Fairness and Effort - Evidence from a Field Experiment

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Abstract

If paying higher wages motivates individuals to voluntarily provide more effort, this has sweeping implications for the functioning of labor markets. While lab experiments support this basic mechanism, evidence from field experiments is less clear cut. We conducted a field experiment in a one-shot employment relationship between a publishing house and workers hired to distribute copies. We increased wages in a controlled way to measure the impact on effort. Ten weeks after the experiment, we conducted a follow-up survey to measure fairness perceptions of the wages of these workers. We find strong evidence for the fair wage-effort hypothesis: Workers who felt underpaid at the baseline wage reacted to the wage increase by raising effort strongly. Workers who felt paid fairly at the baseline wage did not react at all to the wage increase. Our results provide clear evidence from a field experiment that the perceived fairness of wages plays an important role in determining effort.

JEL classification: C93, J30
Keywords: fairness, fair wage-effort hypothesis, field experiment

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1 Introduction

Do fairness concerns affect workers' effort? There is a growing theoretical literature that stresses the importance of fairness concerns and their far-reaching implications for the labor market.[1] A prominent example is the fair wage-effort hypothesis of Akerlof and Yellen (1990).[2] Based on the social psychology literature, the fair wage-effort hypothesis assumes that workers feel entitled to a fair wage. The hypothesis then states that when the actual wage is less than what a worker considers fair, she supplies lower effort than she otherwise would. Consequently, wage increases which workers perceive as an alleviation of unfairness are hypothesized to raise effort, even when the response is costly for the workers. However, wage increases when the wage is considered fair should have no effect on workers' effort (see Figure 1). While extensive evidence from laboratory experiments and interview surveys supports the idea that individuals respond to non-economic incentives, behavioral evidence from field experiments on the relevance of fairness concerns in real-life jobs is scant.[3]

This paper uses a field experiment and an independent follow-up survey among the subjects to study how the perceived fairness of the wage determines workers' effort. We conducted our experiment during an episode in which a publishing house hired workers from a promotion agency to promote its newly launched newspaper. The newspaper promotion was limited in time, meaning that the interaction between the workers of the promotion agency and the publishing house can be considered one-shot.[4] The workers' task was to distribute copies of the newspaper to passers-by. The promotion agency paid its workforce a fixed wage of CHF 22/h (about \$18/h). In collaboration with the publishing house, we raised the distributors' pay by CHF 5/h (about \$4/h) in a randomized and controlled way. This provided us with the opportunity to examine how raising the fixed wage increases workers' effort.

We also conducted a follow-up survey among the workers who had previously participated in the experiment. The survey was conducted such that it was completely unrelated to any of the firms involved in the experiment, and was mailed to the workers 10 weeks after the experiment was concluded. The survey asked them to provide details about their part-time work. Most importantly, the survey asked them about what pay they considered fair for the various jobs they worked.

[1] For empirical evidence of potential economic implications, see Bewley (1999) on downward wage rigidity and Clark and Oswald (1994) on involuntary unemployment.

[2] For a more recent formalization of a very similar idea, see Benjamin (2006), Cabrales et al. (2008) or Danthine and Kurmann (2007).

[3] See Fehr and Gaechter (2000) for an overview of the experimental evidence on fairness in laboratory labor markets. For surveys of managers which suggest that fairness is of overriding importance in setting wages, see Agell and Lundborg (1995), Bewley (1995), Blinder and Choi (1990), Campbell and Kamlani (1997), Doeringer and Piore (1985), Kaufman (1984) and Levine (1993). Examples of the emerging experimental evidence in real-life labor markets include Al-Ubaydli et al. (2006), Gneezy and List (2006) and Kube et al. (2008*a*,*b*).

[4] The one-shot nature of this employment relation allows to distinguish empirically the fair wage-effort hypothesis from models using repeated games, which likewise posit a positive relationship between wages and workers' effort. Examples of the latter include Bull (1987), Holmstrom and Hart (1987), MacLeod and Malcomson (1989) and Shapiro and Stiglitz (1984).

This setup improves on earlier studies in several ways. Earlier studies provided the important first step of randomizing wages in the field (Al-Ubaydli et al., 2006; Gneezy and List, 2006; Kube et al., 2008*a*,*b*). A common finding in these studies is that raising wages above the baseline level has only a small effect on effort. Yet, it may be wrong to conclude from these studies that fairness considerations do not matter for wage setting. As pointed out earlier, the fair wage-effort hypothesis predicts that workers respond by raising effort only to the point up to which pay is considered fair. By combining the follow-up survey with the experimental data, we are able to test this prediction, in contrast to earlier studies, because our data allows us to examine how fairness perceptions modulate the response to wages. Additional data allow us to conduct a manipulation check of the impact of the wage increase on fairness perceptions of the workers.

It is a feature of all three previous studies that the baseline pay was comparatively high. We find in the follow-up survey that about half of the workers considered the baseline pay to be unfairly low. Thus, our study allows a more complete examination of how wages affect effort, because a significant fraction of individuals felt underpaid at the baseline wage.

A limitation of earlier studies was very small sample sizes of no more than 30, but more often 10 individuals per treatment, typically employed for six hours. Because of this low number of observations, the precision of statistical tests is low, and, by consequence, the evidence is consistent with a wide variety of hypotheses. By contrast, we have 196 workers, employed for, on average, six days. This allows us to test hypotheses with greater power.

Our main result lends strong support to the fair wage-effort hypothesis. Workers who felt underpaid at the baseline wage of CHF 22/h responded strongly to the increase in hourly pay by increasing effort. We find a statistically significant effect, amounting to an elasticity of effort w.r.t wages of about 0.5. Yet, there is considerable heterogeneity in the perception of fair wages, and about half of the workers felt adequately paid even at the baseline pay of CHF 22/h. For these workers, we find no effect of the wage increase on effort. The point estimate is not significantly different from zero, and very small, with the point estimate of the elasticity of effort amounting to 0.06. To our knowledge, we are the first study to show a significant interaction between the response to the pay increase and the perceived fairness of the baseline pay. The pattern we find is exactly as predicted by the fair wage-effort hypothesis.

The remainder of this paper is structured as follows. The next section discusses the economic environment, while Section 3 lays out the design of the experiment. Section 4 explores the experimental findings and Section 5 discusses the results and concludes.

2 The Economic Environment

In May of 2006 a large publishing house launched a free daily newspaper, published on weekdays evenings. The newspaper hired a promotion agency to conduct the launching of the free daily.

2.1 Work at the Promotion Agency

The promotion agency conducts product placement and advertising campaigns. The firm retains a large pool of part-time employees, which it contacts when the specific need arises. The workers can then sign up for work shifts. Typically, this is done one or two weeks ahead of the assignment. When a worker agrees to take on at least some assignments, she receives instructions pertaining to the job. Information is provided on the required attire, hours of work and the wage to be paid. A typical job is to distribute samples and pay is usually a fixed wage of about CHF 25/h.

2.2 Newspaper Distribution

The promotion agency allocated workers to busy places and had them distribute copies of a newly launched newspaper to passers-by. A work assignment always consisted of a check-in, three hours of work and a check-out. Upon arriving at the check-in, a supervisor provided information pertaining to the assigned location. After the check-in, distributors moved to their assigned location to distribute copies of the newspaper. After completing a work assignment, distributors returned to their supervisor to give feedback and check out. The distributors were paid a fixed wage of CHF 22/h.

An important aspect of this work environment was that the economic incentives did not encourage the distributors to exert high effort. There were several reasons for that. First, workers earned a fixed wage rather than a piece rate, which means that pay was independent of output. Second, the follow-up survey indicates that pay was perceived as low by more than half of the workers. Third, nobody could blame the workers if the newspaper demand was low and therefore output was low too. Finally, given the size of this campaign, the agency had a hard time filling the planned assignments. As a result, 20 percent of the planned assignments could not be filled, which means that the locations remained vacant on some days (see Figure 2). In sum, the threat of firing workers during the newspaper promotion due to little effort was not credible.

3 The Experimental Set-up

The design of the study consists of two parts. In collaboration with the publishing house, we implemented temporary wage increases in a controlled and randomized way. Ten weeks after the experiment, we conducted a follow-up survey among the workers active during the experiment.

3.1 The Randomized Wage Increase

Our field experiment took place in the city of Zurich, Switzerland, and was conducted over a four-week period in June and July of 2006. The promotion agency divided the city into two equally-sized regions. This division was based on the organizational structure of the campaign:

Each region had its own manager, responsible for recruiting and allocating the supervisors and distributors for the different locations within a region. In each of the four weeks, one region was assigned to be the treatment region, while the other region served as a control.

In the treatment condition, the publishing house raised the distributors' wage by CHF 5/h from CHF 22/h to CHF 27/h. In the following, we will refer to this as the CHF 27 condition. The publishing house announced this wage increase on a day-by-day basis at the beginning of the work shifts in two ways: The workers received a postcard with the information, and they also received a text message on their mobile phone containing the same information.[5] Together with this information, the message (on the postcard and mobile phone) also stated: "In return for this wage increase, please use extra effort to approach all potential readers actively".[6] In addition, the postcard also reminded the workers that it was important to keep an accurate count of the number of copies distributed.

In the control condition, the distributors were paid the regular wage of CHF 22/h (for this reason, we will refer to this condition as the CHF 22 condition). In order to keep the attention from the distributors constant, the distributors in the CHF 22 treatment also received a postcard and a text message at the beginning of the shift, reminding them that it was important to keep an accurate count of the number of copies distributed.

The timing and change in the treatments is shown in Figure 3. As can be seen, the conditions were changed in the locations every week. If asked, it was explained to the distributors that the choice of which location would receive the CHF 27 wage was up to the newspaper, and that the promotion agency did not know which location would be paid what wage. This was done intentionally to rule out selection into particular locations on a specific day in which the distributors assumed the high wage would be paid. There were three reasons to choose a weekly rotation of the treatments. First, more frequent rotations of the treatment allow a more robust identification of confounding time effects that may have occured as the newspaper was introduced. Second, since the recruitment of the of the distributors was done approximately one week in advance of the assignment date, this further minimized issues of workers trying to select into locations in which a high wage was paid. Third, there was strong anticipated turnover after week 2 of the experiment. Thus, a weekly rotation of the treatments also helped generate within-subject variation in pay, enabling us to estimate distributor fixed effects in the empirical analysis below.

[5] The postcard bore the newspaper logo and the text on both the postcard and text message included the name of the publishing house. This was done in order to make it plain that the newspaper, not the promotion agency, awarded them the higher pay.

[6] This was done to make it clear how the workers could reciprocate the higher pay.

3.2 The Follow-Up Survey

In October of 2006, we administered a follow-up survey among the workers who worked during the experimental episode. The survey was mailed to the workers on University of Zurich letterhead. The recipients were informed that the University of Zurich had approached some employers to collect the addresses of their part-time employees. Notice however, that there was no connection visible to the workers that this survey had anything to do with the variation in pay they experienced during our field experiment.

The survey asked a variety of questions related to part-time work and also collected demographic information on the subjects. The respondents were prompted to indicate up to three employers of the previous 6 months and to answer questions relating each of their listed employers.[7] This section included the questions of key interest to us: "How much (gross in CHF/h) did you earn at employer ...?" and "How much (gross in CHF/h) do you think is appropriate for the exertion of this task at employer ...?".

If the respondents fully completed and returned the survey within 2 weeks, they received a guaranteed amount of CHF 7 (about \$6).[8] Extensive phone calls and emails were made to remind the participants of completing the survey.

3.3 Descriptive Statistics

Table 1 provides basic descriptive statistics for our setup. The first panel of Table 1 gives an impression of the work intensity of the distributors. They handed out on average 230 copies of the newspaper per hour. The table also shows that on average, the distributors worked on 6.4 days during the four weeks of the experiment. The data from the follow-up survey provide some demographics on our workers. They were relatively young (22 years), mostly female (73 percent), and most of them worked only part-time. Many of them were enrolled or graduated in a university (23 percent), respectively college (24 percent).

Table 2 provides a randomization check for the number of shifts worked in each treatment and the number of unfilled shifts in each treatment. As we argued above, due to the organization of promotion campaign, workers should not have been able to select into the CHF 27 treatment. We verify this in two ways: We run a regression

$$s_{ic} = \alpha_i + I(\text{CHF } 27)_{ic} + \epsilon_{ic}, \tag{1}$$

where the dependent variable s_{ic} is the number of shifts each worker i worked in treatment c. We include a fixed effect α_i for each worker and a treatment indicator. The second test we run

[7] The 6 months covered the time period of the newspaper promotion.

[8] The participants of the job survey had the possibility to ask one of the authors if they had questions concerning the survey.

is to check whether the number of unfilled shifts differed by treatments. That is, we run the regression

$$u_{tc} = \delta_t + I(\text{CHF } 27)_{tc} + \epsilon_{ic}. \tag{2}$$

The dependent variable u_{tc} is the ratio of unfilled shifts per day t and treatment c. We include date fixed effects δ_t in the estimation. In both estimations, we report OLS standard errors, which may be too liberal because of remaining correlations in the residuals. But they provide a stricter test of randomization. The results in column (1) of Table 2 show that workers work the same number of shifts in either treatment condition. An average worker works 3.14 shifts in each condition. The difference between shifts in the CHF 22 condition and the CHF 27 condition is 0.18 and is small and insignificant. Column (2) shows the results for the estimates of equation (2). Again, the indicator for the treatment condition is small and insignificant. This verifies that workers were unable to select into the high-wage condition.

Table 3 also provides a randomization check based on many individual characteristics, using data from the follow-up survey. The table reports the means for each of the two treatment conditions of various individuals characteristics, and performs a non-parametric test on the two distribtutions. As can be seen, we cannot reject the null of no difference for any of the characteristics.[9] Thus, the table shows that the way the workers were allocated to the CHF 22 and CHF 27 condition is random.

4 Empirical Results

This section reports the results from our study in two steps. First, we use data obtained from the follow-up survey to provide the distribution of the fair wage and detail whether the workers perceived themselves as underpaid or adequately paid, respectively overpaid. Second, we combine the data from the field experiment with data from the follow-up survey to study workers' effort responses to the wage increases as a function of their perception of the fairness of the baseline wage.

4.1 Fairness Perceptions and Pay

As described in the previous section, the follow-up survey asked the workers what wage they would consider fair for the job they were working. Figure 4 displays the difference between the wage they considered fair, and the wage they were paid in the baseline condition. Thus, a positive number indicates that the worker felt underpaid, while a negative number indicates

[9] Notice that the p-values for the tests are calculated assuming independence between all observations. Because we have repeat observations from individuals, this likely understates the variance in the data. Thus, if anything, these tests are biased towards finding a difference. Nevertheless, the lowest p-value we find is 0.215.

that the worker felt overpaid. The figure shows that of the 119 survey respondents, 53 percent considered the baseline pay as inadequately low. Thus, a large number of workers accepted the job even though they thought that the wage was inadequately low. Of the 47 remaining percent, 35 percent felt that the pay was adequate, while very few (12 percent) thought that they were paid more than what they thought was adequate for the job. The figure also highlights substantial heterogeneity in workers' conception of a fair wage.

This suggests that for the majority of workers, it was possible to significantly improve the fairness evaluation of their wage in the CHF 27 condition. Indeed, we find evidence that raising pay from CHF 22/h to CHF 27/h significantly affected the fairness judgments of the workers. In an anonymous feedback form collected by the promotion agency, the workers were asked to rate on a five-point scale the fairness of the pay in the CHF 22 and CHF 27 condition. Figure 5 displays that of the 113 workers who returned the feedback form, 30 percent rated the baseline wage in the two lowest fairness categories while only 2 percent reported the same for the higher pay. Thus, there is a clear shift to a more fair evaluation of pay. In particular, the strongest shift in the distribution of fairness evaluations seems to come from the bottom end of the distribution. When we compute a Wilcoxon signed-ranks test, we can clearly reject the null-hypothesis that both distributions are the same ($p < 0.001$). These results confirm that the fairness perceptions were effectively manipulated.

4.2 Testing the Fair Wage-Effort Relationship

We now turn to the central result of how wages and fairness perceptions affect workers' effort. Figure 6 gives a first visual impression of how the response to the wage increase depends on fairness judgements about the baseline pay. The figure shows the log of the hourly copies distributed, with the location means subtracted. Thus, a zero corresponds to an average number of copies distributed in a particular location, while a positive number indicates greater-than-average output of copies. The dark-blue bars represent the averages in the two payment conditions for the individuals who felt already adequately paid at CHF 22/h. As can be seen in the graph, raising the pay from CHF 22/h to CHF 27/h leads to no increase in the number of copies distributed. Conversely, workers who felt underpaid in the CHF 22 condition responded strongly to the wage increase. The light-blue bars in Figure 6 show the averages of these workers across the two pay conditions. As can be seen, higher pay is associated with clearly higher work effort. The standard error bands of the two means do not overlap, indicating a significant difference between the two groups.

However, the standard errors in Figure 6 are calculated under the assumption that each observation is an independent draw. Since we have multiple observations per individual, these standard errors may be too low. To address this problem, as well as to include tighter controls,

we estimate the following regression:

$$\log(y_{it}) = \gamma_0 \log(w_{it}) + \gamma_1 \Delta_i + \gamma_2 \log(w_{it})\Delta_i + \psi_{j(it)} + \delta_t + \epsilon_{it}, \tag{3}$$

where $\log(y_{it})$ denotes the logarithm of the number of hourly copies distributed by distributor i on day t, $\log(w_{it})$ is the log hourly wage, which depending on the treatment was either CHF 22 or CHF 27. The variable Δ_i is the difference between the wage considered fair and the baseline wage (CHF 22/h). Thus, a positive number means the worker felt the wage is unfairly low. A value of zero means that the wage was considered fair, and negative numbers mean that the wage was more than fair in the judgment of the worker (though this hardly ever occurs, as Figure 5 shows). We include location fixed effects ψ_j to control for differences in output due to locations, as well as date fixed effects δ_t for each day to control for changes in the demand for the newspaper over time. Finally, ϵ_{it} is the idiosyncratic error term. We allow it to be correlated within individuals. We estimate equation (3) by OLS, and consequently adjust the standard errors for clustering on workers.

We also run a more conservative specification in which we include a worker fixed effect, denoted by α_i to control for differences between workers. The regression equation is then given by:

$$\log(y_{it}) = \gamma_0 \log(w_{it}) + \gamma_2 \log(w_{it})\Delta_i + \alpha_i + \psi_{j(it)} + \delta_t + \epsilon_{it}. \tag{4}$$

The estimates are shown in Table 4 and confirm the qualitative picture from the figure. The results show that γ_0, the coefficient on $\log(w_{it})$ is not significantly different from zero. Keep in mind that, because of the interaction with Δ_i, this coefficient represents the impact of a wage increase on effort when Δ_i is zero, i.e., when the baseline wage was already considered fair. Notice since we specify both sides of equation (3) in logs, the coefficient can directly be interpreted as an elasticity. The point estimate of 0.06 is very low, and estimated tightly: It implies that doubling the wage would lead to 6 percent more effort. The 90 percent confidence interval ends at 20 percent, which is still very small. Thus, for individuals who already felt paid fairly at the baseline wage, raising the wage had no significant impact on their output. By contrast, we find a significant effect of wages on effort of individuals who felt paid unfairly. As Table 4 shows, the coefficient γ_2 is significantly different from zero, showing that individuals who felt paid unfairly at the baseline wage, responded to the experiment in a significantly different way than individuals who thought that the baseline pay of CHF 22/h was fair. The point estimate implies that for every CHF that an individual felt underpaid, the elasticity of effort w.r.t. wages increases by 0.098. In other words, for an individual who thought the fair wage was CHF 27, the elasticity of effort in response to the wage increase was $0.06 + 5 \cdot 0.098 = 0.55$. Column (2) of Table 4 reestimates the model using the fixed effect specification in equation (4). This specification has the advantage that it does not impose that Δ_i enter (3) linearly, but allows for any relationship between individual characteristics, including fairness judgments, and

work effort. We obtain the same result: There is virtually no response to the wage increase by individuals who felt paid adequately at the baseline wage, but a substantial response by individuals who felt underpaid at the baseline wage.

What does this imply for the overall effectiveness of high wages to elicit high effort? As can already be inferred from the distribution of Δ_i, the average response to the wage increase was rather small, as found in many other studies (Al-Ubaydli et al., 2006; Gneezy and List, 2006; Kube et al., 2008*a*,*b*) that experimentally raised wages above a baseline for which workers are willing to work. Figure 7 presents the overall results from our study, both, for the entire sample and for the individuals who also participated in the survey. The data for the figure are demeaned by location, like in Figure 6. As can be seen, in our study, there is only a small overall difference of about 0.04 log points, or approximately 4 percent, between the CHF 27 and CHF 22 condition. To test this formally, we estimate the equations

$$\log(y_{it}) = \gamma_0 \log(w_{it}) + \psi_{j(it)} + \delta_t + \epsilon_{it} \quad \text{and} \tag{5}$$

$$\log(y_{it}) = \gamma_0 \log(w_{it}) + \alpha_i + \psi_{j(it)} + \delta_t + \epsilon_{it}, \tag{6}$$

as above. The results are displayed in Table 5, and the estimated coefficients can again be interpreted directly as elasticities. The point estimate, using the full sample, varies between 0.175 and 0.13. Our point estimate is small, but it is solidly within the confidence intervals the earlier studies have found. However, thanks to our larger sample, we still have enough precision to reject that the workers did not react to the wage increase, unlike the earlier studies.

5 Discussion and Conclusion

Overall, our results provide strong evidence that paying individuals wages that they find unfairly low reduces effort significantly. Workers who felt underpaid put in significantly more effort when their wages were raised towards what they think was fair, and the estimated elasticity of this effect is 0.55. That is, for a 10 percent wage increase, effort increases 5.5 percentage points. The effect is strong, and highly significant. By contrast, workers who felt paid fairly at the baseline wage did not change their effort at all when we raised their wages during the experiment, and this behavior is significantly different from the group of workers who felt treated unfairly. Thus, our results conform exactly to the fair wage-effort hypothesis put forward in Akerlof and Yellen (1990). At a methodological level, our results point to the importance of complementing field experiments with additional outside information (e.g., information from surveys about the fair wage in our case) that allow one to probe deeper into psychological mechanisms that drive the response to an experimental intervention.

Our results also provide a potential reconciliation of why earlier studies who examined the impact of raising wages above a baseline wage have found such inconclusive results (Al-Ubaydli

et al., 2006; Gneezy and List, 2006; Kube et al., 2008*a*,*b*). A potential reason is that many subjects in these studies, like in ours, may already have felt being paid fairly at the baseline wage. When we apply the methodology of earlier studies, and ignore how fairness perceptions affect the response to the experiment, we also find a modest overall effect. However, thanks to a sample much larger than in earlier studies, we have enough power to reject that even this effect is zero.

It is difficult to find plausible alternative interpretations of our findings. In particular, one interpretation that has received attention in previous papers does not apply here: Al-Ubaydli et al. (2006) find that treating workers more generously increases effort. They interpret their results in terms of a repeated-game context, as there is at least some scope for repetition in their setting.[10] Such concerns in our setting would lead to the opposite result that we find: if individuals feared being dismissed for insufficient work effort, we should expect an interaction of the opposite sign: Workers who feel particularly well-paid have more at stake if they get fired. They should be particularly sensitive to the demands of the employers and should react more to the wage increase. But we find that they respond less, which is inconsistent with this interpretation.

Our results also point to new questions for future research. Our finding that wages only affect effort when workers feel treated unfairly is consonant with Mas (2006), who finds that police officers' effort is very sensitive to disappointing arbitration outcomes in wage bargaining. On the other hand, Mas (2006) finds little evidence that effort is sensitive to the size of a surprisingly good outcome. It is tentative to conclude that disappointing outcomes were below what the police officers perceived as fair. Given that our results share these two qualitative features, this channel appears particularly plausible. Yet, little is known how such perceptions are formed and more research is needed this matter. In particular, it would be important to understand how these perceptions adjust to labor market conditions.

[10]This channel is not explicitly tested within the experiment, e.g., by comparing the outcomes to a subset of subjects certain to leave this job. Therefore, it is difficult to conclusively attribute the effects to repetition. For a field experiment offering an explicit test of the role of repetition in other markets with incomplete contracts, see List (2006).

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A Figures

Figure 1: Fair Wage-Effort Hypothesis

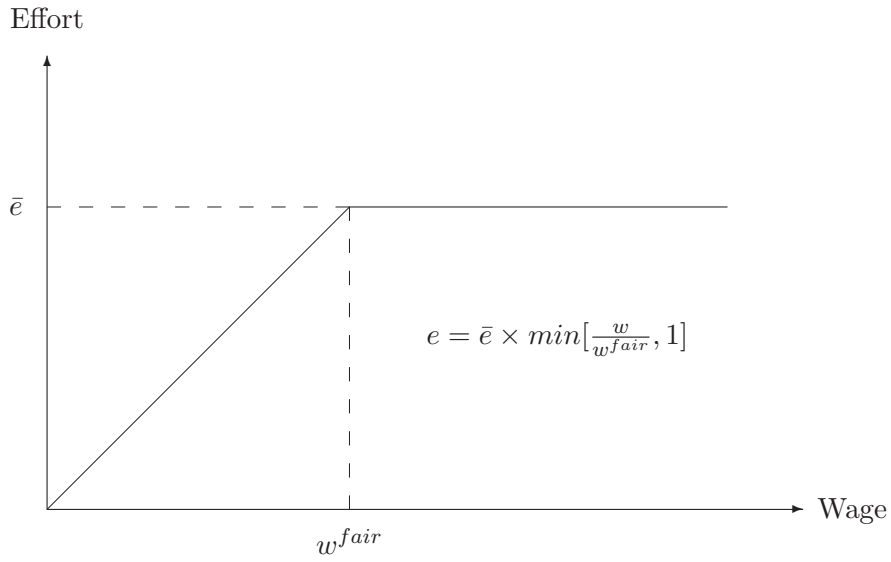
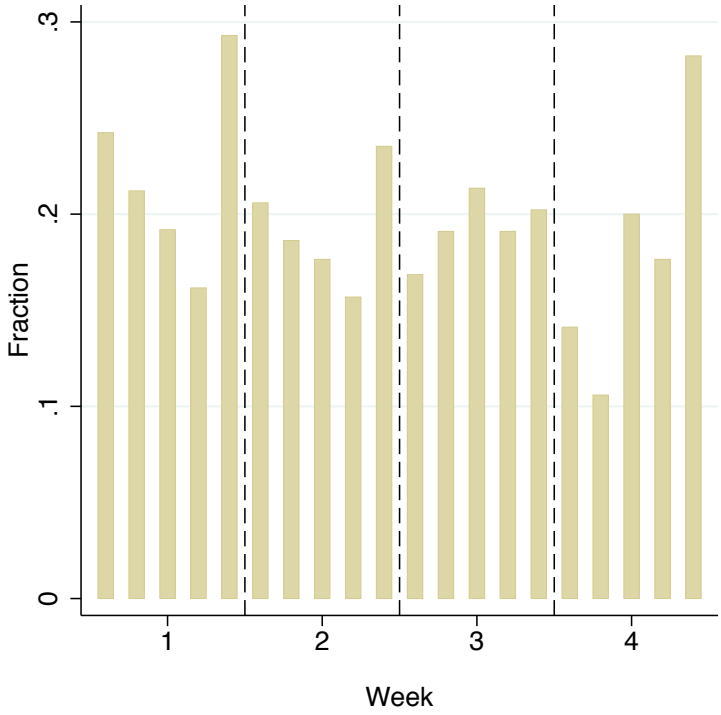


Figure 2: Excess Demand for Labor



Notes: The figure shows the proportion of unfilled shifts.

Figure 3: Timing of Events

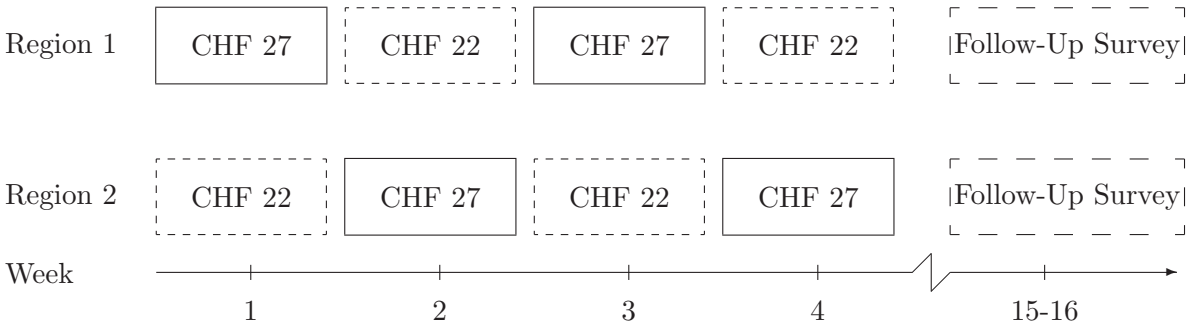
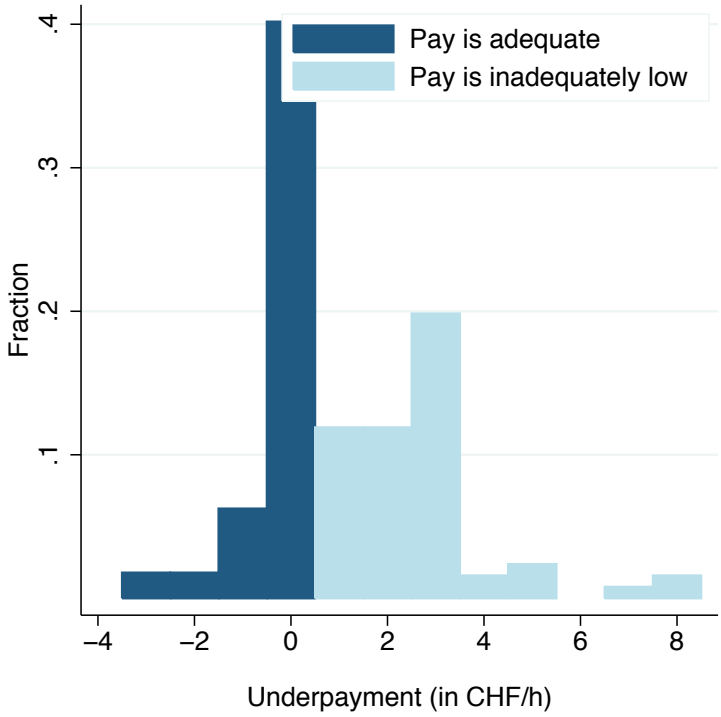
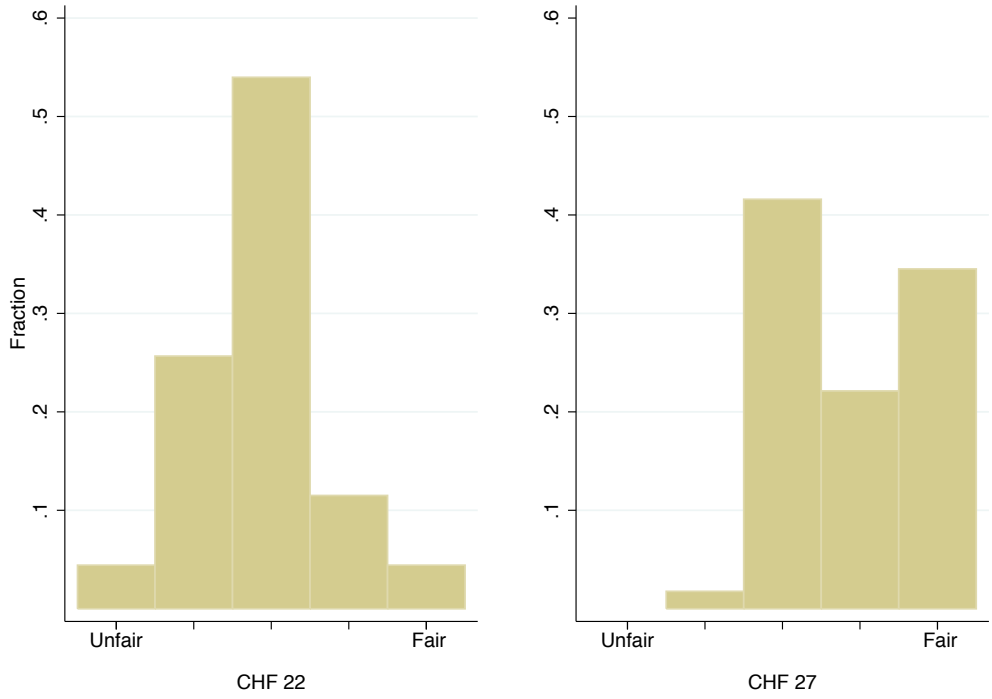


Figure 4: Fairness Perceptions and Pay



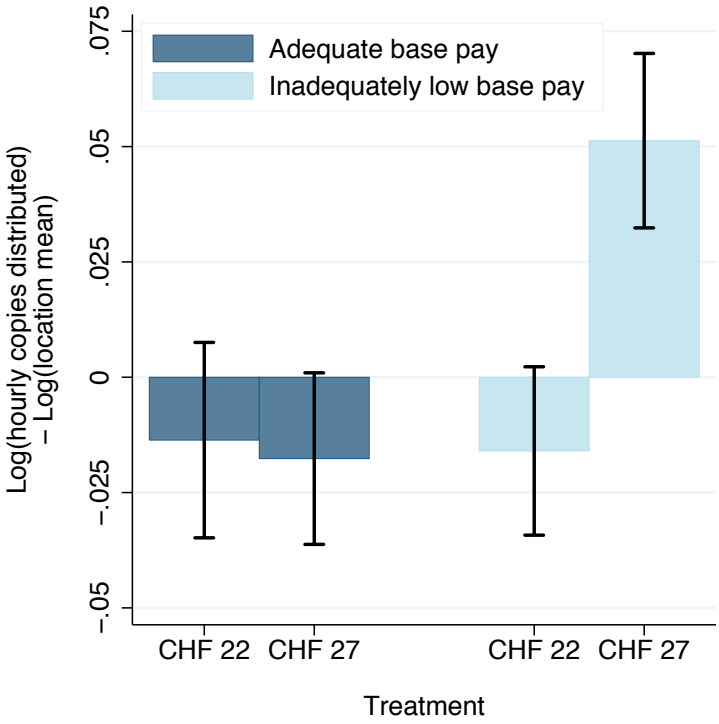
Notes: This figure plots the difference between the wage the workers considered fair, and the wage they were paid in the baseline condition.

Figure 5: Fairness Evaluation of the Pay



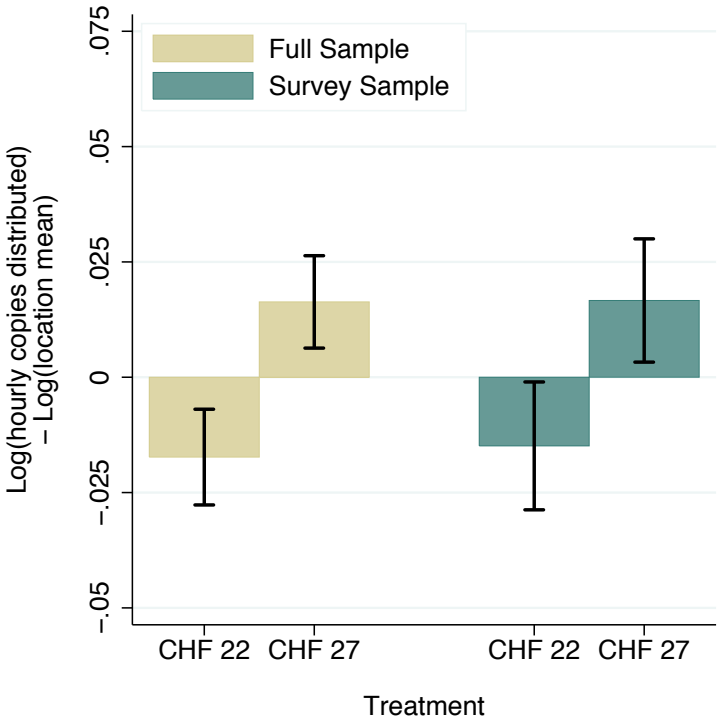
Notes: The figure compares the perceived fairness of the baseline wage (CHF 22/h) and the higher pay (CHF 27/h).

Figure 6: Testing the Fair Wage-Effort Relationship



Notes: The dark-blue bars present the log of hourly copies distributed, corrected for the location means, in the two payment conditions for the individuals who felt adequately paid at CHF 22/h. The light-blue bars show the same for the individuals who felt underpaid in the CHF 22 condition.

Figure 7: Overall Effect of the Wage Increases



Notes: The khaki bars show the average response to the wage increases for the full sample illustrated in logs of the hourly copies distributed, with the location means subtracted. The green bars display the same for the participants of the follow-up survey.

B Tables

Table 1: Summary Statistics

Data Variable	Mean	Std. Dev.	Min.	Max.	N
Newspaper Promotion					
Hourly copies distributed	229.777	84.409	16.667	578.212	1269
Number of shifts	6.474	4.248	1	19	196
Feedback Form					
Fairness evaluation of CHF 22	2.858	0.844	1	5	113
Fairness evaluation of CHF 27	3.894	0.91	2	5	113
Follow-Up Survey					
Underpayment (in CHF/h)	1.092	2.052	-4	8	119
Age (in years)	22.465	4.698	16	42	114
Male	0.272	0.447	0	1	114
Foreigner	0.132	0.34	0	1	114
Number of siblings	1.439	0.912	0	5	114
Secondary education	0.614	0.489	0	1	114
Apprenticeship	0.281	0.451	0	1	114
Continuing education	0.211	0.409	0	1	114
High school	0.675	0.47	0	1	114
College	0.237	0.427	0	1	114
University	0.228	0.421	0	1	114

Notes: The table describes the data used in this paper. Data come from three types of sources: the newspaper promotion, covering the number of copies distributed and the number of work assignments taken, the anonymous feedback form, containing data on the perceived fairness of the two payment conditions; and the follow-up survey, which allowed to measure the individual fair wage and to track the characteristics of the workers.

Table 2: Randomization Check
Dependent variable: (1) number of shifts, (2) proportion of unfilled shifts
OLS Estimates

	(1)	(2)
CHF 27 (=1)	0.189	0.008
	(0.130)	(0.019)
Constant	3.143***	0.193***
	(0.092)	(0.014)
Observations	392	40
R^2	0.846	0.519

Notes: OLS estimates. The unit of observation in column (1) is workers × wage condition, and the dependent variable is the number of shifts per condition. The unit of observation in column (2) is days × wage condition, and the dependent variable is the proportion of unfilled shifts. Fixed effects are normalized such that the constant reflects the mean of the base category. Standard errors are in in parentheses. *** indicates significance at the 1 percent level.

Table 3: Randomization Check for Personal Characteristics

Data	CHF 22		CHF 27		
Variable	Mean	Std. Dev.	Mean	Std. Dev.	p-value
Follow-Up Survey					
Underpayment (in CHF/h)	1.084	(2.096)	1.081	(2.142)	0.731
Age (in years)	23.370	(5.257)	23.344	(5.397)	0.770
Male	0.281	(0.450)	0.267	(0.443)	0.681
Foreigner	0.161	(0.368)	0.172	(0.378)	0.697
Number of siblings	1.376	(0.849)	1.367	(0.854)	0.912
Secondary education	0.648	(0.478)	0.633	(0.483)	0.692
Apprenticeship	0.331	(0.471)	0.308	(0.462)	0.516
Continuing education	0.248	(0.432)	0.242	(0.429)	0.852
High school	0.618	(0.487)	0.658	(0.475)	0.268
College	0.251	(0.434)	0.211	(0.409)	0.215
University	0.245	(0.431)	0.211	(0.409)	0.290

Notes: The table provides a check for the randomization design. Sample averages (and standard deviations in parentheses) are reported in the first four columns. The last column contains p-values (two sided Pearson's χ^2 tests for the binary, respectively Mann-Whitney tests for the non-binary variables) for the null hypothesis of perfect randomization.

Table 4: Fair Wage-Effort Relationship
Dependent variable: log of number of copies distributed
OLS Estimates

	(1)	(2)
$\log(w_{it})$	0.068	0.010
	(0.108)	(0.109)
Δ_i	–0.298**	–
	(0.125)	
$\log(w_{it}) \times \Delta_i$	0.098**	0.091**
	(0.039)	(0.040)
Controls:		
Individual fixed effects?	No	Yes
Location fixed effects?	Yes	Yes
Date fixed effects?	Yes	Yes
Observations	722	722
R^2	0.599	0.531
Prob$> \chi^2, F$	0.000	0.000
Wald tests:		
$\gamma_0 = 0$	0.531	0.929
$\gamma_1 = 0$	0.019	–
$\gamma_2 = 0$	0.013	0.023

Notes: OLS estimates. Standard errors, adjusted for clustering on individuals, are in in parentheses. The dependent variable is the number of hourly copies distributed in logs. The independent variable $\log(w_{it})$ is the log of the hourly wage paid (CHF 22 in baseline, CHF 27 in treatment condition). Δ_i is the difference between what the worker considered fair and what she was paid in the baseline condition. The sample is restricted to only those distributors who completed the follow-up survey, which is needed to measure the perceived fairness of the wage. Values in the last two rows of this table represent p-values from a Wald test for the null-hypothesis that the coefficients equal zero. ** indicates significance at the 5 percent level.

Table 5: Overall Effect of the Wage Increases
Dependent variable: log of number of copies distributed
OLS Estimates

	(1)	(2)	(3)	(4)
$\log(w_{it})$	0.175**	0.134*	0.175*	0.110
	(0.078)	(0.078)	(0.100)	(0.105)
Controls:				
Individual fixed effects?	No	Yes	No	Yes
Location fixed effects?	Yes	Yes	Yes	Yes
Date fixed effects?	Yes	Yes	Yes	Yes
Sample	Full	Full	Survey	Survey
Observations	1269	1269	722	722
R^2	0.597	0.507	0.590	0.527
Prob$> \chi^2, F$	0.000	0.000	0.001	0.000
Wald tests:				
$\gamma_0 = 0$	0.026	0.088	0.081	0.294

Notes: OLS estimates. Standard errors, adjusted for clustering on individuals, are in in parentheses. The dependent variable is the number of hourly copies distributed in logs. The independent variable $\log(w_{it})$ is the log of the hourly wage paid (CHF 22 in baseline, CHF 27 in treatment condition). The sample "Full" involves all individuals participating in the experiment and the sample "Survey" means only those distributors who completed the follow-up survey. Values in the last two rows of this table represent p-values from a Wald test for the null-hypothesis that the coefficients equal zero. *, ** indicate significance at the 10 percent and 5 percent level.