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Fairness in Markets and Market Experiments

Dirk Engelmann (Humboldt University Berlin)
Jana Friedrichsen (Humboldt University Berlin and DIW)
Dorothea Kübler (WZB and TU Berlin)

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Ludwig-Maximilians-Universität München | Humboldt-Universität zu Berlin
Spokesperson: Prof. Dr. Klaus M. Schmidt, University of Munich, 80539 Munich, Germany
+49 (89) 2180 3405 | info@rationality-and-competition.de

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Dirk Engelmann† Jana Friedrichsen‡ Dorothea Kübler§

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Abstract

Whether pro-social preferences identified in economic laboratories survive in natural market contexts is an important and contested issue. We investigate how fairness in a laboratory experiment framed explicitly as a market exchange relates to preferences for fair trade products before and after the market experiment. We find that the willingness to buy at a higher price when higher wages are paid to the worker correlates both with the choice for a fair trade product before the laboratory experiment and with whether the participants are willing to pay a positive fair trade premium, elicited at the end of the experiment. These results support the notion that fairness preferences as assessed in laboratory experiments capture preferences for fair behavior in comparable situations outside the laboratory.

JEL-codes: C91, D01, D91
Keywords: fairness, market experiments, external validity, fair trade

1 Introduction

Laboratory experiments are playing a vital role in reintroducing social preferences and fairness into economics. Starting in the early 2000s, experiments focusing on pro-sociality and fairness are being extended to market environments. It is observed that a market frame does not generally lead to fairness concerns being found irrelevant. A number of papers find that in market experiments a substantial share of consumers is willing to pay a premium if firms pay workers a higher wage or reduce negative externalities (Rode et al., 2008; Danz et al., 2012; Bartling et al., 2015; Pigors and Rockenbach, 2016).[1]

For the external validity of pro-social behavior observed in market experiments, it is pertinent whether it correlates with fair behavior in markets outside of the laboratory. Given the relevance and pervasiveness of market interactions, this constitutes an important case for the debate

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†Corresponding author. Humboldt-Universität zu Berlin; CERGE-EI, Prague; CESifo, Munich, dirk.engelmann@hu-berlin.de

‡DIW and Humboldt-Universität zu Berlin, jana.friedrichsen@hu-berlin.de

§WZB Social Science Center Berlin and Technical University Berlin, kuebler@wzb.eu

[1]While Falk and Szech (2013) argue that markets crowd out concerns for fairness, a different interpretation of their data is provided by Breyer and Weimann (2015).

whether concerns for fairness that are frequently observed in the laboratory (Fehr and Schmidt, 2006) generalize to actual field behavior in a meaningful way (Levitt and List, 2007; Camerer, 2015).

In this paper, we provide a direct test of the relationship between market behavior inside and outside the lab. We elicit choices for, and the willingness to pay for, a fair trade versus a standard product, then compare this with behavior in a market experiment. The market game is designed to resemble exactly the situation that motivates the fair trade movement: consumers have market power, firms compete, and workers receive only a very small share of the surplus in equilibrium. We employ a simplified version of the market experiment by Danz et al. (2012) that shares many features with the above-mentioned experiments on fairness in markets, such as Bertrand competition and externalities on workers who are participants in the experiment.

We investigate whether the willingness of consumers to pay a higher price if firms pay a higher wage in this experimental market correlates with two measures of fair behavior in natural markets. First, participants are classified with respect to their choice between a fair trade chocolate bar and a larger conventional chocolate bar. This choice of chocolate takes place outside of the lab a few days before the market experiment. It involves a tradeoff between the chocolate being produced and traded under fair trade standards and the size of the chocolate bar, thereby resembling everyday choices between fair trade and conventional products. Importantly, the choice is made before subjects participate in the market experiment. This first measure allows us to evaluate the correlation between actual fair trade choices and behavior in an abstract market experiment.

Our second measure yields a different estimate of the fairness preferences of consumers outside of the lab. We elicit the willingness to pay for both a bar of fair trade and a bar of conventional chocolate right after the market experiment. From the difference between the two, we derive the willingness to pay a fair trade premium. While the fair trade premium is elicited in the lab, it is linked to an actual physical product, thus affecting actual workers just like the purchase of fair trade or conventional chocolate in a store.

Levitt and List (2007) point to a number of important differences between lab experiments and behavior outside the lab in the realm of social preference experiments: participants in the lab know that they are being investigated by the researchers and their decisions may not remain anonymous; the context as well as the stakes matter for choices and often cannot be controlled perfectly by the experimenters; the participants are not the same in experiments and in the relevant natural contexts, plus the choices and time horizons are often restricted in an artificial manner in experiments. Given these criteria, our two measures of consumer fairness are complementary. Experimenter scrutiny is possibly felt less in the choice task before the experiment compared to the elicitation of the fair trade premium in the lab. Both tasks have in common that student participants are consumers, therefore a relevant group of people, and the stakes closely resemble those in real-life settings, with real chocolate bars used. Moreover, the advantage of the first task is that it is not influenced by the lab setting. On the other hand, the second task involves money to express the preferences and it is easier to implement than the first, which could make it valuable for future studies. Finally, and importantly, we compare choices between real consumption goods with choices in an experimental market that shares

important features with the real market, rather than correlating non-experimental choices to abstract and context-free experimental games with a somewhat arbitrary connection between the two. Such exercises may be part of the explanation for the mixed results so far (see Galizzi and Navarro-Martínez, 2017 for this argument and an overview of studies relating lab with field evidence on social preferences).

We find that the likelihood of consumers to buy from the firm that pays a higher wage and asks for a higher price is correlated at the individual level both with the likelihood to choose fair trade chocolate before the lab experiment and with the willingness to pay a positive fair trade premium elicited after the market experiment. It further correlates with positive attitudes toward fair trade and the stated frequency to buy fair trade products, as measured with a questionnaire at the end of the experiment. These results support the hypothesis that revealed fairness concerns in an abstract, though not neutrally framed, market experiment are indeed indicative of the willingness to pay for fair behavior of firms in natural markets. They also lend support to the claim that laboratory experiments assessing the determinants of fair behavior in experimental markets provide relevant insights into the determinants of fair behavior in the field.

We refrain from analyzing the behavior of subjects in the role of firms. The experiment inherently studies consumer behavior with the purchasing decision of the consumer in the experimental market closely resembling the fair trade choices that we analyze. The consumer faces the relatively straightforward decision whether to pay more in order for the worker to receive a higher wage, which clearly indicates concerns for the worker. Our design is not intended to, and is not well suited to, study fairness concerns of participants in the role of firms because firms act in a competitive environment. While consumers have strong market power, firms have only little. As a result, strategic concerns affect firm behavior.

Our paper is motivated by the controversy about the relevance of pro-social behavior in the lab for behavior in the field (Levitt and List, 2007; Camerer, 2015). Sports-card trading (List, 2006) is a prime example of the endeavor to link and compare the field and the lab. Other examples more closely related to issues of fairness include Fehr and Leibbrandt (2011) and Stoop et al. (2012) on cooperative behavior of fishermen when dealing with a common pool resource. A combination of field and lab-in-the-field experiments is used by Carlsson et al. (2014) to study whether cooperative behavior is stable at the level of the individual. They find strong evidence of such a correlation over time (a number of years) and over the different experimental formats for a non-student sample in Vietnam.

Previous research on external validity focuses on aspects of giving and helping behavior, for example, considering dictator game choices and charitable giving (Benz and Meier, 2008; Franzen and Pointner, 2013; Winking and Mizer, 2013; Stoop, 2014; Galizzi and Navarro-Martínez, 2017). While charitable giving is an important activity, market interactions take a larger share of most people's time and comprise a larger share of economic activity. Since we expect the external validity of lab experiments to depend on the exact context, studying the relevance of fairness in market experiments for the fairness in actual markets appears to be highly relevant.

In addition to linking behavior in the laboratory to actions outside of the lab, our paper also contributes to the literature on socially responsible or ethical purchases in experimental markets.

Rode et al. (2008) is the first to establish that experimental consumers are willing to pay a higher price for the ethically differentiated product involving a donation. Danz et al. (2012) confirm that a significant fraction of consumers are willing to pay a higher price to support higher wages for dependent workers. Pigors and Rockenbach (2016) find that in a monopoly market, socially responsible production (that is, higher wages and higher prices) does not pay for the firm as it is not rewarded by the consumers. However, it becomes profitable in an oligopoly setting.

Bartling et al. (2015) design an experiment to investigate the claim by Falk and Szech (2013) that markets erode moral behavior. In experiments conducted in Switzerland and in China, the study finds that consumers have a persistent preference for "clean" products (without negative externalities) and are willing to pay a higher price for them. Irlenbusch and Saxler (2015) design an experiment to distinguish between three properties of markets, namely diffusion of responsibility, social information, and market framing. They show that all three affect the fairness of subjects. Finally, moral behavior in individual tasks and in markets is affected in a similar way by institutional changes, such as the removal of anonymity, monetary incentives etc. (Kirchler et al., 2016).

A number of studies focus on the coupling of products with charitable donations. In Feicht et al. (2016), sellers in a Bertrand market can actively bundle their product with a charitable donation. Consumers are found to purchase from a firm with a higher credible donation only if price differences are negligible. In a related study by Soetevent et al. (2016) where the amount donated was less transparent (indicated as a percentage of the price of the good), considerable social behavior in markets is observed. If the charitable donation is high enough, participants are willing to pay higher prices than without the bundling, possibly because they overestimate the amount of money going to the charity. Finally, Etilé and Teyssier (2016) investigate how different certification technologies affect market efficiency when firms choose charitable donations to be bundled with their product. They find that market efficiency is enhanced only if the certification is performed by a third party.

We present our experimental design in the next section and the experimental results in Section 3. We conclude with a brief discussion.

2 Experimental design and procedures

The experiment consists of three parts. First, we derive a proxy for the participants' preference for fair trade chocolate after they have registered for the experiment, but before they come to the laboratory. Second, the subjects take part in a market game in the lab. Third, we elicit their willingness to pay for fair trade and conventional chocolate with an incentive compatible random price mechanism in order to derive the premium they are willing to pay for fair trade. Our main interest concerns the relation between fairness in the market experiment and the fair trade choice in the first part as well as the fair trade premium elicited in the third part of the experiment.

Part 1: Choice between fair trade and conventional chocolate

In the first part of the experiment, we offer subjects the choice between fair trade and conventional milk chocolate as an additional reward for coming to the experiment. Since fair trade chocolate is typically more expensive, we offered a choice between one (in half of the sessions two) slightly larger (125g) bar(s) of conventional chocolate and one standard size (100g) bar of fair trade chocolate. This was done via email. The email was sent out about two days before the experiment and had to be answered before the subjects came to the laboratory. The chocolate was distributed after the experiment. See Appendix A.1 for an English translation of the recruitment email.

Part 2: Market game in the laboratory

The second part of the experiment is based on a market game consisting of one consumer, two firms, and one worker. In the game, the consumer can buy up to 10 units of a fictitious homogeneous good and for each unit that she buys is redeemed with 20 points from the experimenter. Each firm is run by one manager and we refer to subjects in this role as firms. There is one worker who can produce up to 10 units of the good. The worker is an actual participant in the experiment, but has no choice to make. Having only one worker in each market who represents the workforce simplifies fair behavior for the consumer who can ignore horizontal equity concerns between workers.[2] Firm $i = 1, 2$ chooses a uniform price per unit $p_i \in [0, 40]$ and a wage $w_i \in [0, 40]$ per unit. It can sell up to 10 units, $n_i \leq 10$. Wages are paid only for units that are actually sold. Thus, the worker can receive a wage for up to 10 units and has no costs.

If the consumer buys n_i units from firm i that has chosen the price p_i and wage w_i, she earns $20 - p_i$ for each unit, the firm makes a profit of $p_i - w_i$ and the worker earns w_i per unit bought at this firm. Total earnings of firm i are given by $n_i(p_i - w_i)$. Total earnings of the consumer are $n_1(20 - p_1) + n_2(20 - p_2)$. Total earnings of the worker are given by $n_1 w_1 + n_2 w_2$.

The timing of the game is as follows. After the two firms have made their choices, the consumer is informed about the price and the wage of each firm, (p_1, w_1) and (p_2, w_2). The consumer can buy any combination of integer amounts from the two firms up to 10 units, $n_1 + n_2 \leq 10$. At the end of each period, all market participants are informed about both firms' prices and wages as well as about the decision of the consumer and their earnings.

Let us consider the equilibria of the stage game when all agents maximize their payoffs. There are three subgame-perfect equilibria. In each of them, firm i sets $w_i = 0$. The equilibrium prices are $p_i = 0$, $p_i = 1$, or $p_i = 2$ for $i = 1, 2$. The consumer buys 10 units from the firm with the lower price as long as $\min(p_1, p_2) < 20$, which always holds on the equilibrium path.[3] If both firms choose the same price (< 20), the consumer buys 10 units, split in an arbitrary way between the firms. Note that, in equilibrium, almost the entire surplus goes to the consumer.[4]

[2] Complex fairness concerns are studied by Danz et al. (2012) where each firm has its own worker.

[3] Off the equilibrium path, the consumer buys nothing if $\min(p_1, p_2) > 20$ for both firms and any number of units if $\min(p_1, p_2) = 20$.

[4] As the stage game has three equilibria with $p_i = 0$, $p_i = 1$ or $p_i = 2$, collusive equilibria of the repeated game exist due to the possibility to punish deviations. However, we do not find evidence of collusive firm behavior. Moreover, all equilibria involve wages equal to zero. A selfish consumer does not want to pay more for a higher wage and, thus, a (selfish but collusive) firm has no reason to pay higher wages.

In contrast, the payoffs are split equally among all four market participants if both firms choose $p_i = 15$ and $w_i = 5$ and the consumer buys five units from each of the firms. In this case, each participant earns 50 points. Therefore, we refer to these values as the "fair" price and wage, respectively.

The market game has the property that as long as the consumer buys 10 units, the total earnings in the market are constant. In particular, it does not matter for the total earnings from which firms, and at what prices, the consumer purchases the units. Thus, we can study fairness concerns of consumers toward workers that are not confounded with efficiency concerns.[5]

The market game was repeated 20 times with fixed groups of four subjects, and subjects kept their role of firm, worker, or consumer throughout the entire market game. The payoffs in all 20 rounds were added to determine the total payment in this part of the experiment. The exchange rate was 100 points for 1 Euro. In addition, subjects received a show-up fee of 5 Euro that was added to their earnings.

Part 3: Elicitation of fair trade premium

The third part of the experiment yields a measure of the premium that participants are willing to pay for fair trade. From each participant, we elicit his or her willingness-to-pay (between €0-2) for both fair trade and conventional dark chocolate (WTP_{fair} and WTP_{conv}) by relying on a random price mechanism (Becker et al., 1964). The participants were asked to state a price between 0 and 2 Euros where any multiple of €0.01 was admissible. The random price was drawn from the uniform distribution of all integer multiples of €0.01 between 0 and 2 Euros. Subjects bought a chocolate bar if their stated WTP for the bar was at least as high as the random price and if this bar was randomly chosen to be sold in the experiment (which was true only for one of the two bars). If a subject bought the chocolate, he or she paid the random price, not the stated WTP. The mechanism is incentive compatible for both chocolate bars. The prices and relevant chocolate types that were drawn are in Table 7 of Appendix C.1.

Two treatments were conducted, one in which the WTPs were stated in private only and another where the participants stated their WTP publicly. The purpose of this variation was to study image concerns and the results are reported in Friedrichsen and Engelmann (2018). Their paper only uses the data from parts 1 and 3 but not from the market game in part 2. In the present paper, we pool the two treatments of part 3 and check the robustness of our results by running separate tests and regressions per treatment.[6]

[5]Note that consumers have no incentive to signal that they care about fairness if in fact they do not, unless they want to preserve a positive (self-)image. This is in contrast to other experiments that try to assess the fairness concerns of players such as ultimatum, trust, and gift-exchange games. In these games, signaling typically increases the extent of fair behavior in early periods of repeated games, because the presence of a small share of fair players (or the mere possibility that they exist) makes it possible for selfish players to mimic them. In our experiment, selfish consumers want to signal that they do *not* care about the worker but only about low prices.

[6]For the investigation of how behavior in the market game relates to the actual choices of one of the two chocolate bars in part 1, pooling the treatments is innocuous because the treatments only begin to differ after the market game. The main results of Friedrichsen and Engelmann (2018) are that the difference between the stated WTP for fair trade and for conventional chocolate was higher in the treatment with public choices than in the treatment with private choices, but this effect is driven exclusively by participants who chose the conventional chocolate in part 1.

We chose dark chocolate for part 3 of the experiment instead of milk chocolate as in the first part. Thereby, we try to limit the potential effect that the WTP is reduced for the second bar of the same kind of chocolate. Moreover, we offered unknown brands to prevent subjects from choosing a chocolate only because of its brand and not because of its fair trade label. From the two WTPs that we elicit, we infer the premium that an individual is willing to pay for the fair trade chocolate as $\text{WTP}_{\text{premium}} = \text{WTP}_{\text{fair}} - \text{WTP}_{\text{conv}}$.[7]

After entering their WTPs on the computer screen, subjects fill in an extensive questionnaire regarding their attitudes toward and knowledge about fair trade. The answers to this questionnaire allow us to confirm the validity of our proxies for a preference for fair trade.

Before turning to the results, three remarks regarding the design are in order. First, if fair trade products are perceived to be of higher quality, those who choose fair trade chocolate might not only be concerned with the production methods, but might also expect a quality difference. This could weaken the correlation with pro-social choices in the market experiment, thus potentially leading to us to underestimate the correlation between the behavior in the market game and the concerns for fair trade. Second, note that even if subjects choose fair trade chocolate or inflate their willingness to pay for fair trade in order to impress the experimenters, this should not influence our main measure of interest, namely the relationship of these choices with behavior in a computerized market experiment, unless such experimenter demand is systematically related to fair behavior in the market experiment. Finally, in our first sessions very few subjects chose the conventional chocolate. Therefore, we offered a choice between two bars of conventional chocolate and one bar of fair trade chocolate in the following sessions in order to make the conventional chocolate more attractive. For this reason, our classification into fair trade and conventional choosers is noisy. This should, however, only reduce any correlations that we find between choices in the experimental market and choices for one of the chocolate bars.

The experiment was computerized using zTree (Fischbacher, 2007) and took place in the experimental economics laboratory mLab at the University of Mannheim. Participants were recruited using ORSEE (Greiner, 2015). A translation of the experimental instructions is in Appendix A.2. We conducted eight sessions with 16-20 participants each, with a total of 144 participants. For part 2 of the experiment, each participant received a show-up fee of €5; for part 3, everyone received an additional endowment of €4. Average cash earnings were €18.63 in total, including the show-up fee and the endowment, subtracting the payments for the chocolate if applicable. In the market game in the first part of the experiment, participants in the role of firms earned €4.50 on average, those in the role of workers earned €6.31 on average, and those in the role of consumers earned €23.73 on average. In contrast to the equilibrium with common

[7] We note that while the random price mechanism (Becker et al., 1964) is incentive compatible in theory, experimental subjects may misconceive it (Plott and Zeiler, 2005; Cason and Plott, 2014). Such misconceptions arguably do not matter much in our experiment, because we are not concerned with measuring the WTP per se, but with checking whether it correlates with behavior in the experimental markets. Hence, misconceptions would only be problematic if they were systematically related to characteristics that drive fair behavior in the market experiment. Moreover, we only analyze the fair trade premium, which is the difference of two separately stated WTPs, such that any misconceptions resulting in level differences cancel out. Nevertheless, there is noise in the WTPs, as measured by the BDM and, consequently in the fair trade premium. To the extent that there is, we might underestimate the true correlation between the fair trade premium and the fairness preferences as exhibited in the market game. Partly due to this noise, though, we also focus on whether the fair trade premium is positive rather than on its absolute size.

knowledge of rationality and selfish players where the consumer earns at least €36, the workers earn €0 and the firms earn at most €2, we observe that the workers are better off than the firms, and both are better off than predicted while consumers do worse.[8]

Our dataset contains decisions from 121 subjects who chose between fair trade and conventional chocolate via email as described above and from 23 newly recruited subjects for whom the chocolate choice was collected in public during a recruitment day and not via email.[9] These 144 participants are matched in groups of four so that we have 36 independent groups of one consumer, one worker, and two firms each. Our main interest lies in the behavior of the 36 consumers, out of whom 13 had chosen the conventional chocolate bar before the experiment and 23 had chosen the fair trade chocolate bar. As each group plays the outlined market game for 20 periods, we have 20 observations per consumer or 720 observations at the market-period level. Among the consumers are six newly recruited participants who made their chocolate choice on the recruitment day. Two of these consumers had chosen the conventional chocolate and four the fair trade chocolate. The results are very similar if we restrict the analysis to those subjects only who made their choice between chocolate bars via email as shown in Appendix C.5.

3 Experimental results

Our first finding is that the two measures of fair trade preferences outside the laboratory, the chocolate choice made before the actual laboratory experiment and the willingness to pay a premium for fair trade as compared to conventional chocolate, are highly correlated with each other. The stated fair trade premium in part 3 of the experiment is significantly higher on average for those consumers who chose a fair trade chocolate (average of 30.83 cents, $SD = 44.96$ cents, $N = 23$) than for those who chose a conventional chocolate (average of 2.31 cents, $SD = 7.25$ cents, $N = 13$). This difference is highly significant in a two-sided t-test with unequal variances ($p = 0.0066$) and the distributions are also significantly different according to a Wilcoxon rank-sum test ($p = 0.0048$) with (*ex post* calculated) power of the mean comparison of 0.8143. Thus, the probability of not rejecting the null when it is false is below 20%. When we consider the discretized dummy *premium*, which takes on a value of 1 if the premium is strictly positive, we also observe a highly significant positive correlation with the chocolate choice (Spearman's $\rho = 0.4914$, $p = 0.0023$).

Let us now consider consumer behavior in the market game that subjects played in the laboratory. Given that the worker has no bargaining power in the market game, we call a consumer fair if she buys from the firm with the higher wage and higher price. Note that such behavior leads to a more equal distribution of payoffs on average, since the average wage offered was 3.33, which is below the fair wage of 5, and the average posted price was 8.98 as compared to the fair price of 15. We use the same two indicator measures of fair market behavior by consumers that were used by Danz et al. (2012): **BuySomeBW** (with BW standing for "by

[8] In Danz et al. (2012), where there is one worker per firm, the workers are worse off than the firms on average.

[9] We intended to recruit more subjects in this manner, but were not successful. Overall, 222 students received a chocolate bar on the recruitment day, but only 23 showed up to one of our experimental sessions. This explains the low number of subjects in this group. It also indicates that handing out chocolate to motivate students to sign up for experiments is not a very effective recruitment mechanism.

wage") is an indicator of the consumer purchasing at least one unit from the firm offering a higher wage and asking for a higher price, i.e., $w_i > w_j, p_i > p_j$ and $q_i > 0$, conditional on such a high-wage-high-price offer being available. **BuyMoreBW** is an indicator of the consumer purchasing more units at the high-wage-high-price firm (if existing), $w_i > w_j, p_i > p_j$ and $q_i > q_j$. We also employ a third, continuous measure where we calculate the fraction of units that a consumer bought at the high-price-high-wage firm, denoted by **FairShare**.[10] These three measures allow us to focus on the consumers' choices and to abstract from the absolute levels of wages and prices. Note that alternative measures, such as the Gini coefficient to measure equality of payoffs, are affected by firm behavior and, thus, less suited to isolate consumers' fairness concerns.

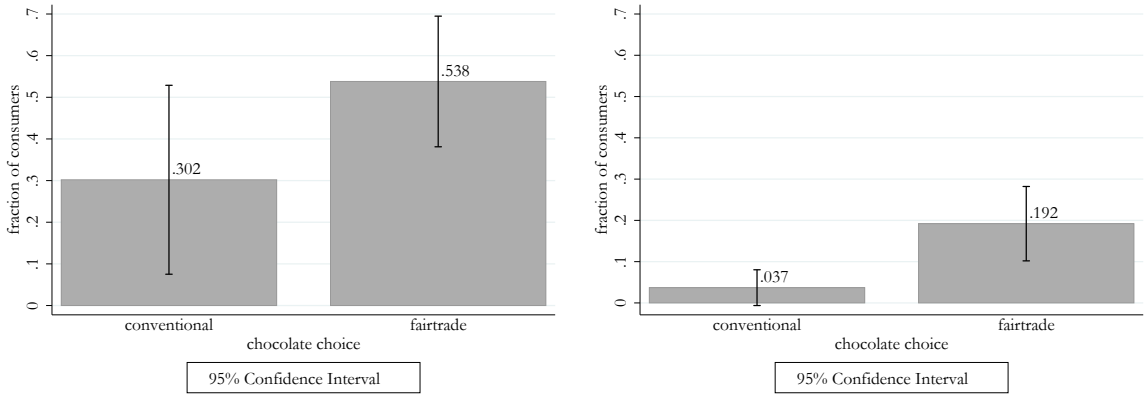
3.1 Fair trade choices and consumer decisions in experimental markets

Let us first consider whether fair consumer choices in the market experiment are related to the decisions for fair trade chocolate that we elicited in part 1 of the experiment before subjects came to the lab. We restrict attention to those instances in which fair behavior is possible, i.e., markets in which one of the two firms offers a higher wage and asks a higher price than its competitor. This is the case in slightly less than half of all interactions. The restriction leaves us with 319 observations, 110 with a consumer who chose conventional chocolate and 209 with a consumer who chose the fair trade chocolate in part 1. Every consumer faced such an instance at least three times, and the number of such instances does not differ with respect to the fair trade choice in part 1. In particular, consumers who had chosen the conventional chocolate faced a situation where a high-wage-high-price offer was available on average 8.46 times ($SD = 3.01$, min = 4, max = 15), and those who had chosen fair trade faced such a situation on average 9.09 times ($SD = 3.53$, min = 3, max = 16). The equality of the two averages cannot be rejected (two-sided t-test with unequal variances: $p = 0.5900$, also the distributions are not significantly different according to a Wilcoxon rank-sum test: $p = 0.6197$).

As shown in Figure 1, consumers who chose the fair trade chocolate in the first part are more likely to act fairly in the market experiment according to all three of our measures (the averages and standard deviations are collected in Table 8 in Appendix C.2). Based on these consumer level averages, we compare behavior between those who chose conventional or fair trade chocolate. While the number of observations appears to be relatively small when we aggregate the market data to one observation per consumer, i.e., 36 observations, the power of our tests is good for our main measure BuyMoreBW and is high enough for all measures, making a sign error unlikely (see Gelman and Carlin, 2014, for a discussion of errors in sign and magnitude of an effect).[11]

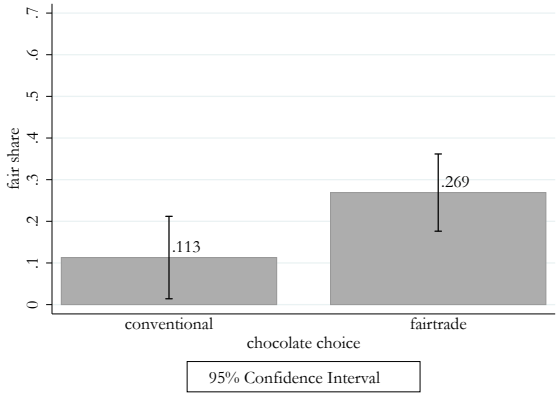
Those participants who chose fair trade chocolate in part 1 are almost twice as likely to buy some units at a high-wage-high-price firm, BuySomeBW, than those who chose conventional

[10] In Appendix C.3, we also consider two additional indicator measures for the sake of the robustness of our analysis, namely BuyMin50BW and BuyAllBW. BuyMin50BW is an indicator of the consumer purchasing at least as many units at the high-wage-high-price firm (if existing) as at the competitor, $w_i > w_j, p_i > p_j$ and $q_i \geq q_j$. The results are very similar to those with BuyMoreBW. However, we consider this variable a less suitable indicator of fair purchasing as the consumer does not *favor* the high-wage-high-price firm. BuyAllBW is an indicator that takes the value 1 if a consumer buys all units from the firm with the higher wage and price.



(a) Average of BuySomeBW.

(b) Average of BuyMoreBW.



(c) Average of FairShare.

Figure 1: Differences of fair purchasing behavior by chocolate choice. $N = 36$, 13 conventional choosers, 23 fair trade choosers. The y-axis displays the average of the respective variable over all consumers, where the variable has been averaged at the consumer level first, taking into account all situations with a high-wage-high-price firm.

chocolate (54% compared to 30%). However, the variation is relatively large and this difference is only marginally significant in a two-sided t-test with unequal variances ($p = 0.0789$) and the difference between the distribution is insignificant according to a Wilcoxon rank-sum test ($p = 0.1105$). When we consider the more stringent measure of fair purchasing, BuyMoreBW, we find larger differences. Consumers who previously chose the fair trade chocolate are, on average, 5 times as likely to purchase more units from the high-wage-high-price firm than are those consumers who had chosen conventional chocolate (about 20% compared to about 4%). This difference is statistically significant in a two-sided t-test with unequal variances ($p = 0.0028$) and, additionally, the distributions differ according to a Wilcoxon rank-sum test ($p = 0.0153$). Finally,

Although not statistically significant, the results are in line with those presented in the main text. We attribute the absence of a significant effect to the lack of variation in BuyAllBW.

[11] When we split the sample according to the *ex ante* choice of a chocolate bar, the power is highest for the comparison of means of BuyMoreBW with 0.88, indicating that the probability of making a type-2 error is 12%. For the other measures, it is lower with 0.42 for BuySomeBW, 0.67 for BuyMin50BW, and 0.66 for FairShare. In the light of the discussions about the possible exaggeration bias in statistically significant findings (e.g., Gelman and Carlin, 2014; Ioannidis et al., 2017), we acknowledge that our point estimates may somewhat overstate the true effects. However, given the consistency and size of the estimates across our various measures, we are confident that the choice of fair trade chocolate indeed correlates significantly positively with fair behavior in our market experiment.

Table 1: Probability of fair consumer behavior measured by BuySomeBW and BuyMoreBW regressed on market characteristics and chocolate choice in part 1.

	BuySomeBW		BuySomeBW		BuyMoreBW		BuyMoreBW	
	coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value
FT	0.2503*	0.0461	0.2409*	0.0484	0.1724***	0.0003	0.1649***	0.0004
Δp			-0.0260**	0.0076			-0.0158*	0.0136
Δw			0.0022	0.8253			0.0159*	0.0288
const.	0.3020**	0.0030	0.4018***	0.0001	0.0362	0.0555	0.0536*	0.0302
N	319		319		319		319	
R^2_{overall}	0.0970		0.1484		0.0577		0.0827	

Notes: Random effects model with robust standard errors clustered on subject. FT denotes choice of fair trade chocolate in part 1 of the experiment. Δw and Δp denote the difference in wages and prices between the two firms. + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

if we consider the average number of units a consumer bought at the high-price-high-wage firm (FairShare), we find that, on average, fair trade choosers in the role of consumers bought 27 percent of their basket at the high-wage-high-price firm, whereas conventional choosers bought only 11.3 percent at the high-wage-high-price firm. This difference is also statistically significant (two-sided t-test with unequal variances: $p = 0.0203$; the distributions differ according to a Wilcoxon rank-sum test: $p = 0.0193$).

To investigate the relationship between fair consumer choices in the market experiment and the choice of a chocolate bar in part 1 of the experiment in more detail, we construct a dataset that contains all market interactions in which one of the two firms was of the high-wage-high-price type.[12] We estimate random effects regressions with standard errors clustered at the subject level, reported in Table 1. These analyses take into account that the data contains multiple observations per consumer and allow us also to control for the cost and benefits of purchasing at the more expensive firm by including price and wage differences as controls.

The propensity to buy some units from the high-wage-high-price firm, BuySomeBW, is 25 percentage points higher if the subject chose fair trade chocolate compared to conventional chocolate in part 1. The effect becomes only slightly smaller when we control for wage and price differences. Similarly, a subject is about 17 percentage points more likely to buy more units from the high-wage-high-price firm, BuyMoreBW, if the subject chose fair trade chocolate, and the effect is again only slightly smaller when we include controls.[13] If we run a fixed-effects regression instead of the random effects model, and omit the dummy for the subjects' chocolate choice, we find that the estimated individual fixed effect correlates significantly positively with the decision in favor of the fair trade chocolate bar for both dependent variables, BuySomeBW

[12]The summary statistics of fair purchasing behavior in this dataset are very similar to the ones above where we first aggregate the data at the consumer level (see Tables 30 and 31 in Appendix D). We do not report results from simple parametric or non-parametric tests because these do not appropriately take into account the clustered nature of the data. Figures 4 and 5 in Appendix D show that any differences at the consumer level are only stronger in the market-level dataset.

[13]We find similar results if we estimate a linear probability model, see Table 12 in Appendix C.4. The point estimates for the FT dummy are larger in absolute terms and significant at the 1-percent level if we include interaction terms of the price and wage differences with the chocolate choice (see Table 19 in Appendix C.6). The interaction terms themselves are typically not significant.

Table 2: Fair consumer behavior measured by FairShare regressed on market characteristics and chocolate choice in part 1.

	FairShare		FairShare	
	coef.	p-value	coef.	p-value
FT	0.1633**	0.0088	0.1575**	0.0092
Δp			-0.0161**	0.0057
Δw			0.0090	0.1332
const.	0.1147*	0.0101	0.1531***	0.0008
N	316		316	
R^2_{overall}	0.0881		0.1398	

Notes: Random effects model with robust standard errors clustered on subject. FT denotes choice of fair trade chocolate in part 1 of the experiment. Δw and Δp denote the difference in wages and prices between the two firms. $+\ p < 0.1$, $*\ p < 0.05$, $**\ p < 0.01$, $***\ p < 0.001$.

and BuyMoreBW among our 36 participants ($p < 0.01$, using OLS, the p-value only becomes smaller if we bootstrap the standard errors to account for the fact that the fixed effect is itself an estimated and therefore noisy dependent variable).

As the dummy variables do not take into account all information available about the relative weight a consumer puts on purchases at the high-wage-high-price firm, we also analyze purchasing behavior based on the variable FairShare. Note that this variable is missing if a consumer does not purchase anything, which happens 3 times in our dataset. Table 2 shows that those who chose the fair trade chocolate bar purchase a significantly larger fraction of their basket (about 16 percentage points more) at the high-wage-high-price firm.[14]

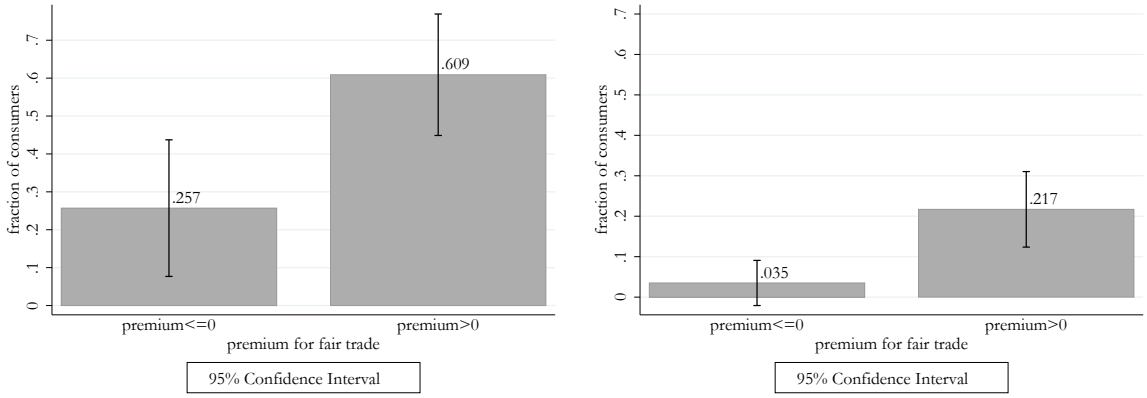
In all regressions, we find that consumers react to the costs of being fair because all our measures of fair behavior decrease significantly in the price difference between the firms. They react less systematically to the benefits of their actions. While the coefficient for the wage difference between firms is positive in all regressions, only BuyMoreBW increases significantly with the wage difference.

3.2 Fair trade premium and consumer decisions in experimental markets

Next, we investigate the relationship between the choices in the experimental market and the fair trade premium elicited in part 3 of the experiment. Do participants who are willing to pay more for a fair trade product buy (more units) from the high-wage-high-price firm? We dichotomize the stated fair trade premium to the indicator *premium*, because the absolute values are noisy measures of fair trade preferences due to the treatment effect in the public and private condition.[15] Again, we restrict attention to those instances in which one of the two firms offered

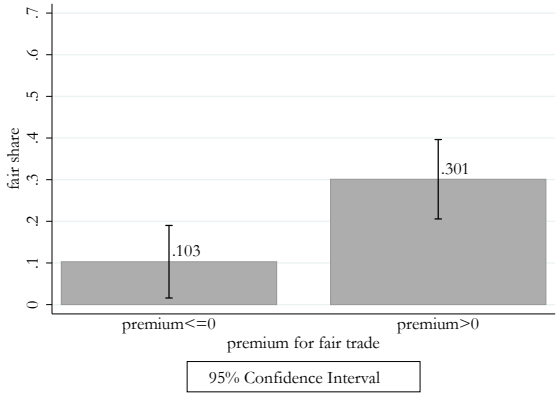
[14] In Table 13 in Appendix C.4 we show that these results are essentially the same when we use an ordinary least squares regression instead of the random effects specification, but the point estimate is slightly larger.

[15] Friedrichsen and Engelmann (2018) show that the fair trade premiums of the conventional choosers are higher in the public than in the private treatment. In effect, the average fair trade premium in public does not differ between individuals who chose the fair trade chocolate and those who chose the conventional one in part 1 of the experiment. Appendix C.8 analyzes the absolute fair trade premiums in more detail.



(a) Average of BuySomeBW.

(b) Average of BuyMoreBW.



(c) Average of FairShare.

Figure 2: Differences in fair purchasing behavior by premium. $N = 36$, 16 with a fair trade premium > 0, 20 with a fair trade premium ≤ 0. The y-axis displays the average of the respective variable over all consumers, where the variable is averaged at the consumer level first, taking into account all situations with a high-wage-high-price firm.

a higher wage and asked a higher price than its competitor. The number of such instances does not differ significantly with the sign of the fair trade premium.[16]

As shown in Figure 2, consumers who stated a positive fair trade premium are more likely to act fairly in the market experiment according to all three of our measures. The figure displays the market choices of the consumers, differentiated by their stated fair trade premium in part 3 (the relevant averages and standard deviations are shown in Table 9 in Appendix C.2). Participants with a positive premium are more than twice as likely to buy some units at a high-wage-high-price firm (61% compared to 26%). This difference is significant in a two-sided t-test with unequal variances ($p = 0.0041$) and the distributions differ significantly according to a Wilcoxon rank-sum test ($p = 0.0057$). The indicator BuyMoreBW shows even larger differences. Consumers with a positive fair trade premium are substantially more likely to have purchased more units from the high-wage-high-price firm than those with a zero or negative premium (about 22% compared to

[16]Consumers whose fair trade premium is positive faced a high-wage-high-price offer 9.6 times on average ($SD = 3.44$, min = 5, max = 16), those whose stated fair trade premium was zero or negative faced such an offer on average 7.94 times ($SD = 3.24$, min = 3, max = 15). The two averages are not statistically different at conventional levels (two-sided t-test with unequal variances: $p = 0.1458$, also the distributions do not differ significantly according to a Wilcoxon rank-sum test: $p = 0.1456$).

about 3%). This difference is highly statistically significant in a two-sided t-test with unequal variances ($p = 0.0014$) as is the difference between distributions according to a Wilcoxon rank-sum test ($p = 0.0006$). Finally, if we take into account how many units a consumer bought at the high-price-high-wage firm and average this over all available instances (FairShare), we find that consumers with a positive premium bought on average 30 percent of their basket at the high-wage-high-price firm, whereas those with a zero or negative premium bought only 10 percent at the high-wage-high-price firm. This difference is also highly statistically significant (two-sided t-test with unequal variances: $p = 0.0027$, also the distributions differ significantly according to a Wilcoxon rank-sum test: $p = 0.0021$).[17]

To study the relationship between the consumers' behavior in the market experiment and the fair trade premium in more detail, we use the dataset that contains all market interactions where one of the firms was of the high-wage-high-price type and estimate a random effects regression with standard errors clustered at the level of subjects. We regress the measures BuySomeBW and BuyMoreBW on a dummy for a positive fair trade premium (*premium*) and market characteristics. From Table 3, it can be taken that the coefficient of the premium dummy is significantly different from zero and economically relevant in size for both measures, BuySomeBW and BuyMoreBW.[18] The incidence of BuySomeBW is about 34 percentage points higher on average for a consumer with a positive fair trade premium and the incidence of BuyMoreBW is about 17 percentage points higher than for a consumer with a weakly negative fair trade premium. Instead of the random effects model, we also run a fixed-effects regression and omit the dummy for a positive premium. We find that the estimated individual fixed effect correlates significantly positively with having a positive fair trade premium both for BuySomeBW and for BuyMoreBW in our sample of 36 consumers ($p = 0.001$, using OLS with standard errors; the same holds if we bootstrap standard errors to account for the estimated dependent variable).

Table 3: Probability of fair consumer behavior measured by BuySomeBW and BuyMoreBW regressed on market characteristics and an indicator of a positive fair trade premium in part 3.

	BuySomeBW		BuySomeBW		BuyMoreBW		BuyMoreBW	
	coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value
premium	0.3491**	0.0022	0.3369**	0.0025	0.1839***	0.0007	0.1739**	0.0011
Δp			-0.0258**	0.0099			-0.0156*	0.0224
Δw			0.0019	0.8534			0.0153*	0.0469
const.	0.2670**	0.0019	0.3677***	0.0001	0.0415	0.1615	0.0609$^+$	0.0713
N	319		319		319		319	
R^2_{overall}	0.1153		0.1667		0.0600		0.0844	

Notes: Random effects model with robust standard errors clustered on subject. Δw and Δp denote the difference in wages and prices between the two firms. $+$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

[17] When we split the sample according to the incidence of a positive fair trade premium, the power is highest for the comparison of means of BuyMoreBW with 0.93. It is 0.85 for BuySomeBW, 0.77 for BuyMin50BW, and 0.88 for FairShare.

[18] The results are very similar when we use a linear probability model, see Table 14 in Appendix C.4 and with interaction terms, see Table 19 in Appendix C.6.

As the WTP in the third part of the experiment is announced privately or in public, depending on the treatment, we also conduct the analysis for both treatments separately. We find that our findings hold in both the private and the public treatment and, moreover, the estimated coefficients for the fair trade premium are nearly identical in both treatments (see Tables 27 and 28 in Appendix C.9). Thus, a positive premium is associated with a higher propensity to buy from the high-wage-high-price firm.

We also analyze whether purchasing behavior based on the variable FairShare correlates with the stated fair trade premium in part 3 of the experiment. Table 4 shows that those with a positive fair trade premium purchase a significantly larger fraction of their basket (about 18 percentage points more) at the high-wage-high-price firm than those with a weakly negative fair trade premium.[19]

Table 4: Fair consumer behavior measured by FairShare regressed on market characteristics and an indicator of a positive fair trade premium in part 3.

	FairShare		FairShare	
	coef.	p-value	coef.	p-value
premium	0.1939**	0.0016	0.1849**	0.0021
Δw			-0.0159**	0.0084
Δp			0.0087	0.1624
const.	0.1103**	0.0094	0.1504***	0.0004
N	316		316	
R^2_{overall}	0.0887		0.1383	

Notes: Random effects model with robust standard errors clustered on subject. Premium is an indicator of a positive fair trade premium in part 3. Δw and Δp denote the difference in wages and prices between the two firms. + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

3.3 Attitudes toward fair trade

After the experiment, we administered a questionnaire to learn about individual attitudes, knowledge, and motivations with respect to fair trade. The questionnaire contained 25 statements for which the participants had to indicate their level of agreement.[20] The questionnaire is designed to cover the most important arguments in favor and against supporting fair trade, important facts about the fair trade principles, and potential purchasing motivations.

We find that choices observed in part 1 of the experiment reflect the stated purchasing behavior and attitudes. Those participants who chose fair trade chocolate report to buy fair trade products more frequently and in the aggregate reveal a more positive attitude regarding fair trade (see Figure 3 in Appendix B.1).

Next, we use an exploratory factor analysis to determine linear combinations of the original questionnaire statements that can be used to summarize the response behavior with fewer

[19] In Table 15 in Appendix C.4 we show that these results are essentially the same when we use ordinary least squares regressions instead of the random effects specification but the point estimate is slightly smaller in the OLS. Furthermore, in Table 29 we conduct the random effects analysis separately for each treatment. Again, our results hold for both treatments.

[20] A translation of the questionnaire is contained in Appendix A.3.

variables without losing much information. It turns out that the questionnaire data can be explained by three latent factors.[21]

As factor 1 loads on attitudes toward fair trade and its effect on farmers and the market, in our interpretation it measures the attitude that fair trade is an effective tool to do good and to transfer money to the poor. Thus, we label factor 1 *shopping helps*. Factor 2 is called *social pressure* because it characterizes individuals who report purchasing fair trade products not out of intrinsic interest but because of image concerns or in order to conform with the wishes of family or friends. Factor 3 mostly loads on questions that do not represent value statements but agreement with a relatively narrow interpretation of fair trade as a system that is focused on above-market level prices and pre-financing. We call factor 3 *fair trade knowledge*. We investigate how these factors correlate with the behavior in the market game, the chocolate choice, and the stated fair trade premium. The detailed results from the regressions with the set of attitudes are collected in Appendix C.7.

The attitudes measured by our questionnaire support the interpretation that both the fair trade choice and the stated premium relate to real fair trade preferences. The decision in favor of the fair trade chocolate bar correlates positively with the belief that purchasing fair trade products is a good thing (*shopping helps*) although this correlation is significant only for the sample of those who stated their chocolate choice via email (see Table 20). The fair trade premium also correlates positively and significantly with *shopping helps* (see Table 21). In contrast, being influenced by image concerns and peers (*social pressure*) does not significantly correlate with the fair trade choice or the stated fair trade premium, and neither does the factor related to fair trade knowledge. This is consistent with the observation that factor 2 mostly reflects social motivations to purchase fair trade and factor 3 (*fair trade knowledge*) captures knowledge about fair trade. Neither of the two must necessarily be correlated with intrinsic preferences for or against fair trade, which are captured mostly by factor 1.

Regarding decisions in the experimental market, the analysis reveals that those consumers who believe in fair trade as an effective tool to help farmers (high values of *shopping helps*) are more likely to purchase more than 50 percent of their basket at a high-wage-high-price firm in the market experiment (see Table 23). In addition, we find that the factor *fair trade knowledge*, which captures the association of fair trade with above market prices and not with judgements regarding its function to help farms for example, correlates negatively with the probability to buy at least some units from the high-wage-high-price firm (see Table 23) and negatively with the share purchased at the high-wage-high-price firm (FairShare, see Table 24). These findings further support the notion that behavior in the abstract market experiment relates meaningfully to attitudes and behavior regarding fair trade in markets outside of the lab.

[21] The factor analysis finds a set of q common factors such that linear combinations of the q factors reconstruct the p original variables. The coefficients of the factors in the linear combination are called *factor loadings*. We employed a maximum-likelihood factor analysis and selected the model with three factors because it had a lower value on Schwarz's BIC than alternative models with fewer or more factors. Our interpretation of the factors relies on a varimax rotation. Details are provided in Appendix B.2.

4 Discussion

Our results suggest that even a relatively abstract market experiment is suitable for measuring fairness preferences that are relevant for consumption choices outside of the lab. This is demonstrated both by a correlation of choices in the market experiment with fair trade choices before the experiment and with the willingness to pay a price premium for a fair trade product over a conventional product after the experiment. The subjects' answers to a post-experimental questionnaire further support the hypothesis that fair (trade) choices in the laboratory and before the experiment reflect fair trade preferences in the field. In summary, abstract market experiments have external validity regarding the consumers' preferences for ethical consumption and, thusly, are a relevant and practical tool to investigate market behavior and market-relevant fairness concerns of consumers. This underlines the relevance of the lively debate on markets and morals that is fueled by experimental evidence (Falk and Szech, 2013; Bartling et al., 2015; Breyer and Weimann, 2015; Pigors and Rockenbach, 2016).

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Appendix

A Instructions and questionnaire

A.1 Recruitment email asking for chocolate choice

Below is the English translation of the text of the email that was sent to participants before the experiment to elicit their fair trade choice. The subject line was "additional information for experiment (date/time)".

Dear participants of the experiment,

For your participation in this experiment, you will receive a bar of chocolate in addition. However, you have to choose the type before the experiment.

Two types of chocolate are on offer:

- conventional milk chocolate, 125g
- fair trade milk chocolate, 100g

Please send an email with your choice before the experiment to ..@... Simply put "conventional" or "fair trade" in the subject line.

A.2 Instructions (translated from German)

Below is the English translation of original instructions. Participants received the instructions for the second part only after the first part had been completed. (Note that the first part of the experiment corresponds to part 2 as described in the paper while the second part of the experiment corresponds to part 3.)

Instructions

Welcome to this experiment! You can earn money and the amount that you will receive depends on the choices you and other participants will make.

Please read these instructions carefully. If you do not understand something, please raise your hand. We will answer your questions individually. The instructions are identical for all participants.

Overview

This experiment consists of two parts. The second part will take less time to complete than the first one. You will receive the instructions for the second part after the first part is completed. Your choices in the second part will have no influence on the results of other participants and likewise the choices of other participants cannot influence your result.

The first part of the experiment

We now describe the first part of the experiment in detail. Your choices in this part will remain anonymous. This means that no participant of the experiment can attribute the observed choices to other participants.

The first part of the experiment consists of several rounds. Before the first period, each participant will be randomly assigned the role of a firm, a worker, or a consumer. These roles are only relevant in the first part of the experiment. Until the end of this part of the experiment, the assigned roles will remain the same. You will know your own role, but will not know which roles the other participants have been assigned. Two firms, one worker and one consumer (four

participants in total) will form a group. During the whole first part of the experiment this group will remain the same. This means that the participants in the role of the firms, the worker, and the consumer in your group will be the same in each round.

The roles

Both firms produce an identical good. Both can each produce a maximum of ten units of the good. How many units will actually be produced in a firm depends on how many units the consumer wants to buy from this firm.

The worker can be fully or partly employed by both firms. Without the worker, a firm cannot produce anything. Each firm determines the wage that the worker receives per unit sold. You can think of the participant in the role of the worker as representing the workforce.

Both firms offer the good to the same consumer. The consumer can buy a maximum of ten units of the good and can decide how much he wants to buy from which firm.

The participants' payoffs are measured in points and depend on their role:

- The worker receives the wage paid to him by the firms. This wage is a piece rate, that is, the worker receives a fixed wage per unit sold by each firm. The worker himself has no decision to make. If the consumer does not buy anything from either firm, the worker receives no wage and thus has a payoff of zero.
- The firm receives the price multiplied by the quantity of units she has sold to the consumer, minus the wage payment to the worker. If the consumer does not buy anything at the firm, the firm must not pay any wage and also earns zero profits.
- The value that the consumer attaches to one unit of the good is equal to 20 points. He can buy a maximum of 10 units, but may also buy less. This means that he receives 200 points minus the total price, if he buys 10 units of the good. If he buys less than 10 units of the good, he receives the quantity of units multiplied by 20 minus the total price he has to pay for them. If a consumer does not buy anything, he receives a payoff of zero.

Examples

1. Firm 1 sets a wage of 7 and a price of 9. Firm 2 sets a wage of 2 and a price of 18. The consumer buys 6 units from firm 1 and 2 units from firm 2. The payoffs are as follows:

- consumer: $(20–9) * 6 + (20–18) * 2 = 11 * 16 + 2 * 2 = 70$
- firm 1: $6 * (9–7) = 6 * 2 = 12$
- firm 2: $2 * (18–2) = 2 * 16 = 32$
- worker: $6 * 7 + 2 * 2 = 46$.

2. Firm 1 sets a wage of 4 and a price of 18. Firm 2 sets a wage of 1 and a price of 8. The consumer buys 7 units from firm 1 and 3 units from firm 2. The payoffs are as follows:

- consumer: $(20–18) * 7 + (20–8) * 3 = 2 * 7 + 12 * 3 = 50$
- firm 1: $7 * (18–4) = 7 * 14 = 98$
- firm 2: $3 * (8–1) = 3 * 7 = 21$
- worker: $7 * 4 + 3 * 1 = 31$.

Procedure

Each round in the first part of the experiment proceeds as follows:

1. Both firms determine the wages they will pay the worker for each unit sold, and the prices at which they want to sell each unit of the good. The piece rate as well as the price must lie in the interval between 0 and 40 points.
2. The consumer is informed about the prices of both firms and about the piece rate paid to the worker by each of them. Then he decides how many units he wants to buy from each firm.
3. The purchases are completed.
4. The choices and payoffs of all participants are displayed on the computer screen.

This procedure is repeated 20 times.

The payoffs

The final payoff from the first part of the experiment is the sum of payoffs from all rounds.

The exchange rate for the points which you earn in the course of the experiment is 100 points = €1.

At the beginning you will receive a fixed payment of €5. If you make losses, these will be deducted from the fixed amount.

If you have any questions, please raise your hand. We will then answer your questions in private.

Quiz

Please answer the following short questions. This helps us to make sure that all participants have understood the instructions before we begin with the first part of the experiment.

1. The roles will be reassigned in each round ☐ Yes ☐ No
2. I will be matched to the same participants throughout the entire first part of the experiment ☐ Yes ☐ No
3. If firm 1 sets a price of 16 and a wage of 2, firm 2 a price of 15 and a wage of 13, and the consumer buys 10 units from firm 1 and 0 units from firm 2, then the payoffs are:
   - consumer: _____.
   - worker: _____.
   - firm 1: _____.
   - firm 2: _____.
4. If firm 1 sets a price of 9 and a wage of 9, firm 2 a price of 14 and a wage of 1, and the consumer buys 3 units from firm 1 and 2 units from firm 2, then the payoffs are:
   - consumer: _____.
   - worker: _____.
   - firm 1: _____.
   - firm 2: _____.

Instructions for the second part of the experiment

In the second part of the experiment, you are asked to make two simple decisions and answer a brief questionnaire.

For the second part of the experiment, you will receive €4 in addition to your earnings from the first part. You can spend part of this €4 to purchase a bar of chocolate.

Purchase of chocolate

Purchasing the chocolate takes place according to the following mechanism:

- There are two types of chocolate, one is fair trade, the other one conventional. Both will be shown to you before you make your decision.
- Please state your maximal willingness-to-pay for each type of chocolate on the screen. Your willingness-to-pay must lie between €0 and €2, and you can choose any amount in cents in this interval.
- Only your willingness-to-pay for one of the two types of chocolate will be payoff relevant. Thus, you will receive at most one bar of chocolate. The relevant type of chocolate is determined randomly and you will learn which one it is only after you have made your decisions. The same type of chocolate is payoff relevant for all participants.
- Before it is been determined which type of chocolate is payoff-relevant, the price for the chocolate bar is drawn at random. This price is the same for all participants and is independent of the type of chocolate. The price is between €0 and €2, and any amount in cents is equally likely.
- If your maximum willingness-to-pay for the relevant type of chocolate is at least as high as the randomly drawn price, you obtain one bar of this type of chocolate and the price is subtracted from the €4 that you received for the second part of the experiment. If your stated maximum willingness-to-pay is lower than the randomly drawn price, you will not receive a bar of chocolate and you do not pay anything; thus you keep your €4.

Please note that your stated willingness-to-pay does not influence the price of the chocolate, but only whether you will get a bar or not. Therefore, you should state how much you would like to pay at most for the respective type of chocolate. Then you will receive the chocolate whenever you do not have to pay more for it than what you are willing to pay for it, and you do not receive the chocolate bar whenever you would have to pay more than your maximum willingness-to-pay.

Example 1:

You state a maximum WTP of €0.13 for fair trade chocolate and of €1.93 for conventional chocolate. Suppose the randomly determined price is €0.78. If fair trade is drawn to be payoff relevant, you obtain €4 but no chocolate bar because your stated maximum willingness-to-pay of €0.13 is lower than the price of €0.78. If the conventional chocolate is chosen to be payoff-relevant instead, you receive a bar of conventional chocolate and you pay €0.78. In this case, you will receive €4 - €0.78 = €3.22 and a bar of conventional chocolate for this part of the experiment.

Example 2:

You state a maximum WTP of €1.34 for fair trade and of €0.62 for conventional chocolate. Suppose the randomly determined price is €0.44. If fair trade is chosen to be payoff-relevant, you receive a bar of fair trade chocolate and you pay €0.44. In this case, you obtain €4 - €0.44 = €3.56 and a bar of fair trade chocolate for this part of the experiment. If the conventional chocolate is chosen to be payoff-relevant instead, you receive a bar of conventional chocolate and you pay €0.44. In this case, you obtain €4 - €0.44 = €3.56 and a bar of conventional chocolate for this part of the experiment.

The examples show that you cannot influence the price with your stated willingness-to-pay (in example 2, you pay the same price in both cases even though the maximum willingness-to-pay is different), but only whether you obtain a bar of chocolate (as in example 1).

Questionnaire

After all participants have entered their willingness-to-pay for both types of chocolate, we ask you to fill in a brief questionnaire on the screen.

Distribution of chocolate (private treatment)

After filling in the questionnaire, you will first be informed about the randomly drawn price and reminded of your stated willingness-to-pay for both types of chocolate. You will then be informed which type of chocolate is payoff relevant and whether you will receive a bar or not. At the end of the experiment you receive the bar of chocolate in case that you get one, together with the money that you earned in the experiment, in the room next door. None of the other participants will learn whether you receive a bar of chocolate, your willingness-to-pay for it, nor how much money you obtain.

Distribution of chocolate (public treatment)

After filling in the questionnaire, you will first be informed about the randomly drawn price and reminded of your willingness-to-pay for both types of chocolate. Each of you will then be asked individually to announce your maximum willingness-to-pay for both types of chocolate.

You will then be informed which type of chocolate is payoff relevant and whether you will obtain a bar.

If your stated willingness-to-pay for the payoff-relevant type of chocolate is at least as high as the price, you will be asked to come to the front of the room to pick up your bar of chocolate.

You will receive the money that you earned in the experiment in the adjacent room. None of the other participants will learn how much money you receive.

A.3 Questionnaire about fair trade (translated from German)

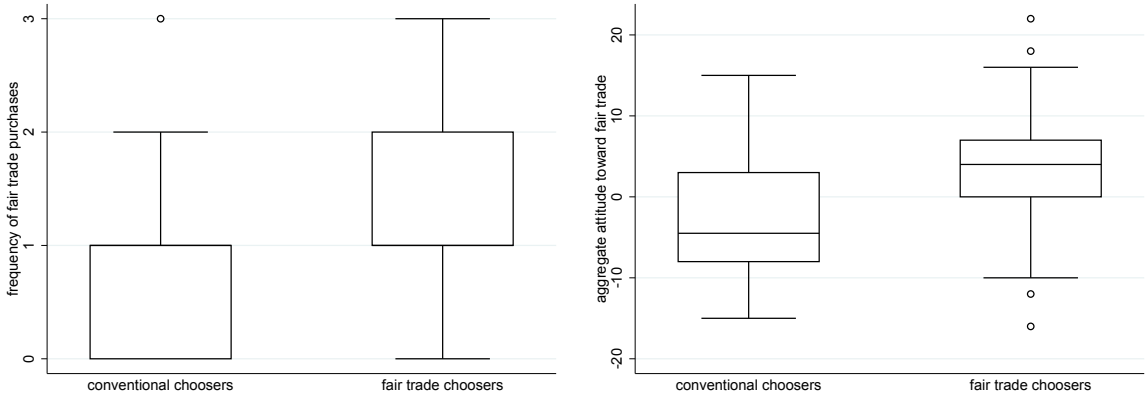
For each of the following statements, subjects were asked to express their agreement on a scale from -3 (do not agree at all) to +3 (fully agree) if not stated otherwise.

1. The higher prices of fair trade products only benefit the firms while the producers of the raw materials and the farmers do not profit.
2. Fair trade products are a good opportunity to secure a decent income for individuals in poor countries.
3. Fair trade distorts competition and hinders the development of alternative industries in countries who are dependent on the export of coffee, cocoa or bananas.
4. I purchase fair trade products (in this case possible answers range from "never" 0 to "often" 3).
5. I am prepared to pay higher prices for fair trade products.
6. I would purchase more fair trade products if these were available at lower prices.
7. The quality of fair trade products in comparison to conventional products is typically (in this case possible answers range from "much worse" -3 to "much better" +3).
8. I am prepared to accept a lower quality when choosing fair trade products.
9. Fair trade products should be available in all conventional supermarkets and discounters.
10. Discounters offering fair trade products are a contradiction to the ethical principles of fair trade.
11. The information available about fair trade is (in this case answer possibilities range from "very unsatisfactory" -3 to "very satisfactory" +3)
12. I consider the following criteria of fair trade (in this case possible answers range from "not important at all" -3 to "particularly important" +3).
    (a) strengthening of peasants
    (b) improvement of working conditions
    (c) fair trade minimum price
    (d) fair trade premium on top of minimum price
    (e) prefinancing of harvests
    (f) reduction of chemicals used in farming
    (g) ban of GMO organisms.
13. I purchase fair trade products (or would possibly purchase fair trade products)
    (a) because I want to do something good when shopping.
    (b) because producers of conventional products often receive only very low prices.
    (c) because fair trade products are typically more environmentally friendly.
    (d) because it conforms with my image.
    (e) because my family finds it important.
    (f) because these products taste better.

B Analysis of questionnaire data

B.1 Results from questionnaire regarding fair trade

Responses to the questionnaire (see Section A.3 in the Appendix) support the validity of our classification into fair trade and conventional choosers. Figure 3a shows the difference in purchasing behavior according to statement 4 from the questionnaire ($p = 0.0009$ in a Wilcoxon rank-sum test). In addition, we construct an aggregate measure of an individual's attitude toward fair trade by summing the answers to all attitudinal statements, i.e., to statements 1 to 11 from the questionnaire. As statements 1, 3, and 6 are written in a way such that agreement reveals a negative attitude toward fair trade, responses to these statements enter with a negative sign. The higher the value of the aggregate measure, the more positive is an individual's attitude toward fair trade. Figure 3b shows that fair trade choosers are much more positive about fair trade ($p < 0.0001$ in a Wilcoxon rank-sum test).



(a) Reported frequency of purchasing fair trade products (statement 4). Answer possibilities from 0 ("never") to 3 ("often").

(b) Aggregate measure of attitudes toward fair trade. Sum of responses to statements 1 to 11, where 1, 3 and 6 enter with a negative sign.

Figure 3: Differences in purchasing behavior and in stated attitude toward fair trade based on questionnaire (see Section A.3). $N = 144$, 44 conventional choosers and 100 fair trade choosers.

B.2 Factor analysis of questionnaire data

Table 5: Selection of number of factors for factor analysis using maximum likelihood

	2 factors	3 factors	4 factors
Schwarz's BIC	762.427	748.554	768.378

Table 6: Factor loadings

Variable	Factor 1	Factor 2	Factor 3	Uniqueness
firms profit	-0.4405			0.8033
living	0.4873			0.6994
competition	-0.3761			0.8035
purchase	0.6259			0.5266
high price	0.7150			0.4652
cheaper				0.8085
quality	0.4854	0.3173		0.6527
deductions		0.3704		0.8431
discounter	0.5600			0.6363
principles				0.9901
information				0.9469
smallholders	0.5847			0.5797
working conditions	0.5162		0.3419	0.5766
minimum price			0.7817	0.3513
premium			0.8520	0.2270
prefinancing	0.3314		0.4777	0.6372
chemicals	0.5015			0.7158
GMO	0.4198			0.7398
doing good	0.5722			0.6013
low prices	0.4534		0.3025	0.6933
environment	0.4320			0.6959
image		0.7680		0.3116
family		0.7247		0.4577
friends		0.6964		0.4903
taste	0.4446	0.4710		0.5744

Notes: Blanks represent factors loadings with an absolute value smaller than 0.3. The column "uniqueness" states which percentage of the variance for the particular variable is not explained by the common factors.

C Additional tables and results

C.1 Results of random price procedure (BDM mechanism) in part 3

For part 3 of the experiment, the payoff-relevant chocolate turned out to be conventional and fair trade in half of the sessions each. Details about the (randomly chosen) prices at which chocolates were sold are collected in Table 7. In total, we handed out conventional chocolate to 22 subjects and fair trade chocolate to 21 subjects.

Table 7: Prices drawn and number of chocolate bars sold to participants

	conventional				fair trade			
price in €	0.26	0.27	0.97	1.85	0.25	1.01	1.20	1.78
treatment	public	private	private	public	public	private	public	private
#participants	16	16	20	20	16	16	20	20
#bars sold	11	9	2	0	12	2	7	0
% of participants	68.8	56.3	10	0	75	12.5	35	0

C.2 Fractions of consumers with fair choices in market experiment by fair trade choice and fair trade premium

Table 8: Average of BuySomeBW and BuyMoreBW and FairShare at the consumer level split by their fair trade choice in part 1 of the experiment.

	BuySomeBW	BuyMoreBW	FairShare	N
conv.	0.3019	0.0368	0.1135	13
	(0.3753)	(0.0717)	(0.0454)	
FT	0.5378	0.1923	0.2694	23
	(0.3627)	(0.2083)	(0.0447)	

Notes: FT and conv. denote choice of fair trade and conventional chocolate, respectively. Standard deviations in parentheses. The variables have been averaged at the consumer level first, taking into account all situations with a high-wage-high-price firm.

Table 9: Average of BuySomeBW and BuyMoreBW and FairShare at the consumer level split up by the fair trade premium stated in part 3 of the experiment being positive or not.

	BuySomeBW	BuyMoreBW	FairShare	N
premium ≤ 0	0.2569	0.0346	0.1033	16
	(0.3382)	(0.1047)	(0.1634)	
premium > 0	0.6092	0.2174	0.3009	20
	(0.3424)	(0.1995)	(0.2036)	

Notes: Standard deviations in parantheses. The variables have been averaged at the consumer level first, taking into account all situations with a high-wage-high-price firm.

C.3 Alternative measures of fair purchasing behavior

In addition to the measures discussed in the main text, we analyze two additional measures of fair consumption. The indicator **BuyMin50BW** takes the value 1 if a consumer purchases at least half of her total purchases in a given market at the high-wage-high-price firm, $w_i > w_j, p_i > p_j$ and $q_i \geq q_j$. The indicator **BuyAllBW** takes the value 1 if a consumer purchases all units at the high-wage-high-price firm, $w_i > w_j, p_i > p_j$ and $q_i > 0, q_j = 0$. As can be taken from Table 10, BuyMin50BW is a relatively frequent behavior whereas BuyAllBW is rare. The raw differences that we expect to see based on the chocolate choice of the participant as well as based on the fair trade premium being positive are clearly visible for these measures too.

We obtain results very similar to those presented in the main text based on the indicator BuyMin50BW. This purchasing behavior is almost three times as likely in the group of consumers who chose the fair trade chocolate bar than among those who had chosen the conventional chocolate bar (about 12% compared to about 32%). This difference is also statistically significant in a t-test ($p = 0.0188$) and the distributions are also significantly different according to a Wilcoxon rank-sum test ($p = 0.0307$). The difference with respect to the sign of the fair trade premium is also large and significant. BuyMin50 is almost three times as likely in the group of consumers with a positive premium than among those with a weakly negative one (about 12% compared to about 35%). This difference is also highly statistically significant in a t-test ($p = 0.0088$) and the distributions are also significantly different according to a Wilcoxon rank-sum test ($p = 0.0050$).

When we consider the indicator BuyAllBW, the results are qualitatively in line with those reported based on other measures. However, as we would expect for such a rare behavior in a small sample, we do not find a statistically significant relationship (chocolate choice: $p = 0.0861$ in a two-sided t-test with unequal variances and $p = 0.1900$ in a Wilcoxon rank-sum test, premium: $p = 0.3978$ in a two-sided t-test with unequal variances and $p = 0.3814$ in a Wilcoxon rank-sum test). While *ex-post* power calculations are problematic, we note that a calculation for the mean comparison of BuyAllBW is 0.40 if we split the sample by chocolate choice and is 0.13 if we split the sample according to the sign of the premium.

Regression results based on a random effects model that used all 319 market interactions where one firm was of the high-wage-high-price type confirm the results from the simple tests for both, BuyMin50BW and BuyAllBW, as shown in Table 11.

Table 10: Average of BuyMin50BW and BuyAllBW at the consumer level split up by the chocolate choice in part 1 of the experiment (upper panel) or by the fair trade premium stated in part 3 of the experiment being positive or not (lower panel).

	BuyMin50BW	BuyAllBW	N
conv.	0.1185	0.0118	13
	(0.0524)	(0.0427)	
FT	0.3188	0.0633	23
	(0.0618)	(0.1270)	
premium ≤ 0	0.1177	0.0284	16
	(0.2208)	(0.0820)	
premium > 0	0.3495	0.0578	20
	(0.2797)	(0.1236)	

Notes: FT and conv. denote choice of fair trade and conventional chocolate, respectively. Standard deviations in parentheses. The variables have been averaged at the consumer level first, taking into account all situations with a high-wage-high-price firm.

Table 11: Probability of fair consumer behavior measured by BuyMin50BW and BuyAllBW, regressed on market characteristics and chocolate choice in part 1.

	BuyMin50BW		BuyMin50BW		BuyAllBW		BuyAllBW	
	coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value
FT	0.2134**	0.0089	0.2048*	0.0112	0.0486	0.1015	0.0473	0.1054
Δp			-0.0223**	0.0078			-0.0024	0.3521
Δw			0.0176^{+}	0.0823			0.0052	0.1420
const.	0.1198*	0.0256	0.1584**	0.0076	0.0141	0.2980	0.0083	0.4204
N	319		319		319		319	
R^2_{overall}	0.0602		0.0958		0.0083		0.0096	

Notes: Random effects model with robust standard errors clustered on subject. FT denotes choice of fair trade chocolate in part 1 of the experiment. Δw and Δp denote the difference in wages and prices between the two firms. $+\ p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

C.4 Consumer decisions in market experiment and chocolate choice or fair trade premium - OLS regressions

While the main text presents results from random effects models, all our results hold up in simple OLS regressions. As the data contains multiple observations per consumer, we consider the random effects model more appropriate. As discussed in the main text, fixed effects models yield similar conclusions. They are less tractable as we first have to estimate the consumer fixed effects and then investigate the relationship between the estimate fixed effects and the chocolate choice or fair trade premium, respectively.

Table 12: Probability of fair consumer behavior measured by BuySomeBW and BuyMoreBW regressed on market characteristics and chocolate choice in part 1 (OLS).

	BuySomeBW		BuySomeBW		BuyMoreBW		BuyMoreBW	
	coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value
FT	0.3273*	0.0138	0.3113*	0.0148	0.1837***	0.0009	0.1734**	0.0012
Δp			-0.0304***	0.0002			-0.0171**	0.0087
Δw			0.0060	0.5556			0.0141^{+}	0.0610
const.	0.3091**	0.0075	0.4213***	0.0006	0.0364^{+}	0.0733	0.0661*	0.0202
N	319		319		319		319	
R^2	0.097		0.149		0.058		0.083	

Notes: Linear probability model with robust standard errors clustered on subject. FT denotes choice of fair trade chocolate in part 1 of the experiment. Δw and Δp denote the difference in wages and prices between the two firms. p-values in second column. $+\ p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 13: Fair consumer behavior measured by FairShare regressed on market characteristics and chocolate choice in part 1 (OLS).

	FairShare		FairShare	
	coef.	p-value	coef.	p-value
FT	0.1840**	0.0078	0.1738**	0.0084
Δp			-0.0189***	0.0006
Δw			0.0066	0.2506
const.	0.1229*	0.0195	0.1832**	0.0011
N	316		316	
R^2	0.088		0.141	

p-values in second column

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Notes: Linear probability model with robust standard errors clustered on subject. FT denotes choice of fair trade chocolate in part 1 of the experiment. Δw and Δp denote the difference in wages and prices between the two firms. + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 14: Probability of fair consumer behavior measured by BuySomeBW and BuyMoreBW regressed on market characteristics and an indicator of a positive fair trade premium in part 3 (OLS).

	BuySomeBW		BuySomeBW		BuyMoreBW		BuyMoreBW	
	coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value
premium	0.3465**	0.0070	0.3324**	0.0071	0.1819**	0.0036	0.1714**	0.0049
Δp			-0.0299**	0.0026			-0.0169*	0.0210
Δw			0.0045	0.6989			0.0135	0.1032
const.	0.3150**	0.0034	0.4279***	0.0002	0.0472	0.1532	0.0780+	0.0633
N	319		319		319		319	
R^2	0.115		0.167		0.060		0.085	

Notes: Linear probability model with robust standard errors clustered on subject. Δw and Δp denote the difference in wages and prices between the two firms. + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 15: Fair consumer behavior measured by FairShare regressed on market characteristics and the fair trade premium stated in part 3 (OLS).

	FairShare		FairShare	
	coef.	p-value	coef.	p-value
premium	0.1791*	0.0119	0.1695*	0.0130
Δw			-0.0188**	0.0043
Δp			0.0060	0.3773
const.	0.1358*	0.0125	0.1966**	0.0010
N	316		316	
R^2	0.089		0.142	

Notes: OLS regression with standard errors clustered on subject. Premium is an indicator of a positive fair trade premium in part 3. Δw and Δp denote the difference in wages and prices between the two firms. + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

C.5 Fair consumer behavior, chocolate choice, and fair trade premium - excluding 23 newly recruited participants

The sample used for all estimations in the main body of the text comprises participants who made their chocolate choice either privately via email (121 participants, 30 consumers) or in public during a recruitment day (23 participants, 6 consumers). All our findings are unaffected by re-estimation on the sample that excludes participants who made their chocolate choice during the recruitment day. The sample of newly recruited participants alone is too small to allow for a separate analysis of this group. Note that we would have liked to have a larger pool of these subjects but were unable to get these people to the laboratory, see footnote 9.

Excluding the participants from the recruitment day is arguably reasonable for the analysis of the relationship between the pre-experiment chocolate choice and the market behavior. Since the chocolate choice was made in different situations for those who made it via email and those who made it on recruitment day, the classification might work differently. For example, for those who made the chocolate choice on the recruitment day, it may have been affected by additional motives such as image concerns toward other students who are present or because there is direct interaction with the experimenter. As can be seen from comparing Tables 16 and (the left half of) 17 with Tables 1 and 2 in the main body of the text, respectively, excluding the participants from the recruitment day leads to marginally weaker results, but the effects of the pre-experimental fair trade choice remain significant except for the one on BuySomeBW.

For the analysis of the relationship between behavior in the market experiment and the fair trade premium, excluding the participants from the recruitment day appears to make less sense, because experimental choices were identical for participants from both pools. Hence there is no reason to believe that there are systematic differences between the two subject pools with respect to these measures. For the sake of completeness, however, we also report robustness checks for the relationship between market behavior and the fair trade premium for the sample restricted to the participants who made their chocolate choice via email. As seen when comparing Tables 18 and (the right half of) 17 with Tables 3 and 4 in the main body of the text, respectively, excluding the participants from the recruitment day leads to partly marginally weaker and partly marginally stronger estimated coefficients for the dummy of a positive fair trade premium, results, with all coefficients remaining significant at the 5%-level.

Table 16: Probability of fair consumer behavior measured by BuySomeBW and BuyMoreBW regressed on market characteristics and chocolate choice in part 1.

	BuySomeBW		BuySomeBW		BuyMoreBW		BuyMoreBW	
	coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value
FT	0.2206	0.1188	0.2094	0.1295	0.1743**	0.0015	0.1674**	0.0018
Δp			-0.0250*	0.0223			-0.0169*	0.0295
Δw			-0.0004	0.9720			0.0172*	0.0384
const.	0.3365**	0.0039	0.4385***	0.0003	0.0429*	0.0497	0.0593*	0.0480
N	274		274		274		274	
R^2_{overall}	0.0807		0.1242		0.0563		0.0837	

Notes: Random effects model with robust standard errors clustered on subject. FT denotes choice of fair trade chocolate in part 1 of the experiment. Δw and Δp denote the difference in wages and prices between the two firms. Regression excludes 23 newly recruited participants. + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 17: Fair consumer behavior measured by FairShare regressed on market characteristics and the chocolate choice in part 1 or an indicator of a positive fair trade premium in part 3.

	FairShare		FairShare		FairShare		FairShare	
	coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value
FT	0.1488*	0.0328	0.1424*	0.0356				
premium					0.1894**	0.0052	0.1774**	0.0081
Δp			-0.0168*	0.0161			-0.0165*	0.0213
Δw			0.0088	0.1951			0.0082	0.2420
const.	0.1337**	0.0084	0.1743***	0.0009	0.1261**	0.0073	0.1699***	0.0004
N	271		271		271		271	
R^2_{overall}	0.0719		0.1224		0.0824		0.1293	

Notes: Random effects model with robust standard errors clustered on subject. FT denotes choice of fair trade chocolate in part 1 of the experiment. Premium is an indicator of a positive fair trade premium in part 3. Δw and Δp denote the difference in wages and prices between the two firms. Regression excludes 23 newly recruited participants. $+$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 18: Probability of fair consumer behavior measured by BuySomeBW and BuyMoreBW regressed on market characteristics and an indicator of a positive fair trade premium in part 3.

	BuySomeBW		BuySomeBW		BuyMoreBW		BuyMoreBW	
	coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value
premium	0.3207*	0.0112	0.3061*	0.0144	0.1953**	0.0017	0.1819**	0.0031
Δp			-0.0246*	0.0272			-0.0163*	0.0442
Δw			-0.0010	0.9264			0.0158$^+$	0.0680
const.	0.3043**	0.0011	0.4073***	0.0001	0.0467	0.1592	0.0684$^+$	0.0745
N	274		274		274		274	
R^2_{overall}	0.0987		0.1437		0.0647		0.0890	

Notes: Random effects model with robust standard errors clustered on subject. Premium is an indicator of a positive fair trade premium in part 3. Δw and Δp denote the difference in wages and prices between the two firms. Regression excludes 23 newly recruited participants. $+$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

C.6 Fair consumer behavior, chocolate choice, and fair trade premium - with interactions

Table 19: Probability of fair consumer behavior measured by BySomeBW and BuyMoreBW regressed on market characteristics and chocolate choice in part 1 or an indicator of a positive fair trade premium in part 3.

	BySomeBW		BuyMoreBW		BySomeBW		BuyMoreBW	
	coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value
FT	0.3571**	0.0079			0.2039**	0.0013		
premium			0.4006***	0.0004			0.1729**	0.0060
Δp	-0.0258*	0.0220	-0.0279*	0.0172	0.0017	0.8602	-0.0031	0.7298
Δw	0.0235$^+$	0.0773	0.0231$^+$	0.0858	0.0024	0.6507	0.0009	0.8581
$\Delta p\times$ FT	-0.0010	0.9522	0.0021	0.8993	-0.0221$^+$	0.0921	-0.0157	0.2087
$\Delta w\times$ FT	-0.0369*	0.0397	-0.0358*	0.0456	0.0165	0.1937	0.0199	0.1290
const.	0.3359***	0.0007	0.3399***	0.0001	0.0219	0.3783	0.0549	0.1366
N	319		319		319		319	
R^2_{overall}	0.1442		0.1503		0.0903		0.0878	

Notes: Random effects model with robust errors clusters on subject. FT denotes choice of fair trade chocolate in part 1 of the experiment. Premium is an indicator of a positive fair trade premium in part 3. Δw and Δp denote the difference in wages and prices between the two firms. $+$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

C.7 Regressions using latent attitudes from the factor analysis

Table 20: Regressions of the chocolate choice on attitudes

	choice of fair trade chocolate			
	coef.	p-value	coef.	p-value
shopping helps	0.0955	0.2261	0.1668$^+$	0.0790
social pressure	0.0787	0.3861	0.0614	0.5429
FT knowledge	0.0632	0.5276	0.0252	0.8327
const.	0.6319***	0.0000	0.6228***	0.0000
N	36		30	
R^2	0.082		0.138	

Notes: OLS regression. Column 1 includes all consumers, column 2 excludes 6 consumers who were newly recruited participants during a public recruitment drive. $+$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 21: OLS regressions of willingness-to-pay differences on attitudes

	fair trade premium						premium> 0					
	all		private		public		all		private		public	
	coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value
shopping helps	0.1253*	0.0354	0.1983+	0.0846	0.0588	0.3124	0.2557***	0.0009	0.2299+	0.0678	0.2535*	0.0210
social pressure	-0.0135	0.8391	0.0070	0.9441	-0.1168	0.1532	-0.0183	0.8229	0.0769	0.4820	-0.2348	0.1027
FT knowledge	-0.1258+	0.0944	-0.1471	0.1794	0.1363	0.2356	-0.0405	0.6541	-0.0872	0.4537	0.1463	0.4570
const.	0.1976**	0.0025	0.2841*	0.0188	0.1010	0.1171	0.5380***	0.0000	0.5324***	0.0004	0.4812***	0.0004
N	36		18		18		36		18		18	
R^2	0.201		0.339		0.264		0.300		0.303		0.446	

Notes: OLS regression. Columns 1-3 have the stated fair trade premium as the dependent variable. Columns 4-6 have the indicator for a positive fair trade premium as dependent variable. + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 22: OLS regressions of willingness-to-pay differences on attitudes, excluding 6 newly recruited participants

	fair trade premium						premium> 0					
	all		private		public		all		private		public	
	coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value
shopping helps	0.1555*	0.0295	0.2886*	0.0376	0.0322	0.3761	0.2621**	0.0060	0.2847+	0.0625	0.2400+	0.0732
social pressure	0.0146	0.8447	0.0458	0.6742	-0.1394*	0.0272	-0.0036	0.9702	0.0734	0.5497	-0.2875	0.1532
FT knowledge	-0.2022*	0.0290	-0.2229	0.1042	0.1053	0.1723	-0.0527	0.6465	-0.0908	0.5356	0.2249	0.3840
const.	0.1672*	0.0186	0.2457+	0.0617	0.0665+	0.0917	0.5177***	0.0000	0.5483**	0.0015	0.4315**	0.0056
N	30		16		14		30		16		14	
R^2	0.264		0.410		0.455		0.257		0.277		0.434	

Notes: OLS regression. OLS regression. Columns 1-3 have the stated fair trade premium as the dependent variable. Columns 4-6 have the indicator for a positive fair trade premium as dependent variable. + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 23: Probability of fair consumer behavior measured by BuySomeBW and BuyMoreBW regressed on attitudes and market characteristics.

	BuySomeBW		BuySomeBW		BuyMoreBW		BuyMoreBW	
	coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value
shopping helps	0.0568	0.3040	0.0511	0.3472	0.0666*	0.0264	0.0683*	0.0201
social pressure	0.0849	0.1634	0.0935	0.1175	-0.0147	0.6083	-0.0126	0.6467
FT knowledge	-0.1296**	0.0095	-0.1319**	0.0073	-0.0124	0.6360	-0.0175	0.4929
Δp			-0.0266**	0.0077			-0.0164*	0.0267
Δw			0.0031	0.7608			0.0181*	0.0200
const.	0.4574***	0.0000	0.5518***	0.0000	0.1420***	0.0000	0.1496***	0.0000
N	319		319		319		319	
R^2 overall	0.0525		0.1170		0.0452		0.0788	

Notes: Random effects model with robust standard errors clustered on subject. Δw and Δp denote the difference in wages and prices between the two firms. + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 24: Fair consumer behavior measured by FairShare regressed on attitudes and market characteristics.

	FairShare		FairShare	
	coef.	p-value	coef.	p-value
shopping helps	0.0511	0.1217	0.0495	0.1208
social pressure	0.0091	0.7715	0.0123	0.6748
FT knowledge	-0.0564*	0.0466	-0.0589*	0.0313
Δp			-0.0163**	0.0083
Δw			0.0098	0.1143
const.	0.2151***	0.0000	0.2483***	0.0000
N	316		316	
R^2_{overall}	0.0404		0.1009	

Notes: Random effects model with robust standard errors clustered on subject. Δw and Δp denote the difference in wages and prices between the two firms. + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

C.8 Results with the absolute values of the fair trade premium

Table 25: Probability of fair consumer behavior measured by BuySomeBW and BuyMoreBW regressed on market characteristics and the fair trade premium in part 3.

	BuySomeBW		BuySomeBW		BuyMoreBW		BuyMoreBW	
	coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value
FT premium	0.1906	0.1908	0.1837	0.2129	0.0632	0.2940	0.0579	0.3132
Δp			-0.0261**	0.0087			-0.0162*	0.0190
Δw			0.0023	0.8212			0.0166*	0.0281
const.	0.4223***	0.0000	0.5177***	0.0000	0.1326***	0.0002	0.1453***	0.0008
N	319		319		319		319	
R^2 overall	0.0254		0.0822		0.0049		0.0352	

Notes: Random effects model with robust standard errors clustered on subject. FT premium is the value of the stated fair trade premium in part 3. Δw and Δp denote the difference in wages and prices between the two firms. + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 26: Fair consumer behavior measured byFairShare regressed on market characteristics and the fair trade premium in part 3.

	FairShare		FairShare	
	coef.	p-value	coef.	p-value
FT premium	0.1018	0.2027	0.0957	0.2163
Δp			-0.0162**	0.0074
Δw			0.0092	0.1318
const.	0.1978***	0.0000	0.2332***	0.0000
N	316		316	
R^2 overall	0.0214		0.0789	

Notes: Random effects model with robust standard errors clustered on subject. FT premium is the value of the stated fair trade premium in part 3. Δw and Δp denote the difference in wages and prices between the two firms. + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

C.9 Consumer decisions in market experiment and fair trade premium - split up by treatment in part 3

Table 27: Probability of fair consumer behavior measured by BuySomeBW regressed on market characteristics and an indicator of a positive fair trade premium in part 3, split up by private/public treatment.

	BuySomeBW				BuySomeBW			
	private		public		private		public	
	coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value
premium	0.3701*	0.0376	0.3436*	0.0117	0.3602*	0.0451	0.3481**	0.0062
Δp					-0.0103	0.2157	-0.0535***	0.0000
Δw					-0.0164	0.2512	0.0277*	0.0250
const.	0.2837*	0.0396	0.2390**	0.0076	0.3738*	0.0132	0.3485***	0.0001
N	162		157		162		157	
R^2 overall	0.0980		0.1416		0.1123		0.2568	

Notes: Random effects model with robust standard errors clustered on subject. Δw and Δp denote the difference in wages and prices between the two firms. + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 28: Probability of fair consumer behavior measured by BuyMoreBW regressed on market characteristics and an indicator of a positive fair trade premium in part 3, split up by private/public treatment.

	BuyMoreBW				BuyMoreBW			
	private		public		private		public	
	coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value
premium	0.1800**	0.0082	0.1799*	0.0401	0.1664**	0.0072	0.1788*	0.0405
Δp					-0.0131	0.1816	-0.0196***	0.0003
Δw					0.0199	0.1359	0.0148*	0.0496
const.	0.0240	0.2803	0.0626	0.2888	0.0270	0.3869	0.0885	0.1565
N	162		157		162		157	
R^2 overall	0.0601		0.0599		0.0900		0.0796	

Notes: Random effects model with robust standard errors clustered on subject. Δw and Δp denote the difference in wages and prices between the two firms. + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 29: Probability of fair consumer behavior measured by FairShare regressed on market characteristics and an indicator of a positive fair trade premium in part 3, split up by private/public treatment.

	FairShare				FairShare			
	private		public		private		public	
	coef.	p-value	coef.	p-value	coef.	p-value	coef.	p-value
premium	0.1938*	0.0172	0.1924*	0.0423	0.1824*	0.0214	0.1946*	0.0326
Δp					-0.0101	0.1292	-0.0257***	0.0000
Δw					0.0088	0.3584	0.0142^{+}	0.0508
const.	0.1040^{+}	0.0618	0.1167^{+}	0.0821	0.1247*	0.0181	0.1663*	0.0137
N	159		157		159		157	
R^2 overall	0.0822		0.0962		0.1167		0.1652	

Notes: Random effects model with robust standard errors clustered on subject. Δw and Δp denote the difference in wages and prices between the two firms. $+$ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

D Statistics and figures at the consumer-period level

Table 30: Average of BuySomeBW and BuyMoreBW at the consumer-period level split up by the chocolate choice in part 1 of the experiment.

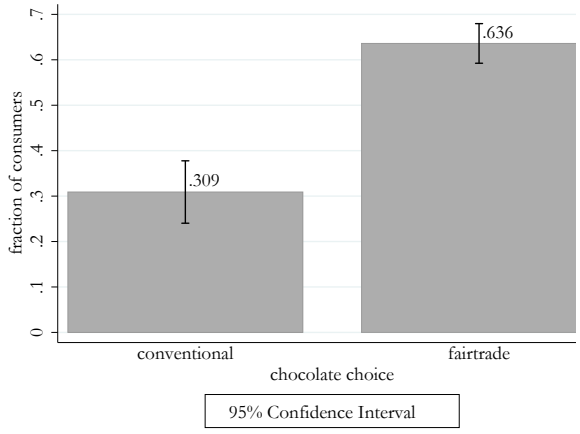
	BuySomeBW	BuyMoreBW	FairShare	N
conv.	0.3091	0.0364	0.1229	110
	(0.4642)	(0.1881)	(0.2193)	
FT	0.6364	0.2201	0.3070	209
	(0.4822)	(0.4153)	(0.3089)	

Notes: FT and conv. denote choice of fair trade and conventional chocolate, respectively. Standard deviations in parentheses. Multiple observations per consumer. FairShare has 108 observations for conventional choosers and 208 for fair trade choosers.

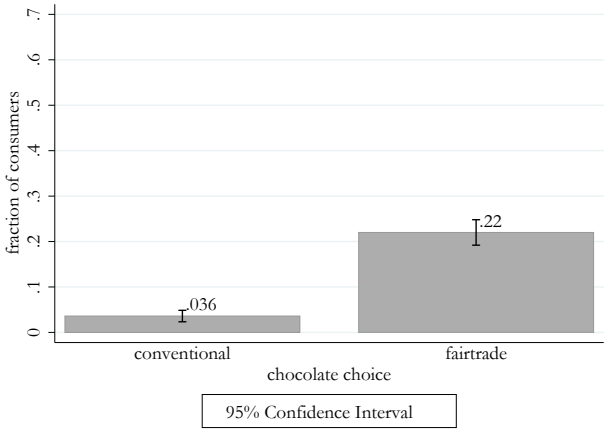
Table 31: Average of BuySomeBW and BuyMoreBW at the consumer-period level split up by the fair trade premium stated in part 3 of the experiment being positive or not.

	BuySomeBW	BuyMoreBW	FairShare	N
premium≤ 0	0.3150	0.0472	0.1358	127
	(0.4663)	(0.2130)	(0.2460)	
premium> 0	0.6615	0.2292	0.3149	192
	(0.4745)	(0.4214)	(0.3025)	

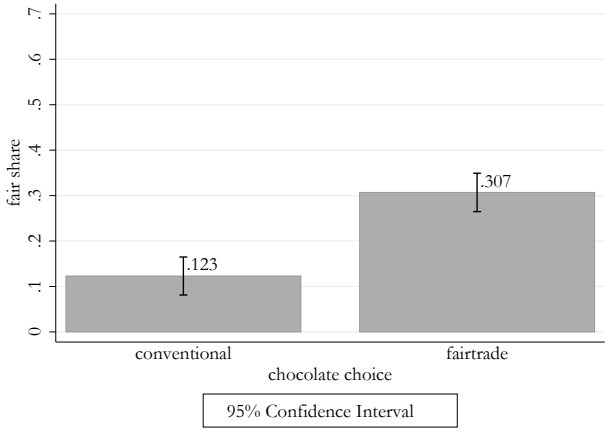
Notes: Standard deviations in parentheses. Multiple observations per consumer. FairShare has 125 observations for participants with a zero or negative fair trade premium and 191 for those with a positive premium.



(a) Average of BuySomeBW.

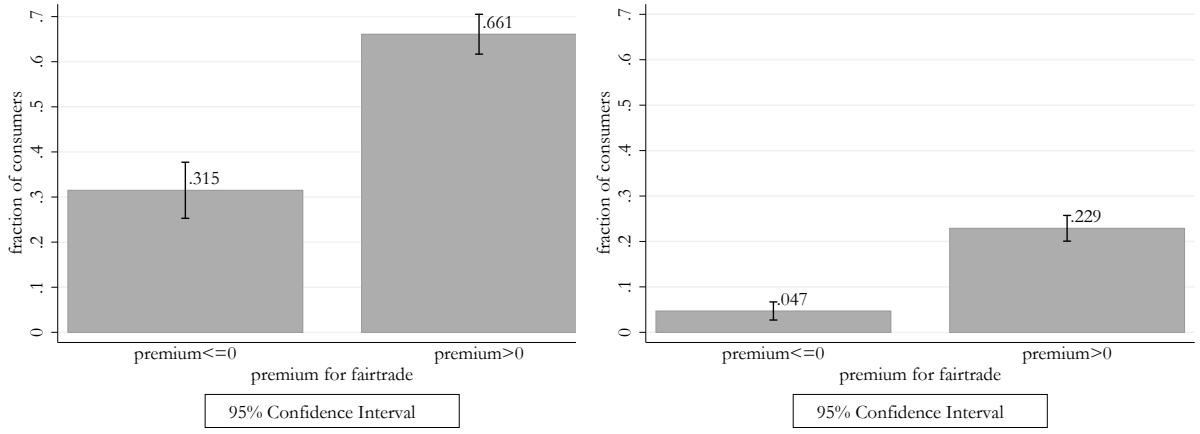


(b) Average of BuyMoreBW.



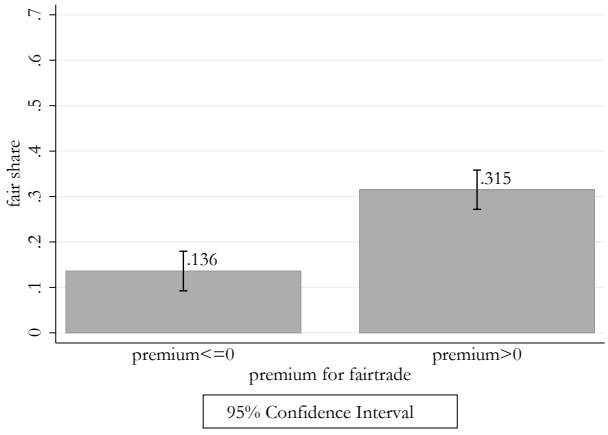
(c) Average of FairShare.

Figure 4: Differences of fair purchasing behavior by chocolate choice. $N = 319$ ($N = 316$ for FairShare), thereof 110 (108) market interactions with a conventional chooser and 209 (208) market interactions with a fair trade chooser. The y-axis displays the average of the respective variable over all situations with a high-wage-high-price firm at the consumer-period level



(a) Average of BuySomeBW.

(b) Average of BuyMoreBW.



(c) Average of FairShare.

Figure 5: Differences of fair purchasing behavior by premium. $N = 319$ ($N = 316$ for FairShare), thereof 192 (191) market interactions of consumers with a positive fair trade premium and 127 (125) market interactions with a consumer with a zero or negative fair trade premium. The y-axis displays the average of the respective variable over all situations with a high-wage-high-price firm at the consumer-period level