Do Legal Standards Affect Ethical Concerns of Consumers?*

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Abstract

We study ethical concerns of consumers in experimental markets. Consumers have monopsony power, firms set prices and wages, and workers are passive recipients of a wage payment who can be protected by a minimum wage regulation. We find that the majority of consumers occasionally deviate from their self-interest and that markets with such consumers exhibit substantially higher wages. Consumers implement fair allocations using two distinct strategies: they split their demand between firms, or they buy all units from the firm with the higher price and higher wage. The two strategies can be captured by maximin preferences and indirect reciprocity in Charness and Rabin's (2002) reciprocal fairness model. A minimum wage raises average wages although it weakens consumers' fairness concerns.

JEL classification: C72, C92, D83, D84

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1 Introduction

In the last decade, the behavior of firms with regard to worker protection, climate change, and other ethically relevant issues has received public attention. Firms can profit from fair behavior toward their workers or from environment-friendly production technologies if a sufficient number of consumers are willing to pay a higher price for their products than for other firms' products. Moreover, publicity about firms engaging in unfair or unethical behavior, such as the use of child labor or ecologically harmful practices, can decrease firm profits substantially.

While some consumers buy fair-trade products or sign up for electricity from renewable sources, these products have relatively small market shares.[1] This suggests that regulation might be necessary to achieve the desired levels of environmental protection, wages, worker rights, etc. However, it is an open question how such regulation affects consumer behavior. Experiments that study the interaction of consumers and firms in markets have found that consumers exhibit non-selfish behavior and that this depends on the exact market conditions.[2] We build on this literature and study the effect of regulation in a tightly controlled laboratory experiment.

The effects of government interventions on consumer behavior can be ambiguous. Apart from the direct effect of the regulation, such as forcing firms to pay a certain minimum wage, indirect effects can play a role if consumers are not purely selfish. If a minimum wage is in place, firms may be unable to gain a reputation from paying high wages, especially if the minimum wage is already quite high. Also, if consumers are willing to pay for the fair treatment of workers, a minimum wage can prevent such fair behavior by consumers. On the other hand, consumers may interpret a minimum wage

[1] For example, in Germany, where fair trade is relatively important, fair-trade cocoa achieved a market share of 8% in 2017 and fair-trade coffee 4.1% (TransFair e.V. 2018). Globally, the market share of fair-trade cocoa is less than 1% (International Cocoa Organization 2019).

[2] For example, Bartling, Weber, and Yao (2015) and Rode et al. (2008) show that fairness of firms and consumers can survive in a market context. By contrast, Falk and Szech (2013) suggest that markets erode fairness, while Pigors and Rockenbach (2016) demonstrate that whether fair behavior pays off for firms depends on the market structure.

as an indication that market wages are too low, which can motivate them to condition their purchase decision on fair wages.

We ask how regulations that target the externalities of interest interact with the willingness of consumers to pay higher prices for fair behavior of firms. Our study differs from existing experimental work on fairness in markets since our setting is characterized by a tradeoff between short-term and long-term fairness. Consumers can provide incentives for firms to increase wages in the future by buying from firms that pay high wages. This, however, harms the workers of low-wage firms in the short run. Thus, strategies that help workers in the short run are in conflict with strategies that can help them in the long run, rendering the decision complex.

In the experiment, we use a setup in which consumers are monopsonists in a duopoly market. Workers have no bargaining power, as they have no decision to make. They are employed by a firm and can neither be fired nor quit themselves. Their only source of income is the wage. The consumer is informed about the prices and wages of both firms and can then decide which firm to buy from and how many units to purchase.

With a two-by-two design, we investigate the effects of a minimum wage, controlling for possible order effects and the level of the minimum wage. In two treatments, there is no minimum wage initially, but it is introduced after the first half of the experiment. These treatments differ only with regard to the level of the minimum wage. In the other two treatments, there is a minimum wage at the beginning, but it is removed after the first half of the experiment, again for both minimum wage levels. This allows us to study the effect of a minimum wage at different stages of experience in a market. Each half of the experiment lasts for 20 periods.

We observe that in all treatments, the majority of consumers occasionally deviate from their self-interest. Markets with such consumers exhibit significantly higher wages than markets with consumers who always act with self-interest. There are two complementary strategies that consumers use to achieve fair outcomes for the workers. First, they often split their purchases between firms even when prices differ. Second, they sometimes buy all units at the more expensive firm if it also pays a higher wage. These strategies

reflect the complex fairness problem that consumers face. Buying from both firms secures an income for both workers in the short run. Alternatively, not buying from the low-wage firm can be an attempt to encourage the firm to pay a higher wage in the future. The consumers' fairness strategies can be captured by maximin preferences and indirect reciprocity in Charness and Rabin's (2002) reciprocal fairness model.

Overall, our findings show that above-equilibrium wages can be sustained in markets without a minimum wage. Nevertheless, even a modest minimum wage level leads to higher rents for the workers. The structural estimations show that a minimum wage lowers consumers' overall weight on social concerns. At the same time, the relative weights on maximin concerns and reciprocity are not significantly affected.

In line with the idea that achieving fairness in markets can be a complex task involving multiple strategies, existing experimental studies detect various determinants of such fairness. Pigors and Rockenbach (2016) demonstrate that socially responsible production is profitable in an oligopoly but not in a monopoly setting. Irlenbusch and Saxler (2019) find that two properties of markets—social information and buyer-seller framing—affect the fairness of subjects, whereas diffusion of responsibility does not. Sutter et al. (2020) focus on fairness in double auction markets, and Kirchler et al. (2016) show that individual decisions and decisions in markets react to factors such as anonymity and incentives in a similar way. Moreover, it emerges that certification can be useful for internalizing externalities in markets (see Etilé and Teyssier 2016). Addressing the external validity of fairness in market experiments, Engelmann, Friedrichsen, and Kübler (2018) show that fair consumer behavior in a market experiment significantly correlates with preferences for fair-trade products. Since we study the effect of labor market regulation on consumer fairness, our experiment also relates to the literature on crowding out of intrinsic motivation with extrinsic or economic incentives (see Frey 1997, Frey and Jegen 2001, Gneezy and Rustichini 2000a, 2000b, Falk and Kosfeld 2006, and Ostrom 2000).

Earlier experimental work focuses on workers' reaction to a minimum wage, not on consumers' as in our study. Falk, Fehr, and Zehnder (2006)

study the impact of a minimum wage on the reservation wage of workers and their fairness perceptions. Brandts and Charness (2004) investigate the effect of a minimum wage in a labor market characterized by gift exchange between workers and employers.

We study minimum wages as an example of a legal regulation that protects third parties. Therefore, we abstract from other aspects that are relevant to the discussion of minimum wages, such as employment effects. In our experimental design, employment is exogenously fixed to keep the question of what constitutes a fair wage simpler for the consumers.[3]

Our experiment is related to the literature on indirect reciprocity, which has been observed in helping games (see Seinen and Schram 2006, Engelmann and Fischbacher 2009) and in third-party punishment (Fehr and Fischbacher 2004). In a three-person ultimatum game (Güth and van Damme 1998, Güth, Schmidt and Sutter 2007), the proposer can allocate money to a responder and to a dummy, and the responder can accept or reject the proposal, while the dummy is passive. The experimental evidence from this game suggests that the responders' willingness to punish proposers for the sake of the dummy player is limited. An important difference from our market experiment is that switching to the fairer firm is a relatively effective punishment by the consumer, in contrast to rejections in the three-player ultimatum game. Note, however, that punishing a firm also punishes its worker, which renders it difficult to achieve a fair outcome in the short run.

[3] A large portion of the empirical literature on minimum wages investigates the employment effect of raising the minimum wage. This has been controversial (Card 1992, Card and Krueger 1994, Dickens, Machin, and Manning 1999). Empirical studies on minimum wages have also observed so-called spillover effects. An increase in the minimum wage has been found to increase wages by more than the required amount (Card and Krueger 1995, Katz and Krueger 1992). In line with this research, we observe in our experimental data set that consumers and firms are willing to pay more than the minimum wage. In particular, depending on the treatment, the average wage is 12%–64% above the minimum wage. Note that efficiency-wage reasons cannot play a role in our experiment, as the effort of the worker is fixed.

2 Experimental design

We study a duopoly market with one consumer who can buy up to 10 units of a fictitious homogeneous good. Each unit has a value of 25 points for the consumer. Both firms are run by a manager, and we will refer to the participants in the role of the manager as firms in the following. Each firm employs one worker. The workers are actual participants in the experiment, even though they have no choice to make. By each firm having one worker without a decision right, we capture a situation with strong competition among workers and in which tasks are easily enforceable. The firm can produce up to 10 units of the good. The firm chooses a price (per unit) $p \in [0, 50]$ and a wage w (per unit). If no minimum wage is in place, then $w \in [0, 50]$; otherwise, $w \in [\underline{w}, 50]$, where $\underline{w} \in \{3, 6\}$ denotes the minimum wage that is varied across treatments.[4] The firms cannot price discriminate; that is, the same price-wage combination holds for all 10 units, and the firms do not have an option to restrict supply except by raising the price to a prohibitively high level. Wages are paid only for units actually sold and there are no other costs. Workers have no costs, no other source of income than the wage, and no outside option. If a consumer buys a unit from a firm that has chosen price p and wage w, the consumer earns $25 - p$ for this unit, the firm makes a profit of $p - w$, and the worker earns w. These earnings are multiplied by the purchased number of units in order to compute total earnings in a period.

After the two firms have made their choices, the consumer is informed about both firms' price-wage pairs (p_1, w_1) and (p_2, w_2). The consumer can then buy any combination of integer amounts from the two firms, up to a total quantity of 10, and he can also buy no units at all. At the end of each period, the participants are informed about all decisions in their group, i.e., about both firms' price-wage combinations and about the consumer's decision.

[4] We also conducted a few sessions for $\underline{w} = 1$ and $\underline{w} = 9$, but decided to focus on $\underline{w} = 3$ and $\underline{w} = 6$ in later sessions. With $\underline{w} = 1$, the minimum wage has hardly any effect, while it is almost always binding in the case of $\underline{w} = 9$.

The stage game with selfish agents has three subgame-perfect equilibria. In each of these, firms set $w = 0$ if there is no minimum wage and $w = \underline{w}$ if there is a minimum wage. The equilibrium prices are $p = w$, $p = w + 1$ or $p = w + 2$ (with $p_1 = p_2$), and the consumer always buys 10 units from the cheaper firm, as long as $\min(p_1, p_2) < 25$, which always holds on the equilibrium path. Off the equilibrium path, the consumer buys nothing if $\min(p_1, p_2) > 25$ and an arbitrary quantity if $\min(p_1, p_2) = 25$. If both firms choose the same price, in equilibrium, the consumer can split his demand in an arbitrary way between the two firms. Note that in equilibrium, almost the entire surplus goes to the consumer.[5] In contrast, the payoffs are split equally among all five market participants if both firms choose $p = 20$ and $w = 10$, and the consumer buys five units from each firm, resulting in a payoff for all participants of $\pi = 10 \cdot 5 = 50$. Hence, the minimum wage of three or six that we implemented is below the wage that would ensure equal payoffs.

Note that as long as the consumer buys 10 units, the total earnings in the market are constant, independent of how the purchases are spread across the two firms. This has the appealing property of allowing us to study consumer concerns for fairness that are not confounded with concerns for efficiency.[6]

We used a fixed-matching protocol whereby a group of five participants (one consumer and two firm-worker pairs) stayed together during the entire experiment. The main motivation for fixed groups was our interest in a situation in which consumer behavior can drive firm behavior. Participants kept their role for the whole experiment in order to enhance possible inequalities and fairness concerns. The experiment lasted for 40 periods.

[5] As the stage game has three equilibria with $p = w$, $p = w + 1$ or $p = w + 2$, collusive equilibria of the repeated game exist due to the possibility to punish deviations. While our main focus is on wages, we note that we do not find evidence of collusive firm behavior (see Table 1 below). In addition, all equilibria involve wages equal to the minimum wage. If the consumer is selfish, he does not want to pay more for a higher wage and thus a (selfish but collusive) firm has no reason to pay higher wages.

[6] See Kritikos and Bolle (2001), Charness and Rabin (2002), Engelmann and Strobel (2004), and Harrison and Johnson (2006) for evidence that experimental subjects frequently exhibit preferences to maximize the total payoff and that the experimental results may mistakenly be interpreted as evidence of fairness concerns.

In spite of the repeated interaction, consumers do not have a strategic incentive to signal that they care about fairness in order to change other subjects' behavior—though consumers may still pretend to be fair to preserve a positive self-image. This is in contrast to many experimental games employed to assess fairness concerns of players, such as ultimatum, trust, and gift-exchange games. In these games, fair behavior in early periods of repeated games can be due to signaling, as 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.[7] Since, in our experiment, higher wages often go along with higher prices, selfish consumers want to signal that they do *not* care about the worker but only about low prices.

We employed a within-subjects design with respect to the presence or absence of a minimum wage but between-subjects design with respect to the magnitude of the minimum wage. Hence each participant experienced half of the experiment with a minimum wage in place and half of the experiment without a minimum wage in place where for half of the sample the minimum wage equaled 3 and for the other half it was 6. To control for order effects, we conducted two sets of treatments. In the NMF treatments (No Minimum wage First), there was no minimum wage initially, but it was introduced after the first 20 periods. In the MF treatments (Minimum wage First), a minimum wage was in place initially, but it was abolished after 20 periods. At the beginning of the experiment, we informed the participants that there would be a change in the rules after 20 periods without mentioning that this change concerned the minimum wage. They were also informed that the group composition and the role assignment would not be changed. We implemented a market frame. In the instructions (see Online Appendix B.2 for the original German instructions and Online Appendix B.1 for an English translation), participants are called consumers, firms, and workers, and we

[7] For example, Anderhub, Engelmann, and Güth (2002) find that behavior in a repeated trust game with some computer-generated players who are programmed to reward trust quite closely follows a signaling equilibrium where second movers reward trust early on but stop doing so near the end of the supergame.

used the terms "prices" and "wages."[8] When a minimum wage was in place, it was stated in the instructions that the wage had to equal at least $\underline{w}$. The minimum wage $\underline{w} \in \{3, 6\}$ was varied between the sessions but kept fixed within a session. After the first 20 periods, participants in the NMF treatments were informed that from the next period on, the wage had to be at least $\underline{w}$, and in the MF treatments, it was specified after 20 periods that from the next period on, the wage had to be non-negative. Depending on the level of the minimum wage and when it was introduced, the sessions were called NMF3, NMF6, MF3, and MF6.

The experiment was conducted at the experimental economics laboratory at the Technical University Berlin. The experiment was programmed and run using z-Tree (Fischbacher 2007). We had a total of 640 subjects in 38 sessions, each consisting of two to four groups of five participants. Each group represents one independent observation. Overall, we collected data from 32 groups for each treatment.

At the end of a session, earnings in points were converted at a rate of 200 points = 1 Euro and were paid out in cash. Participants received 5 Euro in points as an initial endowment to cover possible losses and to ensure that workers were compensated.[9] The sessions took between 60 and 90 minutes, and average earnings were around 14.54 Euro (including the initial endowment).[10]

[8] In line with most other experiments investigating fairness in markets, we did not opt for a neutral frame. First, describing transactions between buyers and sellers, avoiding terms like prices becomes rather convoluted. Participants probably understand the setting once they see it as a transaction between buyer and seller. Second, we wanted to investigate the effects of regulation, and this is arguably easier to understand if it refers to a meaningful variable such as wages.

[9] Paying the workers a higher initial endowment was not feasible because it would have changed the egalitarian price-wage combination and reduced any fairness motivation to pay them a higher wage.

[10] If the consumers buy 10 units (all other decisions only determine the distribution of rents among players), the average payoffs are 10 Euro plus a 5 Euro initial endowment. The slightly lower earnings that we observe result from consumers occasionally buying fewer than 10 units.

3 Results

We start with an overview of the prices and wages set by firms and the resulting distribution of earnings (Section 3.1). In Section 3.2 we investigate the choices of consumers and identify two different strategies of fair consumers. We further analyze consumer behavior with the help of a structural model in Section 3.3.

3.1 Firm behavior

3.1.1 Wage and price dynamics

Figure 1 shows the wage and price offers by the firms over time. The values reported are those set by the firms, not only the wages and prices that were actually paid.[11]

We first note that in all treatments, the initial wage and price offers are close to the fair allocation, independent of the minimum wage levels. We cannot reject the hypothesis that the median wage offer in the first period is equal to 10 (both at the aggregate level and for each treatment separately; sign tests). Similarly, the first-period median price offers are not significantly different from 20 in any treatment (at the 5% level, sign tests).

In the first six periods, all treatments show a significant negative time trend of wages and prices. In contrast, in periods 7–20, there are almost no significant time trends.[12] In the second half of the experiment, we observe a pattern that is similar but weaker than in the first half. Since this paper focuses on the effects of minimum wages on mature consumer behavior, we

[11] We observe some cases in which it appears that a participant in the role of the firm confused wage and price. We infer this from the fact that for one period, the participant reversed a price-wage pattern that he had chosen before and afterwards. We exclude these observations from the analysis in the paper (2.96% of the data). Excluding these cases matters for the analysis of maximin behavior in Table 2. All other results are similar when these cases are not excluded (including the structural estimations in Table 4).

[12] We run OLS regressions of the average wage (price) offer on a constant and the period number (standard errors were clustered at the market level). Only the prices in NMF3 show a significant but moderate (downward) time trend in periods 7–20.

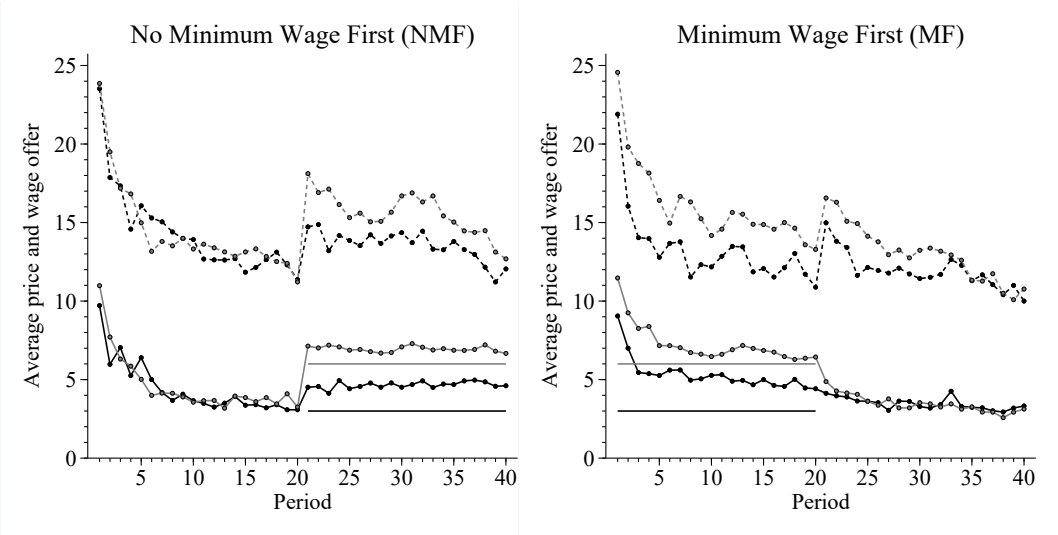

Figure 1: Average price offers (dotted lines) and wage offers (solid lines) over time in the no-minimum-wage-first treatments (NMF, left panel) and the minimum-wage-first treatments (MF, right panel) and for $\underline{w} = 3$ (black) and $\underline{w} = 6$ (gray). Horizontal lines indicate the minimum wage.

exclude the first six periods of each part of the experiment unless indicated otherwise.

3.1.2 Wage and price levels

We first explore the aggregate effect of a minimum wage on the market outcome. Table 1 shows the average wage and price offer together with the average earnings of the participants in each treatment and part of the experiment.

Without a minimum wage, the majority of wage offers (80%) and the majority of price offers (95.7%) are above the levels predicted in equilibrium with selfish players—namely, a wage of 0 and a price of, at most, 2. Even when a minimum wage is in place, wage offers are often above the predicted level. Specifically, 37.6% of wage offers are above the minimum wage, and 89.9% of price offers exceed the imposed minimum wage by more than two units.

Table 1: Average wage and price offer and payoff of the consumer, firms, and workers per treatment and minimum wage policy.

		No minimum wage first (NMF)			Minimum wage first (MF)		
	Minimum wage	w/o min wage	w/ min wage	*Difference*	w/ min wage	w/o min wage	*Difference*
Wage	3	3.51	4.72	*1.20****	4.92	3.33	*−1.59****
offer $\overline{w}$	6	3.74	6.92	*3.18****	6.69	3.20	*−3.50****
Price	3	12.95	13.32	*0.38*	12.35	11.47	*−0.88*
offer $\overline{p}$	6	13.07	15.13	*2.06***	14.93	12.14	*−2.79****
Consumer	3	127.10	122.52	*−4.58*	140.94	148.58	*7.64*
payoff $\overline{\pi}_c$	6	124.16	107.07	*−17.08***	115.56	142.06	*26.49****
Firm	3	77.52	70.92	*−6.60*	58.49	67.17	*8.67***
payoffs $\overline{\pi}_f$	6	77.90	68.07	*−9.83**	66.49	76.25	*9.76***
Worker	3	30.13	43.10	*12.98****	45.36	29.26	*−16.10****
payoffs $\overline{\pi}_w$	6	30.38	64.51	*34.14****	64.13	30.00	*−34.13****

Note: The data from the first six periods in each half are excluded. Tests are based on OLS regressions per treatment, with the average wage offer, price offer, and profits as dependent variables and a constant and a dummy for the second half as independent variables (standard errors corrected for clustering at the market level). $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 1 also shows that the average wage offers and, hence, the workers' earnings are significantly higher when a minimum wage is in place. On the other hand, the price level and the consumers' profits (rows 3–6 in the table) are affected significantly only when the minimum wage is six.

3.2 Consumer behavior

We explore the conditions under which the consumers deviate from the self-interested strategy of buying all 10 units from the firm with the lower price (if prices differ).

3.2.1 Non-selfish choices over all periods

Non-selfish consumer choices are defined as the consumer buying at least one unit from the more expensive firm.[13] To see whether such choices matter in our setting, we study behavior over all rounds, including the six early rounds

[13]Another deviation from self-interest occurs when consumers buy fewer than 10 units in total from both firms. We do not explore these choices further since they are relatively rare (7.5% of all cases), not driven by social concerns for the workers (or firms), and

of each part. In only 22% of all cases in which prices differ, the consumer choices contradict self-interest. However, the majority of consumers make such a choice at least once (66% in NMF3, 75% in NMF6, 66% in MF3, and 72% in MF6).[14]

These occasional deviations from self-interest go along with significant differences in market outcomes. Consider the first half of the NMF treatments in which the market participants are unaware of the minimum wage regulation in later rounds. We can divide these markets according to whether the consumer deviates from the self-interested choice at least once (65.6% of consumers, pooled over NMF3 and NMF6). The firms in markets with selfish consumers offer a wage of 2.16, on average, whereas the average wage offer is about twice as high (4.38) in markets in which consumers do not always act selfishly (the distributions are also different at $p < 0.001$ according to a rank-sum test). Different market outcomes are observed already when consumers deviate from the selfish choice once or twice.[15]

While we cannot show a causal effect of consumer choices on firms due to endogeneity issues in our setting, reverse causality of firm behavior on

apparently attempts to break the collusive behavior of firms (see Online Appendix A.2.1 for more details).

[14]When considering each part of the experiment separately, at least half of the consumers deviate at least once in each part of the experiment, except for the second half in NMF3. The shares in each part before and after the minimum wage change are 63% and 41% in NMF3, 69% and 56% in NMF6, 53% and 56% in MF3, and 50% and 63% in MF6.

[15]Focusing on markets in which consumers act non-selfishly only *once or twice* yields an average wage offer of 3.90, compared to 2.16 for markets with purely self-interested consumers (the distributions differ significantly according to a rank-sum test, $p = 0.017$). Taking into account only the lower of the two wages yields an even starker difference. In markets in which the consumer acts non-selfishly at least once, the average lower wage offer is 3.44, compared to 1.13 (i.e., 205% higher) in markets with selfish consumers ($p < 0.001$, rank-sum test). We find a similar relationship between consumer choices and wages when we look at markets that have no minimum wage in place in the second half (MF3 and MF6). Here, the average [lower] wage offer is 1.88 [1.29] with selfish consumers and 4.23 [3.16] in markets with consumers who buy at least once from the firm with the higher price. We also find correlations for the parts of the experiment when a minimum wage is in place (second half of NMF and first half of MF), but these are significant (at the 5% level) only when the minimum wage is not too high, i.e., with a minimum wage of 3 but not 6. Figure A1 in the online appendix shows the outcome of all markets by consumer type.

consumers is unlikely given the following three observations: (i) in the first period, firms do not act differently between the two market clusters with selfish and non-selfish consumers: in all four treatments, the wage and price offers are the same whether or not the firms face a selfish or non-selfish consumer;[16] (ii) given the limited market power of the firms, it is unclear how a single firm that wants to implement fair wages can force the consumer to buy from it;[17] (iii) if differences in wages were caused by differences in firms' preferences and caused differences in consumer behavior, we should observe consumers acting non-selfishly when the need of the workers is larger, i.e., when the lower of the two wages is low. This is the opposite of our observation that wages are higher in markets with consumers who act non-selfishly.

Overall, the comparisons of the two sets of markets suggest that consumers are able to affect the market outcome through occasional deviations from self-interest. Note that the two sets of markets do not differ with respect to the distributions of the average price offers ($p = 0.260$, rank-sum test) or the lower of the two price offers ($p = 0.130$, rank-sum test), which indicates that consumers care primarily about the workers and not the firms.

Observation 1. *The majority of consumers deviate at least once from the self-interested prediction. Markets with such consumers exhibit significantly higher wages than markets with consumers who always act according to their self-interest.*

[16] Rank-sum tests using the average wage offer [price offer] in the first period as observations between markets with selfish and non-selfish consumers yield $p = 0.196$, $p = 0.533$, $p = 0.799$, and $p = 0.516$ [$p = 0.849$, $p = 0.480$, $p = 0.839$, and $p = 0.385$] for the NMF3, NMF6, MF3, and MF6 treatment, respectively. Pooling over the NMF treatments yield $p = 0.222$ and $p = 0.855$ for wage and price offers, respectively.

[17] Note that the consumers buy from the expensive firm in 23% of the cases in which price offers differ and in 35% of the cases in which the firm with the higher price also offers a higher wage. In addition, even if most firms cared equally for the workers and managed to break the consumer's market power, we would expect to see the firms offer the same price and wage, but we see that in only 16.6% of all periods.

3.2.2 Fairness strategies

Non-selfish consumer choices occur particularly often when the firm charging the higher price also pays a higher wage. In these cases, consumers act non-selfishly 35% of the time, with an average share of units bought from the high-wage, high-price firm of 50.3%.[18]

Figure 2 shows the distributions of the number of units bought from the high-price, high-wage firm, given that the consumer bought at least one unit at that firm. The left panel is a histogram over all these cases, displaying three peaks. Consumers often buy one or two units at the high-price, high-wage firm, which is close to the self-interested choice of zero. The second peak is due to consumers buying an equal number of units at each firm even though the two prices differ.[19] The third peak captures consumers who buy all units from the high-price, high-wage firm. These observations are unlikely to be due to confusion since in 84.7% of all cases in which consumers bought more units from the firm with the higher price, this firm also offered a higher wage. Interestingly, both strategies that differ substantially from selfishness (buying five units from each firm and buying 10 units from the more expensive firm) are well separated from each other since there is little mass on $7, 8$, and 9 units.

While the histogram in the left panel of Figure 2 does not condition on the wage level, the right panel of the figure shows the kernel density estimates for the number of units bought at the high-price, high-wage firm—conditional on such a firm existing and at least one unit being bought from that firm—for two levels of the lower wage offer in each round. The graph displays

[18] Consumers deviate from self-interest significantly less often (in 17% of the cases) when the firm with the higher price has the *lower* wage. Based on the cases where price and wage offers differ, a probit regression of a dummy indicating deviations from self-interest on a dummy for cases where the firm with the higher price also has the higher wage yields $p < 0.001$ (standard errors corrected for clusters on the individual level). For expositional purposes, we restrict the analysis in the first part of the section to observations of one firm setting a *strictly* higher price and wage.

[19] When considering the entire data set (i.e., including observations where prices are equal and wages have any level), buying the same number of units from each firm is the second most frequent choice of consumers (18.5%), which is only chosen less often than buying all units from one firm (66.9%).

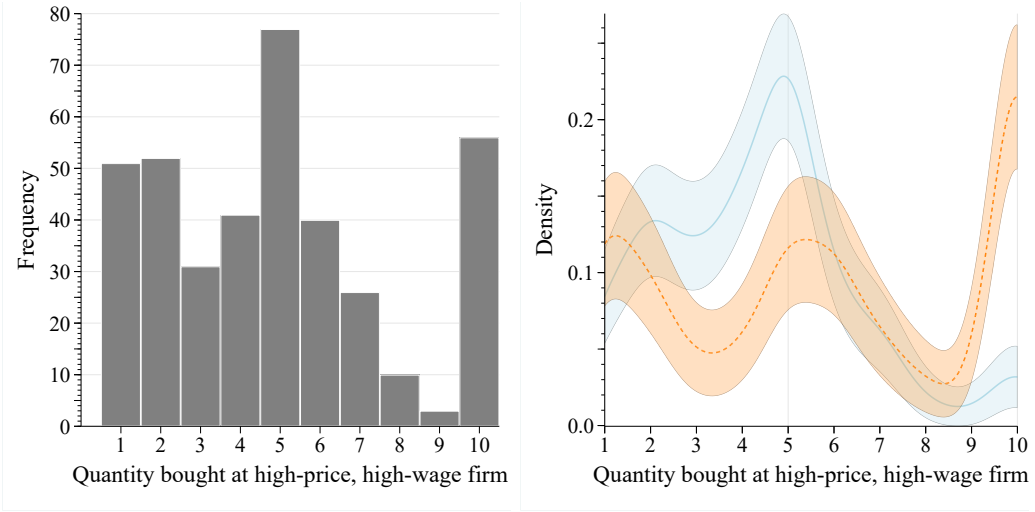

Figure 2: Distributions of the number of units the consumers bought from the firm with the higher price and the higher wage, conditional on buying at least one unit at that firm. *Left panel:* Histogram of all relevant cases (high-price, high-wage firm exists and at least one unit is bought from this firm). *Right panel:* Kernel density estimates for the same data but restricted to cases in which the lower of the two wage offers is above five (solid line) and below two (dotted line). Shaded areas represent 95% confidence intervals.

that when the lower of the two wages is fairly high (above five; solid line), consumers most often buy equal amounts from both firms (27%, conditional on buying at least one unit from the high-price, high-wage firm) and rarely buy all units from the high-price, high-wage firm (4%). In contrast, when the lower wage offer is below two (dotted line), consumers most often buy all units from the high-price, high-wage firm (31%) and less often buy the same amount from both firms (13%).[20]

Buying a similar number of units from both firms The strategy of buying similar amounts at both firms might reflect the consumers' wish to maximize the minimum payoff among market participants. Workers are

[20]For ease of exposition, the figure does not include the cases with intermediate levels of the lower wage offer (between 2 and 5). This distribution lies well between the other two (see Figure A2 in the online appendix).

among the lowest-earning market participants in 92.3% of all observations. When wage offers are identical and above zero (44.8% of the observations), maximizing the profits of each of the workers is achieved by buying five units from each firm. Consumers with maximin preferences who face differing wage offers should buy more from the firm with the lower wage offer (as long as it is positive).

Table 2: Effect of wages, prices, and minimum wage on consumers' tendency to maximize the minimum payoff of all market participants.

	Consumers' proximity to maximin choice			
	No minimum wage first (NMF)		Minimum wage first (MF)	
	NMF3	NMF6	MF3	MF6
Lower wage offer	0.239***	0.380***	0.204**	0.297***
	(0.080)	(0.092)	(0.083)	(0.073)
Wage difference	0.044	0.014	0.012	0.045
(Higher−lower)	(0.051)	(0.051)	(0.054)	(0.050)
Lower price offer	−0.008	−0.057*	−0.061	−0.059*
	(0.031)	(0.032)	(0.051)	(0.031)
Price difference	−0.001	−0.021	0.011	0.000
(Higher−lower)	(0.019)	(0.019)	(0.017)	(0.017)
With minimum wage	0.094	−1.064***	−0.706***	−0.894***
	(0.183)	(0.350)	(0.244)	(0.249)
Constant	−4.524***	−3.804***	−3.234***	−3.491***
	(0.453)	(0.501)	(0.574)	(0.369)
N	667	651	675	717
R^2	0.095	0.101	0.057	0.064

Note: The table shows estimated coefficients of OLS regressions. The dependent variable is the negative absolute difference between the quantity bought at firm 1 and the quantity predicted by maximin preferences. The regressions include only observations where the consumer bought all ten units and where maximin is consistent with, at most, two choices (84.27% of the cases; in 15.02% of the cases, maximin is consistent with any choice because one of the wages is zero or one of the firms sets its price equal to its wage; for the cases where maximin is consistent with two choices, they are always adjacent, e.g., "5 or 6", and their mean is taken as the prediction); the data from the first six periods in each half are excluded. Standard errors (in parentheses) corrected for clustering at the market level. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 2 reports on regressions to estimate the effects of the price and wage structure and the minimum wage policy on the consumers' propensity to maximize the minimum payoff of market participants. The dependent variable is the negative absolute distance between the quantity the consumers bought at

a firm and the quantity predicted by the maximin strategy (focusing on cases in which the consumer bought ten units in total). The estimations confirm that the consumers' propensity to act according to the maximin strategy is increasing in the lower of the two wage offers w_l (significant in all treatments, cp. right panel of Figure 2). The regressions also show that the consumers' propensity to follow the maximin strategy is reduced when a minimum wage is in place (significant in NFM6, MF3, and MF6). Consumers also respond to higher price levels with slightly lower propensities to choose the maximin strategy (marginally significant in NMF6 and MF6).

Observation 2. *The consumers' propensity to maximize the minimum payoff of market participants (i) increases in the lower wage offer and (ii) is lower with a minimum wage in place than without a minimum wage in three out of four treatments.*

Buying all units from the firm with the higher wage Consumers who care for the workers may want to punish a firm for paying too low wages. If this is the case, we expect the consumers' willingness to buy all units from the high-price, high-wage firm to depend negatively on the lower of the two wage offers. Furthermore, due to the price sensitivity of fairness concerns, the higher the difference in the price offers, the lower we expect the consumers' willingness to buy from the more expensive firm.

Table 3 reports the regression results of the consumers' willingness to buy all units from the high-price, high-wage firm on a dummy for the minimum wage policy and the price and wage structure. The estimations show that, as expected, this propensity of consumers is decreasing in the lower of the two wage offers in MF3. The absolute wage difference has a significant positive effect on the consumers' willingness to buy all units from the high-price, high-wage firm in NMF3. Furthermore, we find evidence of the price sensitivity of fairness concerns in MF3. The presence of a minimum wage negatively affects the consumers' tendency to buy all units from the high-price high-wage firm in NMF6.

Table 3: Effect of wages, prices, and minimum wage on consumers' tendency to buy all units from the high-price, high-wage firm.

	Consumer buys all units from the high-price high-wage firm			
	No minimum wage first (NMF)		Minimum wage first (MF)	
	NMF3	NMF6	MF3	MF6
Lower wage offer	0.010	−0.036	−0.423**	−0.076
	(0.060)	(0.090)	(0.185)	(0.063)
Wage difference	0.131**	0.024	0.347*	0.011
(Higher−lower)	(0.067)	(0.096)	(0.180)	(0.081)
Lower price offer	0.013	0.036	−0.067	−0.040
	(0.034)	(0.057)	(0.098)	(0.053)
Price difference	−0.042	0.011	−0.632***	−0.023
(Higher−lower)	(0.032)	(0.065)	(0.196)	(0.048)
With minimum wage	0.134	−0.652**	−0.260	.
	(0.374)	(0.292)	(0.650)	(.)
Constant	−2.102***	−2.148***	0.234	−0.856
	(0.363)	(0.611)	(0.799)	(0.554)
N	239	242	303	233
$\log L$	−47.621	−33.272	−44.402	−44.475

Note: The table shows estimated coefficients of probit regressions. The dependent variable is a dummy for observations where the consumer bought all ten units at the high-price, high-wage firm. The regressions include only cases where the consumer bought ten units in total, and one firm offered both a strictly higher price and a strictly higher wage; the data from the first six periods in each half are excluded. In MF6 (column 4), the effect of the minimum wage could not be estimated because the consumers never bought all ten units from the high-price, high-wage firm when a minimum wage was in place (there is a reduction in the application of the strategy from 8.2% to 0% when comparing periods without and with a minimum wage, respectively). Standard errors (in parentheses) corrected for clustering at the market level. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Observation 3. *(i) Some consumers buy all units from the firm with the higher price as long as it offers a higher wage. (ii) In some treatments, consumers are more likely to buy all units from the high-price, high-wage firm the lower the wage offer of the low-wage firm, the higher the wage difference between firms, the lower the price difference between firms, or if no minimum wage is in place.*

3.3 Structural estimation of consumer preferences

In this section, we apply Charness and Rabin's (2002) social welfare model to assess how a minimum wage affects consumer behavior. The analysis in the previous section addressed the minimum wage's effect on the two specific fairness strategies separately. The structural estimation presented in this section allows us to estimate the weights that consumers assign to these strategies, depending on whether or not a minimum wage is in place.

In the static game, a consumer with maximin preferences would buy nearly equal shares from both firms and more from the firm paying the lower wage. In the repeated game, a consumer with maximin preferences might buy more from the firm with the higher wage (as long as the workers earn less than the firms) if she believes that firms will react by raising wages. An alternative way to interpret the consumers' tendency to buy all units from the high-price, high-wage firm is indirect negative reciprocity. Consumers "retaliate" on behalf of the worker if the wage is unfairly low. Charness and Rabin's (2002) model combines maximin preferences with reciprocity concerns (besides self-interest and total welfare concerns) and is, therefore, well suited to capture the consumers' fairness strategies in our setting.

Before applying the model to our setup, we introduce its general features. In the multi-agent model of Charness and Rabin (2002), n players pick strategies $s = (s_1, \ldots, s_n)$ that yield material payoffs $\pi = (\pi_1, \ldots, \pi_n)$. The CR-utility of player i is given by

$$\begin{aligned} U_i(s,d) =&(1-\lambda)\pi_i + \lambda \Bigg[\delta \min\{\pi_i, \min_{m\neq i}\{\pi_m + bd_m\}\} \\ &+(1-\delta)(\pi_i + \sum_{m\neq i} \max\{1-kd_m, 0\}\pi_m) - f\sum_{m\neq i} d_m\pi_m\Bigg]. \end{aligned} \tag{1}$$

The most interesting parameter is $\lambda \in [0,1]$, which is the weight that player i assigns to social concerns relative to her own material payoff. With $\lambda = 0$, the model collapses to the benchmark of a purely self-interested consumer. With $\lambda = 1$, the consumer does not care differently about her own material payoff than about others.

Social concerns include a δ-weighted combination of maximin preferences (first term in the square brackets) and total-payoff concerns (second term), with adjustments for the "demerit" of the other players. Individual demerit $d_j \in [0, 1]$ reflects how much any player $i \neq j$ thinks player j has "misbehaved." Demerit affects social concerns in three ways: first, by an adjustment of the maximin preferences (weighted by $b \geq 0$); second, by an adjustment of total-payoff concerns (weighted by $k \geq 0$); and third, by adding demerit-based negative reciprocity (weighted by $f \geq 0$; third term).

3.3.1 Model application

For the application to our specific setting, we simplify Charness and Rabin's (2002) general model in several ways. We first note that only the firms' demerit matters for the consumer's utility since the workers have no agency and, therefore, cannot acquire demerit. Second, in our setting, there is no genuine tradeoff between total material welfare and other motives since the sum of the material payoffs is constant as long as the consumer buys ten units.[21] Therefore, we ignore total-payoff concerns in our application and reweight the remaining components such that social concerns are a convex combination of maximin preferences (weighted with ϕ) and negative reciprocity (weighted with $1 - \phi$).

The firm's demerit adjustment for the maximin preferences is of minor relevance in our setting since in the vast majority of cases (92.3%), a worker has the lowest income. Thus, maximin preferences are almost always equal to concerns for a sufficiently high wage. Therefore, we ignore the firm-specific demerit adjustment for the maximin preferences and reserve the role of demerit for negative reciprocity.[22] Together with the above assumptions, the

[21] The only way in which the second term differs from the constant material welfare is through the demerit adjustment that lowers a firm's weight in the consumer's welfare consideration if the firm has misbehaved. The same logic is already captured by the negative reciprocity component (third term), with the only difference that the effect of the latter is unbounded and weighted differently relative to the maximin component (first term).

[22] This also greatly facilitates the estimation of the model. Attempts to include the parameter b in the estimations yielded either convergence of b to zero or (for other variations

consumer's CR-utility is now reduced to

$$U_c(s,d) = (1-\lambda)\pi_c + \lambda\left[\phi \min\{\pi_c, \pi_{w_1}, \pi_{w_2}, \pi_{f_1}, \pi_{f_2}\} + (1-\phi)(-d_{f_1}\pi_{f_1} - d_{f_2}\pi_{f_2})\right]. \tag{2}$$

Our final assumption concerns the firms' demerit.[23] As in Charness and Rabin (2002), we have to specify an exogenous fairness standard to pin down the predictions of the model. A natural candidate is a wage of 10 and a price of 20 that lead to equal payoffs of all participants if the consumer buys five units from each firm. To ease interpretation of the results, we restrict demerit to deviations from the fair wage, $w^* = 10$.[24] Specifically, we assume that the demerit d_{f_i} of firm f_i is given by

$$d_{f_i} = \max\{w^* - w_i, 0\}/w^*. \tag{3}$$

That is, a firm's demerit is the extent to which its wage w_i undercuts the fair wage w^*, normalized to be in $[0, 1]$.

3.3.2 Model estimation

The unknown parameters in the consumer CR-utility (2) are λ, the weight on social concerns relative to self-interest, and ϕ, the weight on maximin preferences relative to negative reciprocity (within social concerns). To estimate the CR-utility over all consumers, we use a mixed logit model with random individual parameters (see Train, 2009). Letting λ and ϕ vary across consumers (rather than estimating a fixed λ and ϕ for all consumers) accounts

of the model) no convergence at all. We also note that rather than weighting negative reciprocity with a parameter that is non-negative but not constrained from above, we weight negative reciprocity with $(1-\phi)$ and maximin preferences with ϕ, which constrains ϕ to lie between 0 and 1, thus allowing for an easier comparison with λ.

[23] Charness and Rabin (2002) explicitly leave demerit "underspecified" for applications. It is only in their Appendix 1 that demerit is fully specified for the definition of the reciprocal-fairness equilibrium. In the main applications in their paper, demerit is assumed to be 1 if player A chooses to enter in some of the games, and 0 otherwise.

[24] We also estimated an extended model in which both unfairly low wages and unfairly high prices evoke demerit. The results are qualitatively the same (see Table A2 in the online appendix).

for individual heterogeneity as well as for repeated observations on the individual level. Since both parameters are bounded in $[0, 1]$, we model them as draws from beta distributions. Specifically, we assume that random parameter $\theta \in \{\lambda, \phi\}$ follows a beta distribution $\theta \sim \text{Beta}(\theta^\mu, \theta^\eta)$ with mean $\theta^\mu \in (0, 1)$ and precision parameter $\theta^\eta > 0$, which is inversely related to the variance of θ, $\text{var}(\theta) = \theta^\mu(1 - \theta^\mu)/(1 + \theta^\eta)$.[25] Thus, for the two parameters in our setting we have:

$$\begin{aligned} \lambda &\sim \text{Beta}(\lambda^\mu, \lambda^\eta), \\ \phi &\sim \text{Beta}(\phi^\mu, \phi^\eta). \end{aligned} \tag{4}$$

To test the effects of minimum wages on consumers' average social concerns, we allow the mean of each random parameter to depend on the minimum wage:

$$\begin{aligned} \lambda^\mu &= \lambda^\mu_{(\text{w/o min wage})} + \mathbb{1}_{(\text{w/ min wage})}\Delta\lambda^\mu, \\ \phi^\mu &= \phi^\mu_{(\text{w/o min wage})} + \mathbb{1}_{(\text{w/ min wage})}\Delta\phi^\mu, \end{aligned} \tag{5}$$

where $\mathbb{1}_{(\text{w/ min wage})}$ is the indicator function, which takes on value one for periods with a minimum wage and zero otherwise, and $\Delta\lambda^\mu$ and $\Delta\phi^\mu$ are potential differences in the parameter means when comparing periods with and without a minimum wage.

Consumer choices have a simple logit representation such that consumer i with parameters λ_i and ϕ_i chooses allocation $(q_{1it}, 10 - q_{1it})$ in period t with probability

$$p(q_{1it}; \lambda_i, \phi_i) = \frac{\exp(U_c(q_{1it}; \lambda_i, \phi_i))}{\sum_{x=0}^{10} \exp(U_c(x; \lambda_i, \phi_i))}, q_{1it} = 0, \ldots, 10. \tag{6}$$

[25] The beta distribution is usually expressed in terms of $\theta \sim \text{Beta}(\alpha, \beta)$, with mean $\mu = \alpha/(\alpha+\beta)$ and variance $\text{var}(\theta) = \alpha\beta/((\alpha+\beta)^2(\alpha+\beta+1))$. We use the above alternative parameterization for a straightforward interpretation of the the estimated parameters; the alternative parameterization is obtained from the standard parameterization by setting $\alpha = \theta^\mu\theta^\eta$ and $\beta = (1 - \theta^\mu)\theta^\eta$ (see Ferrari and Cribari-Neto, 2004).

We can now construct the likelihood function. Conditional on λ_i and ϕ_i, the likelihood of observing consumer i's choices $q_{1i} = \{q_{1it}\}_t$ across periods $t = \{7, \ldots, 20, 27, \ldots, 40\}$ is given by

$$L_i(\lambda_i, \phi_i) = \prod_t p(q_{1it}; \lambda_i, \phi_i).$$

Integrating out the random parameters gives us the unconditional likelihood (the mixed logit probability) of observing consumer i's choices

$$L_i(\lambda^\mu, \lambda^\eta, \phi^\mu, \phi^\eta) = \iint \prod_t p(q_{1it}; \lambda_i, \phi_i) f_\lambda\left(\lambda_i; \lambda^\mu, \lambda^\eta\right) f_\phi\left(\phi_i; \phi^\mu, \phi^\eta\right) \, d\lambda_i \, d\phi_i, \tag{7}$$

where $f_\lambda(\cdot)$ and $f_\phi(\cdot)$ are the beta density functions for λ and ϕ, respectively. The joint log likelihood function over all consumers can now be written as

$$l(\lambda^\mu, \lambda^\eta, \phi^\mu, \phi^\eta) = \sum_i \log L_i(\lambda^\mu, \lambda^\eta, \phi^\mu, \phi^\eta). \tag{8}$$

Since we cannot evaluate the integral in (7) directly, we estimate the parameters in (8) by maximum simulated likelihood (Train, 2009; Wooldridge, 2010). As in the previous sections, we exclude the first six periods of each half and focus on the observations in which the consumers bought ten units in total. In addition to the random parameters in our model, we apply a cluster correction of the standard errors to account for repeated observations on the individual level.[26]

Table 4 presents the estimation results. Rows (1) and (2) show that social concerns matter in all markets, regardless of the minimum wage policy. The average weight that consumers assign to social concerns, λ^μ, is between 0.160 and 0.399 and significantly larger than zero in all treatments. Rows (4) and (5) show that within social concerns, the average weight on maximin relative

[26]The estimation was conducted with Gauss. The correction of standard errors for clustering on the individual level was conducted with Stata. We use Halton sequences of length 100,000 for each individual (see Train, 2009). The cluster correction does not affect the significance of estimated parameters, except that without the cluster correction also in MF6 λ (as well as ϕ) is significantly lower with a minimum wage (cp. Table A3 in the online appendix).

Table 4: Estimates of consumers' CR-utility.

		No minimum wage first		Minimum wage first	
	Parameter	NMF3	NMF6	MF3	MF6
(1)	$\lambda^{\mu}_{\text{(w/o min wage)}}$	0.352***	0.361***	0.338***	0.399***
		(0.053)	(0.076)	(0.065)	(0.061)
(2)	$\lambda^{\mu}_{\text{(w/ min wage)}}$	0.331***	0.230***	0.160***	0.277***
		(0.074)	(0.070)	(0.052)	(0.065)
(3)	$\Delta\lambda^{\mu}$	−0.021	−0.131***	−0.178***	−0.122
		(0.056)	(0.048)	(0.068)	(0.082)
(4)	$\phi^{\mu}_{\text{(w/o min wage)}}$	0.263***	0.407***	0.507***	0.415***
		(0.068)	(0.077)	(0.127)	(0.073)
(5)	$\phi^{\mu}_{\text{(w/ min wage)}}$	0.331***	0.391***	0.346**	0.248***
		(0.074)	(0.140)	(0.138)	(0.075)
(6)	$\Delta\phi^{\mu}$	0.068	−0.016	−0.161	−0.167*
		(0.082)	(0.112)	(0.132)	(0.093)
	N	773	765	830	848
	$\log L$	7855.012	7583.980	8488.831	8547.427

Note: The table shows the mean of the estimated distribution of each parameter in the CR-model with random parameters; estimated precision parameters are $\lambda^{\eta} = \{0.228, 0.354, 0.377, 1.140\}$, and $\phi^{\eta} = \{0.896, 1.226, 0.935, 1.137\}$ for NMF3, NMF6, MF3, and MF6, respectively. Regressions are based on observations in which the consumers bought ten units in total; the data from the first six periods in each half are omitted. Standard errors are clustered at the individual level; $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

to reciprocity concerns, ϕ^{μ}, is significantly different from both 0 and 1 in all markets ($p < 0.001$ in all cases), which indicates that both maximin and reciprocity concerns matter in all markets.

Row (3) shows that a minimum wage tends to reduce consumers' average weight on social concerns λ (relative to their self-interest), and these reductions are statistically significant in NMF6 and MF3. The weight on maximin preferences relative to negative reciprocity, ϕ, is, in turn, not significantly affected by the minimum wage, see row (6). These findings are overall consistent with our regression analyses in Section 3.2, where we found (i) no significant effects of a minimum wage in NMF3 and (ii) in all other treatments, a significant reduction of maximin choices (Table 2) together with

fewer "reciprocating" choices of consumers buying all units from the high-wage, high-price firm (significant in NMF6; Table 3).[27]

Consumers' decision times are affected by the minimum wage policy. The high minimum wage significantly reduces the decision times of non-selfish consumers (those who buy at least once from the firm with the higher price), while there are no significant effects on decision times for selfish consumers and for the low minimum wage (see Table A4 in the online appendix). The same holds if instead of looking at non-selfish behavior in general, we consider consumers who at least occasionally follow one of the two identified fairness strategies with those who do not (see Tables A5 and A6 in the online appendix). The shorter decision times for pro-social consumers could reflect that their decision making is easier under sufficiently tight regulation or—since consumers' weight on social concerns λ tends to be lower under a minimum wage—that they "outsource" their moral concerns to the regulation.[28]

4 Conclusions

Over the last decades, experimental research has provided important insights into fair behavior in markets. Much of this research investigates situations in which it is obvious what constitutes fair behavior and how fair outcomes can be achieved. However, outside the laboratory, it is often complicated to achieve fair outcomes or to even decide what is a fair outcome. We study an experimental market in which consumers have to make complex decisions to achieve fair outcomes.

We find that, although consumers act self-interestedly in the majority of cases, they also reveal a non-negligible willingness to forgo their own payoffs

[27] In MF6, the weakly significant negative effect on ϕ^{μ} and the insignificant negative effect on λ^{μ} both point towards a lower weight on maximin preferences, consistent with the decline of maximin choices reported in Table 2 for MF6.

[28] We thank an anonymous reviewer for pointing this out. While the average reduction in decision times is moderate (10.6%), it is in the range of 6% to a third observed in Carpenter et al. (2021), who find that regulating information provision about prepaid cards can increase welfare through fewer dominated choices and lower decision times.

in order to support the workers. Specifically, we identify two strategies that consumers use to implement a fair market outcome. First, consumers often act in line with maximin preferences, even if the firms' prices differ. Second, if the average wage level is low, consumers sometimes buy all units from the more expensive firm if it offers a higher wage. Maximin preferences imply that consumers want to implement a fair outcome in the short run as long as wages are high enough. But if wages are too low, fair-minded consumers shift purchases to the firm with the higher wage, presumably to encourage higher wages in later rounds. We observe, therefore, that although achieving fair outcomes is far from trivial in our markets, a number of participants in the role of consumers make an effort to do so. The behavior of consumers encourages firms to raise wages above the minimum level.

Do legal standards affect the ethical concerns of consumers? With the help of regressions and a structural model that captures self-interest, short-run concerns for equality, and long-run concerns for fair wages, we find that the presence of a minimum wage lowers consumers' overall weight on fairness but nevertheless leads to higher welfare of workers.

The abstractions from natural labor markets (such as the restriction to monopsonistic buyers) preclude drawing general lessons regarding the effects of minimum wages or other regulations. Our design rules out any possible impact of minimum wages on employment levels, as well as on workers' motivation, both of which would be important determinants of the overall welfare effects of minimum wages. Our results imply, however, that consumers pursue complex fairness strategies and that regulation can weaken the overall impact of fairness concerns.

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