sufficiently high. Thus, in *Label* we expect wages to be higher than in *Baseline*. In *Face* workers send signals about their satisfaction with the wage. Consumers know that these signals do not have to correlate with the actual wage and it may be that workers (mis-)use the signal to achieve an "excessive" wage. Experimental findings show, however, that subjects can be quite trustworthy even in situations where they can manipulate such information (e.g., Gneezy 2005, Cai and Wang 2006). Yet, since there is no objective scale to convert wage into satisfaction level, and vice versa, the satisfaction level might be a weaker SR indicator than the wage in *Full Info*. Managers anticipate this and pay wages lower than *Full Info*.

Hypothesis 3 (Information Treatment Effects). *Wages are highest in* Full Info *and lowest in* Baseline. *Wages in* Choice, Label, *and* Face *are higher than in* Baseline *and lower than in* Full Info.

5. Experimental Implementation

The orthogonal variation of the two competition and the five information conditions establishes our 10 experimental treatments. To account for learning effects, the stage-game market is repeated for 30 periods. Every market consists of fixed groups of three (no competition) or six (competition) subjects. Roles and firm composition remain identical throughout the entire experiment. In the duopoly market, firms are distinguished by assigned letters A and B and consumers by assigned letters X and Y. Table 1 provides an overview over the number of independent observations and the number of subjects in each treatment. We strived for 10 independent observations in each treatment. Because of no-shows, we collected only nine in some treatments. For manager competition in *Label*, we decided to double the number of independent observations to allow for a sufficient number of observations for the endogenously occurring choices for having or not having a label. In total, 492 subjects took part in the experiment.

Table 1 **Number of Independent Observations (and Subjects) in Each of the Treatments**

	Baseline	Full Info	Label	Choice	Face
No competition	9 (27)	9 (27)	10 (30)	10 (30)	10 (30)
Competition	9 (54)	9 (54)	20 (120)	10 (60)	10 (60)

At the end of the experiment, subjects answered a questionnaire concerning their attitude toward SR.[8] The main body of the questionnaire uses questions adapted from the Eurobarometer 47.0 (Melich 2000). We complemented those questions with specific questions concerning our experimental setup. The different sessions of the experiment were conducted between November 2012 and February 2014 at the Cologne Laboratory for Economic Research (CLER). Interaction was computerized using the software z-Tree (Fischbacher 2007). Participants were recruited with ORSEE (Greiner 2004). At the beginning of the experiment written instructions[9] were distributed and read aloud. Sessions lasted between 75 and 105 minutes. Subjects received an initial endowment of 40 points and additional 5 points at the beginning of every round.[10] After the experiment, all points were converted into Euros and paid in cash with an exchange rate of 40 points for 1 Euro and an additional show-up fee of 2.50€. Average total earnings are 13.29€ in the monopoly (with a minimum of 6.03€ and a maximum of 22.23€) and 14.61€ in the duopoly sessions (with a minimum of 3.53€ and a maximum of 28.25€).

6. Results

This section presents the results of our experiment. In §6.1 we analyze the treatment effects on wages, our

[8] See §A3 in the online appendix for the questions asked and the statistical analysis of the answers.

[9] English translations can be found in §A4 of the online appendix.

[10] The initial endowment and the roundly endowment could cover potential losses, which are possible for subjects in the roles of managers (from not trading or trading at prices lower than costs). It never happened that a subject had a negative account at any point in time.

Table 2 Aggregated Market Outcomes

	Baseline	Full Info	Choice	Label	Face
No competition					
Wage paid	4.70 (1.02)	7.39 (1.49)	5.55 (0.60)	2.39 (0.66)	6.96 (1.05)
Wage in accepted offers	4.69 (1.11)	7.25 (1.47)	5.52 (0.65)	2.38 (0.68)	6.70 (1.10)
Wage in rejected offers	6.59 (1.66)	8.94 (2.07)	5.95 (0.67)	2.34 (0.62)	8.03 (0.92)
Price offered	19.21 (0.61)	19.27 (1.36)	19.29 (1.03)	18.37 (0.82)	19.39 (0.78)
Price in accepted offers	18.71 (0.69)	18.88 (1.40)	18.62 (1.12)	17.86 (0.88)	18.89 (0.79)
Price in rejected offers	23.46 (1.07)	22.02 (1.09)	20.92 (0.77)	20.49 (0.99)	21.73 (0.81)
Units sold per firm	0.89 (0.02)	0.82 (0.05)	0.74 (0.04)	0.79 (0.03)	0.81 (0.04)
Payoff manager	11.96 (1.58)	7.96 (1.41)	8.38 (1.44)	11.37 (1.33)	8.31 (1.03)
Payoff consumer	10.00 (0.61)	9.31 (1.43)	8.37 (0.88)	9.42 (0.60)	9.03 (0.78)
Competition					
Wage paid	2.86 (0.38)	5.34 (0.92)	5.46 (0.59)	3.29 (0.46)	6.06 (0.71)
Wage in accepted offers	2.71 (0.43)	5.48 (0.99)	5.65 (0.62)	3.41 (0.50)	6.13(0.71)
Wage in rejected offers	3.06 (0.40)	5.18 (0.83)	5.16 (0.60)	3.12 (0.43)	5.94 (0.71)
Price offered	11.12 (1.20)	12.41 (1.32)	9.89 (1.37)	11.04 (0.74)	8.08 (0.99)
Price in accepted offers	9.45 (1.23)	11.12 (1.63)	9.28 (1.37)	9.95 (0.71)	7.27 (0.94)
Price in rejected offers	13.02 (1.19)	14.49 (0.93)	11.04 (1.47)	12.72 (0.86)	9.36 (1.02)
Units sold per firm	0.97 (0.02)	0.99 (0.01)	0.99 (0.01)	0.99 (0.01)	1.00 (0.00)
Payoff manager	6.13 (1.27)	5.56 (1.27)	3.66 (1.22)	5.79 (0.54)	1.27 (0.82)
Payoff consumer	20.02 (1.31)	18.82 (1.61)	20.68 (1.36)	19.95 (0.74)	22.62 (0.94)

Notes. The table reports averages and standard errors (in parentheses) based on independent observations (see Table 1). Rejected offers are offers where no consumer buys and accepted offers are those where at least one consumer buys. A more detailed overview over prices and payoffs is provided in Figure 6 and Tables 9 and 11–13 in §A1 of the online appendix.

proxy for SR production. We study consumers' buying decisions in §6.2 to ask whether consumer behavior makes SR production profitable for firms in §6.3. In §6.4, we connect subjects' behavior in the experiment to their willingness to pay for SR products stated in the questionnaire. In what follows, all comparisons between treatments use the Mann-Whitney *u*-test (MWT) and all comparisons within treatments use the Wilcoxon signed-rank test (WSR) on the basis of the independent observations (see Table 1), both two-sided. Table 2 provides an overview over the aggregated market outcomes.

6.1. The Influence of Information and Competition on SR Production

On average, managers pay positive wages in each information treatment of both competition conditions. Although in the no-competition treatments the average wage in *Baseline* (4.70) is lower than the average wages in *Full Info* (7.39), *Choice* (5.55), and *Face* (6.96), they are not statistically different in nonparametric tests (see Table 10 in §A1 of the online appendix). Only in *Label* (2.39) is the average wage significantly lower than in *Baseline* or any other treatment.[11] How can we explain this difference in the *Label* treatment? Managers choose the label in 42.0% of the cases. The possibility of acquiring a label seems to strongly separate managers into two groups: managers who acquire a label pay a wage of exactly 4 in 68.3% of the cases (average wage of 4.52), whereas managers without a label pay a wage of 0 in 78.7% of the cases (average wage of 1.67) (see Figure 3 in §A1 of the online appendix). Wages with a label are significantly higher than wages without a label ($p = 0.036$). Thus, the label seems to provide an anchor, signaling the "appropriate" wage and seems to crowd out any voluntary payment exceeding this benchmark. Managers not acquiring a label seem to feel "licensed" to pay nothing at all. The observed effect demonstrates a potential detrimental effect of minimum wages.

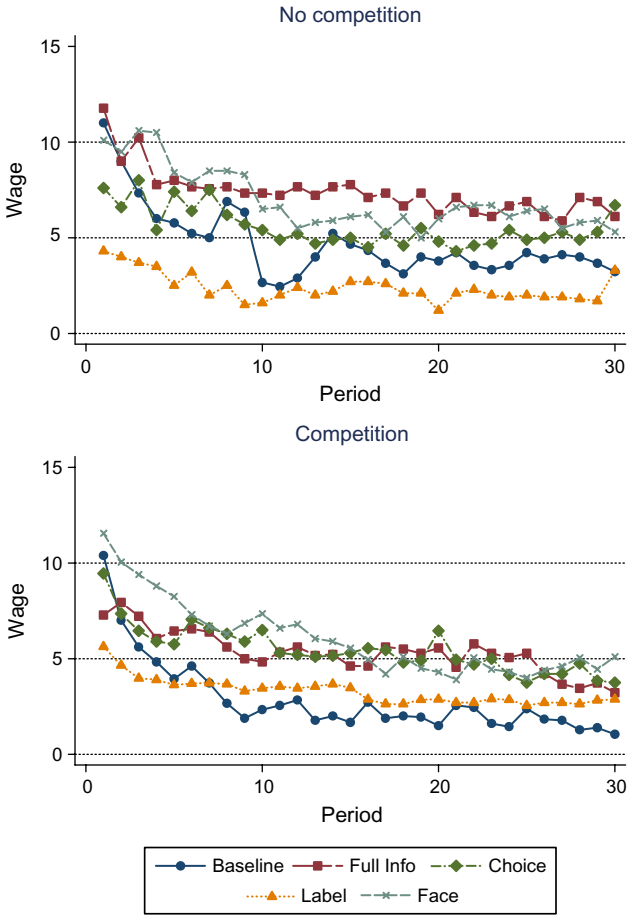
Figure 2 shows the development of the average wages over time and demonstrates that the wages in the no-competition treatments (except for *Choice*) slightly decrease over time (top panel).[12] We also find a negative time trend in average wages under competition (bottom panel).[13] To account for these

[11] In *Label*, there is an extra cost whenever the manager buys the label, which makes *Label* different than all other treatments. Even including the cost of buying the label does not change results. The average wage cost (i.e., wage plus label acquisition cost) of 2.81 in *Label* is still significantly lower than the average wages of the other treatments.

[12] Random-effects generalized least squares (GLS) regression of wage on period with robust standard errors clustered by manager ID, coefficient for period: *Baseline*: −0.143 ($p = 0.008$), *Full Info*: −0.104 ($p = 0.012$), *Choice*: −0.067 ($p = 0.260$), *Label*: −0.047 ($p = 0.036$), *Face:* −0.142 ($p = 0.054$).

[13] Random-effects GLS regression of wage on period with robust standard errors clustered by manager ID, coefficient for period: *Baseline*: −0.166 ($p = 0.000$), *Full Info*: −0.105 ($p = 0.021$), *Choice*: −0.116 ($p = 0.000$), *Label*: −0.065 ($p = 0.001$), *Face*: −0.192 ($p = 0.000$).

Figure 2 **(Color online) Average Wages per Treatment**



time trends, we will control for "period" in the later analyses.

With competition, wages vary across treatments: the average wages are highest in *Face* (6.06), *Choice* (5.46), and *Full Info* (5.34); significantly higher than in *Baseline* (2.86) and *Label* (3.29) (see Table 10 in §A1 of the online appendix).[14] In *Label*, we observe the same effect as in the no-competition setting. Managers choose a label in 57.6% of the cases. After acquiring the label, managers pay a wage of 4 in 82.8% of the cases (average wage of 5.15) and without a label managers pay a wage of 0 in 62.7% of the cases (average wage of 1.76; see Figure 4 in §A1 of the online appendix). Wages with a label are significantly higher than without a label ($p = 0.001$).

The positive wage effect observed in *Face* is remarkable (cf. Hypothesis 3). Although vulnerable for manipulations, the stated satisfaction level highly correlates to the wage (no competition: Spearman's rho = 0.642, $p < 0.001$; competition: Spearman's rho = 0.673, $p < 0.001$).[15] It seems that the direct communication between workers and consumers reduces the social distance (Hoffman et al. 1996, Bohnet and Frey 1999, Rankin 2006, Charness and Gneezy 2008) and triggers social concerns of the consumers for the workers (van Dijk and van Winden 1997, Malmendier and Schmidt 2012), which results in high wages for the workers. Moreover, explicitly showing the satisfaction may reduce the uncertainty of whether or not the wage is acceptable for the worker and thus reduces consumers' "moral wiggle room" (Dana et al. 2007).

Wages in the competition settings are not significantly different from the respective no-competition setting (see Table 10 in §A1 of the online appendix).

Result 1. In both competition conditions, we observe positive wages, in contrast to the predictions by purely selfish preferences (cf. Hypothesis 1). Without competition there are no information treatment effects on wages: in *Full Info*, *Choice*, and *Face* wages are not significantly higher than in *Baseline*. However, with competition, information significantly increases wages: in *Full Info*, *Choice*, and *Face* wages are significantly higher than in *Baseline*. Compared to the *Baseline*, the *Label* leads to significantly lower wages under no competition and to not significantly different wages under competition.

6.2. Consumers' Decision to Buy

6.2.1. The No-Competition Condition. Without competition, consumers have only two choices: accept the monopolist's offer (buy) or reject (do not buy). Consumers buy in roughly 80% of the cases (see *Units sold per firm* in Table 2). When do consumers refuse to buy? In each of the information treatments, the prices of the accepted offers are significantly lower than the prices of the rejected offers (see Table 2).[16] With the exception of *Baseline*, consumers may base their consumption decision not only on the price but also on the wage information available to them.

The regression presented in Table 3 tests how the different attributes of a good affect the consumers' propensity to buy. We use a conditional fixed-effects logistic regression to meet the panel structure of the data. The dependent variable is *Buy*, which equals 1 when the consumer accepts a monopolist's offer and 0 otherwise. Consumers may reject an offer to signal their dissatisfaction; for example, with the price being too high. Since the value of such a signal might be lower in later periods, we add the variable period

[14] Again, adding the costs of acquiring a label does not change the results. The average wage costs of 3.86 in *Label* is also not significantly different from the average wage in *Baseline*, but significantly lower than the average wages of the other treatments.

[15] Figure 5 in §A1 of the online appendix shows the average wage for each stated satisfaction level.

[16] WSR test on the difference between prices of accepted and rejected offers: *Baseline* $p = 0.012$, *Full Info* $p = 0.018$, *Choice* $p = 0.017$, *Label* $p = 0.005$, *Face* $p = 0.005$.

Table 3 Consumers' Propensity to Buy, No Competition

	Baseline	Full Info	Choice (info revealed)	Choice (all cases)	Label	Face
Price	−0.640*	−0.553***	−0.586***	−0.414***	−0.270***	−1.390***
	(0.348)	(0.135)	(0.122)	(0.159)	(0.062)	(0.348)
Wage		0.208	0.415***	0.141		
		(0.139)	(0.100)	(0.227)		
Label					1.303	
					(0.827)	
Satisfaction						0.354**
						(0.178)
Period	0.022	0.040	0.031	−0.003	0.030	0.017
	(0.033)	(0.044)	(0.066)	(0.057)	(0.039)	(0.043)
n	240	210	235	300	300	300
Log pseudo	−47.60	−69.71	−83.87	−120.84	−109.46	−64.94
Wald χ^2	4.35	91.92	54.09	13.66	22.82	38.22

Notes. Conditional fixed-effects logistic regression. Robust standard errors in parentheses, clustered by consumer ID. Dependent variable: Buy. In *Choice*, we include all cases, independent of whether or not the consumer revealed the wage to keep it comparable to *Full Info* where we cannot control whether or not the consumer actually looked at the wage.

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

to control for time effects. The regression shows the strong negative effect of the price on the consumers' propensity to buy. Strikingly, in *Full Info*, when consumers are perfectly informed about the worker's wage, the paid wage does not influence their purchasing decision. On these grounds, the fact that consumers reveal the wage information in 78.7% of the cases in *Choice* seems counterintuitive. However, disclosing the wage may have multiple motivations. It may be motivated by fairness concerns toward the worker, but may also be a means to receive information on the manager's payoff and thus be motivated by disadvantageous inequality aversion. Suppose a consumer is confronted with a relatively high price. Then the wage information is necessary to check if the high price (only) generates manager surplus or is used to pay a (high) wage. The responses to the final questionnaire[17] suggest two predominant motivations for revealing the price: 32% of the participants named "control for fair wages" as their reason for revealing the wage information, and 29% named "to check for the manager's payoff." The observation that there is no significant wage difference between accepted and rejected offers (5.52 versus 5.95, WRS: $p = 0.285$ overall and 5.28 versus 6.04, WSR: $p = 0.515$ for cases were consumers acquired information) indicates that the significant influence of the acquired wage info in *Choice* (cf. fourth column in Table 3) seems to stem from inequity aversion with respect to the manager, rather than from concerns for the worker. When we look at the aggregated treatment effect (i.e., pool the cases of acquired and not acquired wage information), there is no longer a significant influence of wage (cf. fifth column in Table 3). The lacking influence of the label choice in *Label* is also reflected in the nonparametric analyses. In the *Label* treatment there is no difference in the label choices for accepted and rejected offers (44.3% accepted versus 38.2% rejected, WSR: $p = 0.797$) and no difference in the average acceptance rate between offers with label and offers without label (69.9% with label versus 61.5% without label, WSR: $p = 0.779$). Only in treatment *Face* does the stated satisfaction influence consumers, although there is no significant difference in satisfaction between accepted and rejected offers (satisfaction in accepted offers = 2.89, satisfaction in rejected offers = 2.53, WSR: $p = 0.285$).

Result 2. Without competition, wages are positive, in contrast to the predictions by purely selfish preferences (cf. Hypothesis 1). However, the positive wages cannot be attributed to consumer behavior. As suggested by ERC (cf. Hypothesis 2), consumers predominantly care for the price. There are no indications, except for treatment *Face*, that SR (wage or wage indicators) affects consumers' decisions. Rejected offers are due to high prices and not due to low wages.

6.2.2. The Competition Condition. In duopoly, consumers may or may not buy, and when they buy, they can choose between two potentially different offers. In contrast to the monopoly, it almost never happens that consumers do not buy at all: they buy in about 99% of the cases (see Table 2). As in the cases of no competition, in each of the information treatments, the prices of the accepted offers are considerably and significantly lower than the prices

[17] In *Choice* subjects were asked "What do you think, why should consumers know the information about the wage?" Out of 30 free-form answers, 28 are categorized either as "check the manager profit" (8), "check for fair wages" (11), or "check for equality/fairness/payoffs of all three players" (9).

Table 4 Consumers' Buying Decision, Competition

	Baseline	Full Info	Choice	Label	Face
Price	−1.707***	−0.751***	−0.605***	−0.488**	−0.541***
	(0.529)	(0.229)	(0.129)	(0.200)	(0.129)
Wage		0.298***	0.395***		
		(0.093)	(0.066)		
Label				1.376***	
				(0.524)	
Satisfaction					0.584***
					(0.129)
N	1,044	1,070	1,132	2,368	1,198
Cases	522	535	566	1,184	599
Log pseudo	−139.50	−261.92	−298.13	−589.91	−302.13
Wald χ^2	15.96	13.57	59.63	10.85	38.64

Notes. Alternative-specific conditional logit model (McFadden's choice model) for the cases in which consumers buy. Robust standard errors in parentheses, clustered by consumer ID. Dependent variable: *Buy*. Case-specific variables (not reported): *Period*. In *Choice* only cases where consumer is fully informed are used, because only in these cases the consumer can fully compare both offers.

**$p < 0.05$; ***$p < 0.01$.

of the rejected offers (see Table 2).[18] To investigate whether and if so how consumers trade off their own payoff against the worker's wage in their purchasing decisions, we report an alternative-specific conditional logit model (McFadden 1973) for the cases in which consumers buy (see Table 4). The choice model reflects the specific situation that consumers accept one of two potentially different offers. We specify a case as a single decision of a single consumer in a period. Each case consists of two single observations (alternatives), which are the two firms' offers. Alternative-specific variables are the attributes of an offer, i.e., price and SR information. The dependent variable is *Buy*, which equals one for the accepted offer. As a case-specific variable, we include *Period*, which is not significant.[19]

The regressions in Table 4 show that in *Baseline* as well as in all information conditions the price has a highly significant negative influence. In all information treatments the paid wage (in *Full Info* and *Choice*[20]) or the imperfect information on the wage (in *Label* and *Face*) has a significant positive influence on consumer choices. However, in *Full Info* and *Choice* the negative effect of the price is by far stronger than the positive effect of the wage. In *Label*, having a label has a highly significant positive effect on consumers' propensity to accept an offer. In *Face* workers' satisfaction influences consumers' choice positively. Since price, label, and satisfaction are on different scales, they are not directly comparable.

Table 5 indicates how subjects trade off the price against worker's wage when the prices of the two firms differ. In all treatments, consumers predominantly buy at the firm with the lower price. Those firms pay a wage that is by 4 lower than the wage of the firm with the higher wage. Consumers rarely buy at the firm with the higher price. But if they do, they predominantly buy at the firm that pays the higher wage, and the wage difference is about 2.5. If both firms set the same price, the majority of consumers buy at the firm with the higher wage. Thus, it seems that consumers follow a lexicographic decision rule: the first priority is to buy cheap, but if prices do not differ too much, the worker's wage guides the decision.

Result 3. With competition, wages are positive, in contrast to Hypotheses 1 and 2. The price has a significant negative influence and the wage information has a significant positive influence on consumers' buying decisions. Consumers buy the more expensive good if it has a higher level of SR and the mark-up is not too high.

6.3. Is Socially Responsible Production Profitable?

The study of both market sides, consumers, and producers, allows for explicitly focusing on the drawbacks of consumer decisions on producers and analyzing whether consumer behavior makes SR production profitable. First, consider the monopoly case.

The regression presented in Table 6 has managers' profit as a dependent variable and shows that, except for *Full Info*, the wage has a (weakly) significant negative influence on managers' profit. Although, in *Face*,

[18] WSR test on the difference between prices of accepted and rejected offers: *Baseline* $p = 0.008$, *Full Info* $p = 0.021$, *Choice* $p = 0.0005$, *Label* $p < 0.001$, *Face* $p = 0.005$.

[19] *Period* and the constant term are insignificant in all treatments. This means that there is no propensity to prefer the first alternative (firm A) to the second (firm B) in general or over time.

[20] In *Choice* consumers disclose at least one wage in 95.8% of the cases and disclose both wages in 95.0% of the cases.

Table 5 Consumer Choices on Competition Markets with Different Prices

	Consumer buys at low price firm (LF)			Consumer buys at high price firm (HF)		
	(%)	LF higher SR (%)	Avg. price diff.	(%)	HF higher SR (%)	Avg. price diff.
Baseline	96.8		4.06	3.2		2.07
Full Info	82.8	28.6	4.82	17.2	94.2	2.43
Choice	77.0	31.6	3.40	23.0	92.9	2.89
Label	82.7	16.0	4.38	17.3	70.5	3.04
Face	72.2	30.6	3.39	27.8	78.7	1.99

Notes. The table shows consumer choices on markets with different prices: How often do they buy at the cheap or expensive firm, how often is this firm better in terms of social responsibility, and the price difference to the other firm?

Table 6 Managers' Profits, No Competition

	Full Info	Choice	Label	Face
Price	−0.667	−0.146	−0.177	−1.430***
	(0.562)	(0.293)	(0.199)	(0.361)
Wage	−0.529	−1.000*	−0.723*	−0.937***
	(0.436)	(0.509)	(0.372)	(0.098)
Period	0.106	0.031	0.050	0.198***
	(0.065)	(0.140)	(0.098)	(0.057)
Constant	23.089**	16.276***	15.575***	39.496***
	(8.973)	(4.393)	(3.953)	(7.081)
N	270	300	300	300
F ratio	14.88	4.77	2.43	301.75
R-squared	0.0543	0.0961	0.0593	0.2730

Notes. Fixed-effects (within) regression. Robust standard errors in parentheses, clustered by manager ID. Dependent variable: manager payoff.
*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

the stated satisfaction has a positive effect on consumers' propensity to buy (cf. Table 3), the higher wage costs to increase satisfaction are not covered by the increased propensity to sell.

For duopoly, Table 4 has shown that SR positively influences consumers' purchase decisions in all information conditions. The question is whether this suffices to make SR production profitable for managers. Since consumers in the competition condition almost always buy, not the absolute level of prices and SR but the differences between the two firms determines consumers' choices. Nine possible constellations of product differentiation on the duopoly market are possible: a firm may be lower, equal, or higher in price than the competitor and a firm may be lower, equal, or higher in SR than the competitor.[21] Table 14 in §A1 of the online appendix shows the average sales and the resulting payoff for the information treatments in duopoly.

In Table 7, we estimate the effects on the manager's payoff using a linear panel regression where the categories of price and SR differentiation are interacted as independent variables. The base category is the case of two homogeneous goods: both managers offer the same price and the same level of SR. All other categories represent a deviation from that case. The first line shows that offering a product with the same level of SR as the competitor, but at a lower price, significantly increases the manager's profit in all treatments. Not surprisingly, a higher price at the same level of SR as the competitor decreases the manager's profit (second line). The last three categories represent a positive product differentiation in SR. A manager can significantly increase her payoff by offering goods with a higher level of SR at a lower or equal price (compared to two identical goods). Under *Full Info*, a higher level of SR offered at a higher price significantly reduces profits. In the other treatments, when SR information is more indirect, the effect on manager profit is insignificant. Thus, consumer behavior not only results in higher sales for the firm with the higher level of SR, it may also result in higher profits.

Result 4. Monopolists lose profit by offering goods with increased SR, whereas this is not true under supplier competition. In all treatments, duopolists with the higher level of SR have significantly higher profits as long as the price is not higher. If the price is higher, a higher level of SR is only detrimental under *Full Info*.

6.4. Stated Preference and Actual Behavior

After the experiment, subjects answered a questionnaire with various questions on SR behavior. The questionnaire and the statistical analyses of the answers are provided in detail in §A3 of the online appendix. The questionnaire allows us to map the stated preferences with the actual actions in the experiment on an individual level. Specifically, we may ask whether those who state that they value SR in the questionnaire actually act in such a way

[21] SR is lower (equal, higher) if a manager pays a lower (equal, higher) wage than the competitor in *Full Info* and *Choice*. SR is lower (equal, higher) if a manager has lower (equal, higher) satisfied worker than the competitor in *Face*. In *Label*, the SR is higher (lower) if a manager has (no) label but the competitor does not (does) have one. The SR is equal if both firms have or do not have a label. Note, that the categories on SR are not directly comparable, since in *Full Info*, for example, a one-point-higher wage is sufficient to fall into the category "higher SR," whereas in *Label* this is not the case.

Table 7 Manager Profit for Different Cases of Price and SR Differences, Competition

	Full Info	Choice	Label	Face
Equal SR × Lower price	10.507***	7.258*	7.445***	4.687***
	(2.201)	(3.638)	(1.005)	(1.432)
Equal SR × Higher price	−9.747***	−8.156**	−8.860***	−4.527**
	(1.977)	(3.384)	(1.100)	(1.695)
Lower SR × Equal price	−6.841***	−3.761	−3.738***	−2.738**
	(2.112)	(2.867)	(1.285)	(1.163)
Lower SR × Lower price	4.614**	4.085	5.039***	3.377*
	(1.837)	(3.042)	(1.440)	(1.649)
Lower SR × Higher price	−7.742**	−5.415*	−8.711***	−8.242***
	(2.973)	(3.082)	(1.194)	(1.436)
Higher SR × Equal price	7.712***	5.401*	6.889***	4.434***
	(2.453)	(2.821)	(1.479)	(1.481)
Higher SR × Lower price	8.211***	6.948**	9.828***	8.560***
	(2.215)	(3.300)	(1.663)	(2.153)
Higher SR × Higher price	−5.968***	−4.124	−2.300	−1.387
	(2.032)	(3.008)	(1.570)	(1.745)
Period	−0.157*	−0.071	−0.097**	−0.035
	(0.084)	(0.055)	(0.047)	(0.055)
Constant	8.132***	4.530	7.172***	1.280
	(1.653)	(2.660)	(1.102)	(1.247)
N	540	600	1,200	600
F ratio	10.02	13.30	25.81	12.66
R-squared	0.3391	0.2577	0.3654	0.2509

Notes. Fixed-effects (within) regression. Robust standard errors in parentheses, clustered by manager ID. Dependent variable: manager payoff. The regression uses two categorical variables indicating Price and SR differences: SR is lower (equal, higher) if a manager pays a lower (equal, higher) wage than the competitor in *Full Info* and *Choice*. SR is lower (equal, higher) if a manager has lower (equal, higher) satisfied worker than the competitor in *Face*. In *Label*, the SR is higher (lower) if a manager has (no) Label but the competitor does not (does) have one. The SR is equal if both firms have or do not have a label.

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

in the experiment. The questionnaire contains the two questions "Would you be willing to pay a mark-up for convenience goods that have been produced under better social conditions than competing products?" and "Would you be willing to pay a mark-up for convenience goods that are more climate-friendly/more ecologically than competing products?" Subjects answer each question on the following five-point scale: 0 (I would not accept a premium), 1 (I would accept a premium of up to 10%), 2 (...up to 20%), 3 (...up to 30%), 4 (...more than 30%). The answers to the two questions are highly correlated (Spearman's rho $= 0.6742$, $p < 0.001$, $n = 492$). We take the sum of both answers as a subject's overall willingness to pay for SR (variable WTP with $0 \leq \text{WTP} \leq 8$).

The regression presented in Table 8 considers all instances in the experiment in which a consumer may choose between two products that differ in the SR level in the duopoly markets. In *Full Info* this means that they were produced under different wages, in *Label* it means that one product is produced by a labeled firm, and the other is not, and so forth. The dependent variable is the share of SR-products bought, i.e., the number of cases where a consumer buys the product with the higher level of SR divided by the number of cases where the two offers differ in the SR level.

Table 8 Purchase of and Willingness to Pay for SR Products

Rate of buying the product with the higher level of SR	
WTP	0.034*
	(0.019)
Constant	0.497***
	(0.067)
N	98
R^2	0.0415

Notes. Ordinary least squares regression. Robust standard errors in parentheses. Dependent variable: The rate of buying the product with the higher level of SR (if products differ). The regression considers all instances in which a consumer could choose between two products that differ in the SR level in the duopoly markets. This happened for 18 consumers in *Full Info*, 40 consumers in *Label*, 20 consumers in *Choice*, and 20 consumers in *Face*. This amounts to $N = 98$ cases.

*$p < 0.1$; ***$p < 0.01$.

The regression shows a weakly significant positive effect of the subject's stated WTP on subject's likelihood to buy the product that was produced more socially responsible. This means subjects' questionnaire responses are consistent with their experimental behavior: subjects who state to value SR in the questionnaire are actually more likely to act in an SR way as a participant in the experiment.

7. Conclusion

In this paper, we analyze the emergence of social responsibility in production through consumer behavior. In small laboratory economies, our experimental treatments vary the availability and opaqueness of the information on SR in the production process and the competitiveness on the supplier side of the market. We find that absent competition, consumers are predominantly interested in buying cheap and do not care for the SR in production, irrespective of the information on SR. Consequently, socially responsible production significantly reduces the profit of a monopolistic supplier. However, when suppliers compete, consumers take SR in production as a decision criterion, whenever the price premium for SR is not too high. Accordingly, in competitive settings, SR production is no longer detrimental for the producer.

Two aspects are particularly noteworthy. The first being the strong effect of the treatment *Face.* Here workers directly communicate with the consumers by showing their satisfaction with their wage. Although this is an imperfect information transmission that is highly vulnerable to strategic manipulations it turns out that this is highly effective by directly

addressing consumers' responsibility (cf. van Dijk and van Winden 1997, Malmendier and Schmidt 2012). Our second noteworthy finding is the profit enhancing effect of SR production under competition. When consumers face a monopolistic supplier, the costs of banning goods with low SR in production is very high. By refusing to buy, they forgo the gains from trade, and consumers as well as managers are left with zero or negative payoffs. If, however, an alternative product exists, consumers can ban non-SR products at lower personal costs. By purchasing the SR product, they may lose some fraction, but not their entire profit. In the experiment, consumers use this power. With competition, SR production significantly increases consumers' propensity to buy. With competition, SR production significantly increases consumers' propensity to buy, leading to an increase in sales. Moreover, a firm can significantly increase its profit if it offers a product with a higher level of SR than the competitor, as long as the price premium is not too high. Thus, SR can be used as a profit enhancing means in product differentiation. In this aspect, our results demonstrate a positive effect of competition on fostering consumer social responsibility. This is in line with Bartling et al. (2015) and demonstrates that market interaction does not lead to more immoral behavior per se (Falk and Szech 2013). Yet, at the same time, it becomes clear that a regulatory focus on the producers seems necessary to increase the overall level of SR in production.

Supplemental Material

Supplemental material to this paper is available at https://doi.org/10.1287/mnsc.2015.2279.

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