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The effect of charitable giving on workers' performance: Experimental evidence

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ABSTRACT

We investigate how donating worker earnings for voluntary extra work, a form of corporate social responsibility, affects worker behavior. Participants entered data for 60 minutes, with piece-rate pay. They could then stay for up to another 30 minutes; we varied the piece-rate pay and whether it was paid to the worker or to charity. When this piece-rate is high, workers produce more for own pay than when their earnings go to charity. However, with low piece-rates, this relationship reverses. There is also little difference in performance between paying workers a small amount and not paying anything at all.

1. Introduction

Economists have traditionally focused on the role of financial incentives to increase worker productivity. This implies tying performance to pay in the most effective manner. However, it has been shown that financial incentives are not always an ideal motivator (see Deci, 1971; Gneezy and Rustichini, 2000; Ariely et al., 2009). Besides, even in the case in which financial incentives might increase production, they may not be cost-effective. Thus, firms may not always be willing to pay the amount of money that would be necessary in order to motivate the worker. So it is useful to try to find other mechanisms to harness motivations in order to achieve higher profitability and potentially even better social outcomes.

Economists, sociologists and human-resource management scholars have emphasized the role of non-financial incentives on worker motivation. Laboratory experiments, such as those of Masclet et al., 2003, Peeters and Vorsatz (2013), and Charness et al. (2014a,b), have been conducted to analyze the positive effect of non-monetary rewards and sanctions on subjects' behavior. Numerous studies in organizational psychology and management support the idea that when managers show that they care for their employees, it improves worker behavior and increases positive attitudes and organizational commitment (Rhoades and Eisenberger, 2002; Cropanzano and Mitchell, 2005). Many employees are affected not only by their pay, but also by their perceptions of how the company treats them. So, features like workplace flexibility, worker involvement in

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running the company, and procedural justice in promotions could become very important for aligning the interests of firms and workers, thereby increasing workers' motivation (Amabile, 1993; Rousseau, 2004).[1]

Within this set of non-pecuniary motivations, the management literature has shown that corporate social responsibility (CSR) increases the attractiveness of the company to current and potential workers (see, Greening and Turban, 2000; Kim and Park, 2011; Porter and Kramer, 2006). It is also known that firms such as IBM or Microsoft introduce in their recruitment brochures information highlighting their responsiveness to the community in order to attract a larger number of prospective job applicants (Shelton, 1999). A high perceived CSR could also improve worker satisfaction, increase workers motivation, attract more qualified workers, and reduce turnover. For example, positive feelings toward the firm could also encourage *organizational citizenship behavior*, which is defined as "...behavior of a discretionary nature that is not part of employees' formal role requirements, but nevertheless promote the effective functioning of the organization" (Organ, 1988).

Companies are aware of these potential benefits and so have sometimes tried to improve the social consequences of their activities. However, these policies are not always as effective as perhaps they could be. One of the main reasons may be that companies think of CSR in a generic manner, instead of pinpointing a particularly effective approach given the company's strategy. A suitable CSR, instead of being a cost or a constraint, would become a source of opportunities and competitive advantage (see Porter and Kramer, 2006).

Along this line, perhaps giving employees the opportunity of working for a social goal would increase workers' motivation and engage them more within the firm. Some recent experimental literature finds that spending money on others can lead to greater happiness than spending money on one's self (Dunn et al., 2008), and that pro-social bonuses may increase workers' satisfaction and improve their performance (Anik et al., 2013). Along the same line, Fehrler and Przepiorka (2016), find that donors in a Dictator Game are perceived to be more trustworthy and are chosen more frequently than non-donors to play in the role of trustee in a Trust Game. So, within the set of social goals, charitable giving seems likely to be a strong motivator. Our study differs from previous ones on CSR in that previous studies focused solely on improving the image of the company, while we propose a form of CSR that not only has positive externalities for the reputation of the company but also has a direct effect on worker motivation.[2]

The aim of this paper is to investigate experimentally how a particular policy, based on charitable giving, affects workers' motivation and whether this leads to productivity gains in a setting in which the worker has the possibility of leaving and not exerting any extra effort, thus refusing to help the employer. In particular, we analyze the effect of charitable giving on two margins of labor supply. On the extensive margin, we examine whether this pro-social incentive works better than financial incentives in encouraging agents to select into a task. On the intensive margin, we also study whether pro-social incentives are better than financial ones in improving the performance of workers who have selected into a task.

We take this as a starting point for our experimental design. Participants were asked to enter real data (from an unrelated experiment) for 60 minutes and were paid on a piece-rate basis, 12 cents per data entered for each individual in the unrelated experiment.[3] Upon finishing this task, they were offered the possibility of voluntarily entering extra experimental data during an additional period of time.

We vary two factors in a 3×2 design. One factor is the piece-rate paid in the second part of the experiment. We paid subjects for each individual's data entered in the second stage of the experiment, with a piece-rate of zero, two, or eight cents, depending on the treatment. The second factor concerns the recipient of the payment for the second stage of the experiment. In one treatment the money generated was paid to the participant. So, here a subject's total payoff was the amount earned in the first stage of the experiment plus the amount earned in the second stage. In another treatment, the money generated in the second stage of the experiment was paid to a charity. So, in this case, participants receive the money they earned in the first stage of the experiment and whatever earnings generated in the second stage were sent to a charity.

Our results are intriguing. We find that, perhaps unsurprisingly, when the piece-rate paid was relatively high, workers were more willing to work and produced more when they were directly paid this piece-rate. However, when the piece-rate was low, this *reverses*: workers produced more when the money was donated to a charity instead of being paid directly to them. We find that a larger percentage of workers are willing to stay for the second stage when the money is sent to a charity. In addition, the participants who decide to stay for the voluntary second stage also perform better, leading to a better outcome for the firm.

Finally, we also find that when we only pay a relatively small amount to workers, performance does not differ greatly from the situation in which we do not pay at all. In fact, there is no difference in the rate of staying for the second stage or not. We also observe that there is only a small difference in workers' performance whether they were directly paid a piece-rate of two cents or were not paid at all.

The study closest to ours is Imas (2014). He conducts an experiment in which participants have to squeeze a hand dynamometer, with payments tied to the force recorded by the dynamometer. The study has a 2×2 design in which both

[1] These issues could also affect the social preferences that workers have towards their employers (DellaVigna et al., 2016 Malmendier and Rao, 2016)

[2] While there are many definitions of CSR, there is considerable common ground among them. The World Business Council for Sustainable Development defines CSR to be "the *continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large*". This paper proposes a particular form of CSR in which the firm does not have to sacrifice anything in order to participate in an initiative that benefits the society.

[3] Hossain and Li (2014) use a similar task.

the amount earned per unit of force and the recipient of the money (either the participant or a charity) are varied. There are four main results in the paper that go along the line of our findings. First, individuals exert more effort for a charity than for themselves when the stakes are low. Second, with pro-social incentives, increasing the piece-rate does not affect the effort exerted by the subjects. Third, participants respond to increments in incentives when they are the recipients. And fourth, for high stakes, the effort exerted when the money is paid to the subjects is marginally larger than with pro-social incentives.

Our paper analyzes similar incentives, but in an environment in which the worker is exerting effort for the benefit of the firm as well as for either her own benefit or that of the charity. In our environment workers might wish to reduce their effort in order to, in effect, punish the company for a low wage (even if this wage was donated to a charity). So in our setting we are able to study whether the positive effect of the donation compensates for the negative effect of the low salary, complementing the Imas (2014) results. In addition, our task is cognitive rather than physical, and so may be more relevant for the white-collar environments to which the student participants are likely to go after graduation. Finally, while Imas (2014) focuses primarily on the effect of pro-social incentives on the intensive margin of labor supply, our design enables us to analyze this effect on both the extensive and intensive margins.

The remainder of the paper is organized as follows. In Section 2 we review the related literature. We explain the experimental design in Section 3. Section 4 provides some behavioral predictions. Section 5 shows the main results and provides some discussion. We conclude in Section 6.

2. Literature review

As was discussed briefly in the previous section, non-monetary incentives play a very important role on subjects' motivation. Kosfeld and Neckermann (2011) conduct a field experiment in which subjects were asked to search and provide information for a certain NGO. They were asked to enter as much data as possible from different communities for a fixed wage. In another treatment, subjects could receive a non-material award. The results show that subjects with a non-material award performed better, with 12 percent higher productivity. Charness et al. (2014a,b) find that ranking people within a group of three induces higher performance for a fixed wage in a real-effort task (decoding sets of one-digit numbers into letters from a grid of letters displayed on the computer screen); the performance was 25 percent higher.

Ashraf et al. (2016) studied workers' performance depending on awards received for public service delivery. Workers were asked to provide HIV-prevention information to customers as well as selling condoms. They were divided into four groups. In the control group, subjects received no incentive; in another non-financial award group, people received a star per packed condom sold. Participants in a large-financial-margin group earned 90 percent above the retail price, while participants in a small-financial-margin group received only 10 percent above the retail price. Results show that the group with the non-financial award sold almost double the number of condoms compared to any other group.

Kube et al. (2012) use the simple task of copying data to measure worker's productivity in a field experiment. Among other treatments, authors propose one in which workers would make an additional amount of $7 on top of the initial $12 they were paid. In a different treatment, instead of $7, workers received a thermos bottle with a value of $7. Giving $7 extra in the Money treatment increased worker productivity by 5 percent whereas giving the bottle increased it by 25 percent. In the same vein, Heyman and Ariely (2004) had subjects drag a virtual ball to a specified location on the screen, varying whether fixed payments (not contingent on effort) were made in cash or in the equivalent amount of candy. When the payment was low, the effort provided with cash payments was lower than the effort provided with payments in candy.

Our paper also contributes to the literature that analyzes how right missions increase worker's motivation. Fehrler and Kosfeld (2014) proposed an experiment to see whether right-mission jobs have some influence on worker's costly effort; they found that neither donating to a NGO nor giving the money to a random student led to higher worker performance. However, when workers were given the option of *choosing* the mission, one third of them were willing to significantly increase their effort in order to donate to a NGO.[4]

Gerhards (2015) conducted a one-shot principal-agent experiment. Two treatments were implemented, differing in the degree of the agent's mission match: The Low Mission treatment, where agents were not that familiar with the project on which they were working, and the Mission Match treatment, where agents were essentially matched with the project that they chose within their own organization. Earnings were determined by the piece-rate and effort decisions. The agent's mission was implemented via an additional donation, which was generated by the effort choice. Findings show that agents choose higher effort levels in the Mission Match treatment than in the Low Mission treatment.

Koppel and Regner (2014) analyze how workers react to firms' investments in CSR. They propose a gift-exchange game in which the CSR is implemented by donating part of firms' profits to a charity. In their experiment, firms choose the share of profits they want to give to a charity and workers have to decide, for each possible share, the effort level they want to provide. They find that the level of share (of CSR) and the effort level are positively correlated.[5] Findings also show that when firms donate to workers' preferred charity, it increases workers' effort. However, the investment in the shared mission and its extent do not seem to affect workers' behavior.

[4] The act of choosing may *per se* affect performance. Babcock et al. (forthcoming) avoid the usual selection-effect problem and show cleanly that performance was increased by 27 percent when subjects chose an activity than when they were assigned to the activity.

[5] However, we take this result with a grain of salt, since this type of within-subject design may lead to spurious effects (see Charness et al., 2012).

In the same vein, Tonin and Vlassopoulos (2010) implemented a field experiment in which they recruited students for a data-entry job that took place on two separate occasions. On the first occasion, students were paid a fixed amount plus a bonus based on their performance. On the second occasion, students were divided into three groups. The conditions remained the same for the first group. For the second, in addition to their personal compensation, their effort could contribute to a charity of their choice and would crowd out the employer contribution so that the total amount donated was fixed. Finally, for the third group, their effort could also contribute to a charity of their choice without crowding out. Subjects increase their productivity by a bit more (15 percent) in the treatments in which money will be donated to a charity than in the baseline (12 percent).

Tonin and Vlassopoulos (2015) also compare the role of financial and social incentives. They conduct an online experiment in which subjects had to enter bibliographic records into a repository platform. The experiment consisted of four stages. There were four different groups, each of which had different incentives. Participants in Group 1 worked under a fixed piece-rate. In Group 2, the piece-rate was different in the different stages. In Groups 3 and 4, subjects faced a social incentive in the form of donations to a charity. Participants in Groups 3 and 4 could also choose between the financial and the social incentive in the last stage of the experiment. They find that social incentives induce a 13% rise in productivity and the response is greater for subjects with low initial productivity.

Brown et al. (2013) analyze the relationship between monetary donations and volunteering time. They conduct a real-effort experiment in which subjects have the chance of working for themselves or for a charity. If they choose to work for themselves, subjects had the opportunity of donating part of the money that they generated to a charity. The study finds that subjects show a stronger desire to donate time and effort than to donate money. They explain their findings arguing that there is a differential warm glow for donations of time and money. Lilley and Slonim (2014), propose a model of altruism in which subjects have separable utility over pure and impure motives that vary across monetary and time donations. They find that when subjects are motivated by pure altruism (that is, they care about the value received by the charity), agents will donate in a more efficient manner, will pay less for warm glow and will suffer a greater crowding out effect. The authors conduct an experiment in which the results support the theoretical predictions.

This paper also contributes to the large literature on giving and altruism. Eckel and Grossman (1996) conduct an experiment employing the double-blind dictator game of Hoffman et al. (1994). Each dictator was asked to divide $10 between one's self and a recipient. The two treatments differed in terms of the identity of the recipient. In Treatment 1, the recipient was an anonymous student in a different room, whereas in Treatment 2, the recipient was a charity. Subject's decisions were unknown to the experimenter in order to avoid an experimenter effect. Results showed that 62.5 percent of the subjects in the first treatment kept the whole amount of $10, whereas only 27.1 percent did so in the second treatment. In addition, the total amount donated in the first treatment was a total of $51 (10.6 percent), in contrast with the total of $149 (31.0 percent) in the second treatment. Branas-Garza (2006) ran a Dictator Game with different information conditions. In one treatment, Dictators would receive no information about the recipient, in the second treatment, dictators were told that recipients were poor, and in the third treatment, dictators were told that the donations would be received as medicines instead of as money. While no one donated the full endowment in the no-information treatment, 40.8 percent did so in the "poverty" treatment, and 74.6 donated everything in the "medicines" treatment.

Gneezy and Rustichini (2000) provide the results of an experiment in which participants went door-to-door to collect donations. In the experiment there were three different treatments; subjects received a motivation speech in all. Nothing else was done in the first treatment. In the second treatment, participants were promised a percentage (1 percent) of the money they collected, and in the third treatment, the promised percentage was 10 percent. They find that the average amount collected without any economic incentives was larger than when participants could make a percentage of the amount collected. This shows that non-monetary incentives clearly played a role in workers' performance.

3. Experimental design and procedures

3.1. Experimental design

The experimental design consists of five treatments: the *Baseline*, the *Charity2* treatment, the *Worker2* treatment, the *Charity8* treatment, and the *Worker8* treatment. All five treatments involve a real-effort task. The task consists of entering data from a real pen-and-paper experiment into an Excel file.

3.1.1. Baseline treatment

This treatment was composed of two different sections; people were told in the first stage that there was a second stage, but they were not told what it was. In the first part, workers had to enter experimental data into an Excel file. They were paid 12 cents per individual entered.[6] Subjects had 60 minutes to type as much of data as they wished.[7]

[6] There were eight separate items that were to be entered for each individual. In particular, subjects had to type from each participant from a different experiment: *i)* ID, *ii)* Decision, *iii)* Age, *iv)* Major, *v)* Gender, *vi)* Height, *vii)* SAT, and *viii)* Guess. Subjects were paid only for complete individual data (all eight items) entered.

[7] Subjects were required to stay until the end of the first stage. They would have been paid only the show-up fee if they left before the first 60 minutes were over.

In the second stage, workers were offered the possibility of entering more data. For this second stage, workers could stay up to a maximum of 30 minutes but could leave the room at any time desired. Subjects were told that they would not be paid for the data entered during the second stage. So, their earnings stemmed only from the first stage of the experiment.

3.1.2. Worker2 treatment

This is the same as the *Baseline* treatment, except that workers were also paid two cents per data entered for each individual in the second stage.[8]

3.1.3. Charity2 treatment

This treatment is exactly the same as the *Worker2* treatment with the only difference that the two cents per additional data entered during the second part of the experiment would be paid to a charity instead of being paid to the workers. Workers could pick a preferred charity.[9] To ensure credibility that money would actually go to the charity, we told the subjects (truthfully, of course) that we would give them stamped and addressed envelopes and would enclose a check made out to the charity for the amount to be sent to the charity. Workers could put the envelopes into the mailbox themselves.

3.1.4. Worker8 treatment

This is the same as the *Worker2* treatment, except that workers were paid eight cents per set of individual data entered in the second stage of the experiment.

3.1.5. Charity8 treatment

This is the same as the *Charity2* treatment, except that the charity would be paid eight cents per set of individual data entered by the subjects in the second stage of the experiment.

3.2. Procedures

The experiment was conducted at the University of California Santa Barbara with 149 participants, who were recruited using the online recruitment system ORSEE (Greiner, 2015). No subject participated in more than one treatment. We conducted 50 sessions of 3 subjects each.[10] On average, each person received $17.20 for (up to) a 90 minutes session.

To avoid peer effects, we had each individual do the task alone in a separate room. The experiment was implemented as follows. Upon arrival, the experimenter took the subjects to different rooms, they were seated in from of a computer and the instructions for the first part of the experiment were handed to participants. At the end of the first stage (60 minutes), the experimenter came back to the room, checked the amount of data entered, and handed participants the instructions for the second stage. Participants in the second stage could leave at any time they wanted.

In order to minimize the contact with the experimenter (and potential demand and social-image effects), participants were told in the instructions that, once they were done, they had to go to a different room in which a different experimenter from the one handing the instructions would pay them. In this way, participants did not have to make the decision about whether to stay or not for the second stage (or for how long) in front of the experimenter. Once the participant left the room, the first experimenter would check the amount of data entered in the second stage and communicated this information to the second experimenter, who would pay subjects (and the charity if appropriate) according to their performance.

4. Behavioral predictions

What do we predict about behavior in the second stage? We first consider the case when the pay from the additional work goes to charity.

Under the standard assumption of selfish preferences, the theoretical predictions in *Baseline*, *Charity2* and *Charity8*, would of course be that people would leave the experiment in the second stage since there is no payment to the workers. However, it has been widely observed in the experimental literature that other considerations are likely to influence subjects' behavior. Thus, in accord with previous experimental results, we hypothesize that more agents in the charity treatments than in the Baseline will decide to participate in the second stage even when they do not receive any of the money generated in that second stage.

Hypothesis 1: *A greater proportion of the participants will participate in the second stage of the experiment and will generate more money for the charity in Charity2 and Charity8 compared to the Baseline condition.*

Regarding any differences between behavior in *Charity2* and *Charity8*, an inclination to work when the money goes to a charity may stem from different motivations. One possibility would be that, following the model

[8] We chose to reduce the piece-rate with respect to the first stage since paying the same piece-rate seemed likely to lead to everybody staying both when the money was for the charity and when it was for the workers. In fact, we find something like this, despite reducing the piece-rate to eight cents in the second stage. So, in order to create some tension in the incentives, we decided to reduce the piece-rate in the second stage.

[9] Subjects could pick one of these charities: *i)* American Red Cross, *ii)* Doctors without Borders, *iii)* Save the Children or *iv)* Santa Barbara Braille Institute.

[10] There were only two participants in one session.

of "impure altruism" (Andreoni 1989, 1990) in which subjects obtain utility just from giving, an individual might obtain utility gain via a "warm glow" from contributing to the charity *per se*. According to this notion the amount given is unimportant, as the utility received from the warm glow of giving is independent of the size of the donation. Does one feel better about donating $25 or $50? While this is really an empirical question, we suspect that there is not a great deal of difference in the degree of warm glow.[11]

A second possible motivation for working for the benefit of a charity is that people care not only about their own material payoffs but they are also affected by the amount generated and by the payoffs of others, particularly when these others have less money. Models of social preferences have been shown to address a relevant motivating factor. But the prediction of the Fehr and Schmidt (1999) model is unclear, since the participants did not know exactly who would benefit from their donation and so it is difficult to assess relative wealth; similarly, prediction of the Charness and Rabin (2002) model is unclear, since the firm might be considered to be part of the reference group. So, based on this, in addition to previous findings in the experimental literature (Imas, 2014; Hsee and Rottenstreich, 2004), we hypothesize that subjects will not be sensitive to the amount donated to the charity.[12]

Hypothesis 2: *There will be no differences in behavior between Charity2 and Charity8. That is, both the percentage of workers staying for the second stage and the amount of work contributed will be similar in Charity2 and Charity8.*

Next we consider the *Worker2* and *Worker8* treatments. Since the money generated in the second stage goes to the worker, the prediction of selfish preferences should apply. Decisions in the second stage would depend on whether the marginal benefit obtained from working longer exceeds the marginal cost. Since the piece-rate is larger in *Worker8* than in *Worker2*, we expect that more participants would be willing to stay for the second stage in *Worker8* and that the production would also be larger in *Worker8*.

Hypothesis 3: *A larger proportion of people will be willing to participate in the second stage in Worker8 than in Worker2 and production in Worker8 will be greater than in Worker2.*

Regarding behavior in *Worker2* compared to the *Baseline* treatment, the results of Gneezy and Rustichini (2000), where there is some intrinsic motivation for a task and effort is actually lower with low pay than with no pay, lead us to expect little willingness to stay and work in the second stage of Worker2. Nevertheless, there may still be some intrinsic motivation or belief that the work will benefit the experimenter, so we do not predict zero effort. Still, we expect low levels of effort that do not differ across these treatments.

Hypothesis 4: *Neither the proportion of people staying for the second stage nor their production will be different in Baseline and in Worker2.*

It seems clear that the warm glow from giving in *Charity2* should lead to higher participation and effort in stage 2 than in *Worker2*, particularly given our prediction for *Worker2*. In *Charity2*, subjects would obtain utility from the fact of generating money, so the benefit would not depend directly on the two cents paid but would instead reflect the utility from donating money to a charity.

Hypothesis 5: *Both the proportion of people staying for the second stage and their production will be the larger in Charity2 than in Worker2.*

Our last prediction is a bit more speculative. We conjecture that people would produce more in stage 2 of *Worker8* than in stage 2 of *Charity8*. Considerations of fairness may be crowded out by larger amounts of money (as in the Rabin, 1993 model). If the benefit obtained from working extra time readily compensates for the time cost, and people care more about their own payoffs than those of others, participants may well be more willing to work for themselves than for a charity.

Hypothesis 6: *Both the proportion of people staying for the second stage and their production will be greater in Worker8 than in Charity8.*

5. Results

This section is structured as follows. We first compare workers' behavior when we pay a high and a low piece-rate. We make this comparison for the case in which we pay the money to the charity and for the case in which the money goes directly to the worker. Second, we analyze decisions when we pay the piece-rate in the second stage directly to the worker and we compare that to the situation in which we donate this money to a charity. We do this analysis for both high and low piece-rate compensation. We then consider whether it is more cost-effective to pay a high piece-rate to the worker or a low piece-rate to a charity, and follow by analyzing the *Baseline* data.

Table 1 presents a summary of the average individual's data entered during the first and second stages, the percentage of workers who decided to stay for the second stage, and the relative performance in the second stage. This relative performance is defined to be the amount of data entered in the second stage divided by the amount of data entered in the first stage. In

[11] Of course there is most likely a lower limit to the size of the donation. For example, while it may well be true that giving $25 to each of two charities generates more utility for the donor than giving $50 to one charity, we suspect that giving $0.01 to each of 5000 charities would give only little utility to the donor.

[12] The results might be different if a would-be donor were to be shown a picture of the recipient and some information, as it is sometimes done by charities.

Table 1
Summary statistics.

	N	% Stay	Data 1st	Data 2nd	Ratio (all)	Ratio (stay)
Worker2	30	40.00%	122.13	15.47	12.99%	32.49%
Charity2	30	73.33%	134.97	48.23	35.75%	48.75%
Worker8	30	93.33%	134.77	66.40	49.05%	52.55%
Charity8	30	80.00%	129.13	49.57	38.17%	47.12%
Baseline	29	24.13%	130.35	6.65	5.06%	20.97%

Notes: %Stay refers to the proportion of subjects who stayed for the second stage. Data 1st and Data 2nd refer to the data entered per person in the first and second stages, respectively. Ratio (all) is the overall ratio of data entered in the second stage divided by the data entered in the first stage, and Ratio (stay) is the same, but applies only to people who chose to stay for the second stage.

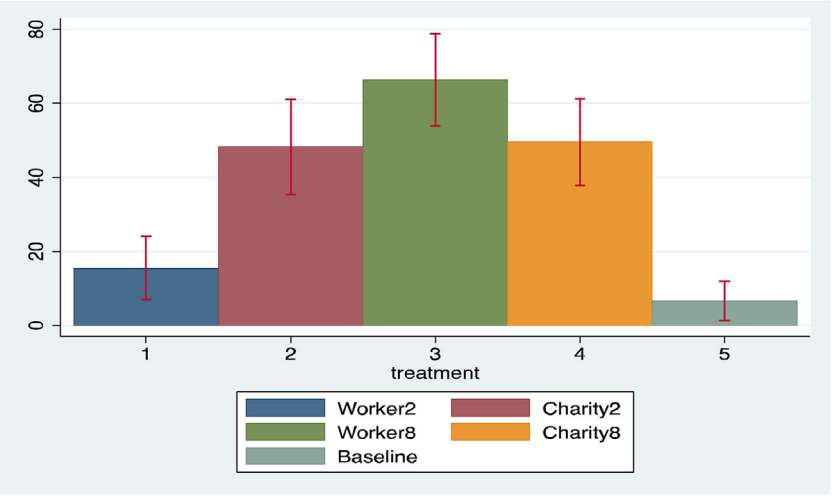

Fig. 1. Data entered in the second stage.

the last column we compute the same ratio, but only taking into account subjects who actually stayed for the second stage of the experiment. We provide detailed discussion below.

As we mentioned in the presentation of the experimental design, the decision to stay for the second stage of the experiment was completely voluntary. Subjects were told that they could leave at any time they wished once the first part was completed and the instructions for the second stage had been explained. It is clear that the rate at which people stay is highly sensitive to the payment arrangement, since these rates ranged from 93.33 percent to 24.13 percent ($Z = 5.409$, $p = 0.000$, test of the difference of proportions).[13]

Fig. 1 represents the average number of data entered (and standard errors) in the second stage for low and high piece-rates, separately when the worker receives the money and when the charity is the recipient.[14,15] As a first approximation, Fig. 1 shows that, for a low-piece rate, paying the money to a charity leads to a larger amount of data entered than when the money is paid directly to the worker while, for high piece-rates this result reverses.[16] In fact, it is clear that performance was unaffected by the size of a positive wage when the money went to charity.

5.1. *Effect of giving the money to a charity*

We begin by studying the effect that paying the money generated in the second stage to a charity has on workers' decisions. We study this effect for both an eight-cent piece-rate (*Charity8*) and a two-cent piece-rate (*Charity2*). As we can see in Table 1, the percentage of subjects who decided to stay for the second stage is 73.33% in *Charity2* and 80.00% in *Charity8*. A Mann-Whitney test shows that in both *Charity2* and *Charity8*, the percentage of workers staying for the second stage of the experiment (the extensive margin) is significantly larger than in *Baseline* ($Z = 3.747$, $p = 0.000$ and $Z = 4.259$, $p = 0.000$ for *Charity2* and *Charity8*, respectively). This result supports our first hypothesis.

[13] We round all p-values in this paper to the nearest three decimals. All p-values reflect two-tailed tests unless otherwise indicated.
[14] Regarding the quality of the data entered, we observe that the vast majority of the data was correct.
[15] For a complementary analysis, Fig. B1 in Appendix B presents the histogram of data entered in the second stage for all five treatments.
[16] Note that workers' productivity was different across treatments in the second stage although initial productivities were similar. The average amount of data entered in the first stage does not differ across treatments. See Appendix C for tests.

Result 1: *For both high and low piece-rate schemes when the recipient was a charity, we observe that a significantly larger percentage of subjects decided to stay for the second stage, compared to the Baseline treatment.*

As we stated in the behavioral predictions, this willingness to participate in the second stage of the experiment when the money goes to a charity could come from the fact that workers feel good just from donating, and this would be independent of the money donated. In order to analyze whether this is the case or if, on the contrary, workers care about the amount donated, we compare workers' decisions in *Charity2* to decisions in *Charity8*. Differences in the percentage of workers staying for the second stage (the extensive margin) between *Charity2* and *Charity8* are not statistically significant ($Z = -0.605$, $p = 0.545$, Mann-Whitney test).

Turning to productivity, workers entered a similar amount of data in the second stage in *Charity2* (48.23) and *Charity8* (49.57). A Mann-Whitney test shows this difference not to be statistically significant ($Z = -0.164$, $p = 0.870$).[17] On the intensive margin, the productivity of those subjects who decided to stay for the second stage is also similar (48.75% and 47.12% for *Charity2* and *Charity8*, respectively). In this case, differences are also not statistically significant ($Z = 0.462$, $p = 0.644$). Given these results, we find support for Hypothesis 2.

Result 2: *There are no differences between Charity2 and Charity8 for either the percentage of people participating in the second stage or their productivity.*

5.2. Effect of paying the worker directly

In this section, we analyze workers' behavior when the piece-rate in the second stage is paid directly to the worker. We compare decisions with high and low piece-rates (*Worker8* and *Worker2*). In Table 1, we observe that the percentage of subjects staying for the second stage is 93.33% in *Worker8* and 40.00% in *Worker2*. This difference on the extensive margin is statistically significant ($Z = 4.345$, $p = 0.000$). The amount of data entered in the second stage is also larger in *Worker8* (66.40) than in *Worker2* (15.47). The differences are statistically significant as well ($Z = -5.281$, $p = 0.000$, Mann-Whitney test).[18] On the intensive margin, the Ratio (stay) is 52.55% compared to 32.49%; these rates are significantly different, at $p = 0.000$. These results support our third hypothesis.

Result 3: *When the money is paid directly to the workers, they react to high piece-rates by staying and producing more.*

5.3. Effect of paying a high piece-rate

We next analyze the effect on workers' effort of paying the worker a piece-rate of eight cents per individual's data entered compared to the effect of paying the same piece-rate to a charity. On the extensive margin, as we have shown earlier, the percentage of workers who decided to stay was 93.33 percent in *Worker8* and 80.00 percent in *Charity8*. However, this difference is not statistically significant.[19] Turning to performance, we see that subjects enter more data (per person in the sessions) in the second stage (66.40) in *Worker8* when they were paid a piece-rate of eight cents than when the payment was made to a charity (49.57). A Mann-Whitney test shows this difference to be statistically significant ($Z = -2.206$, $p = 0.027$).[20]

Entering more data when the money was paid to the worker could reflect subjects in *Worker8* having higher ability (entering more data in stage one); in fact, subjects in *Worker8* are slightly (four percent) more productive than subjects in *Charity8*, but this modest difference is not statistically significant.[21,22] Workers could also be more likely to stay for the second stage in *Worker8*. While this is true, we have seen that the 13 percentage-point extensive-margin difference is not statistically significant. The Ratio (all) column of Table 1 is a more careful control than the raw figures in the Data 2nd column, as it corrects for *ex-ante* differences in ability. Here we see a substantial and highly-significant difference ($Z = -2.531$, $p = 0.011$) in favor of *Worker8*. In fact, on the intensive margin, subjects who participate in Stage 2 in *Worker8* enter more data per person than those in *Charity8* ($Z = -2.038$, $p = 0.042$), as seen in the rightmost column on Table 1. So, it is not only that a higher (although non-significant) percentage of workers stayed in *Worker8* than in *Charity8* but also that these workers performed relatively better in *Worker8*. So, paying eight cents to the worker compared to donating eight cents to a charity has a relatively stronger effect on the intensive margin of labor supply than on the extensive margin. Thus, Hypothesis 6 is supported from the point of view of the productivity, but not from the point of view of decisions regarding whether to stay for the second stage.

Result 4: *With a high piece-rate, better production was achieved by paying the workers directly rather than by sending the earnings to a charity. This was driven primarily by a difference on the intensive margin.*

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[17] In line with our results, Imas (2014) also found that increasing the incentives did not change the effort exerted by the subjects with pro-social incentives.

[18] In Appendix D (Table D1) we report an OLS regression that shows that this result holds when controlling for gender and first-stage workers performance.

[19] $Z = -1.506$, $p = 0.132$, Mann-Whitney test.

[20] This performance result goes along with the findings in Imas (2014). He reports that for high stakes, the effort exerted when the money was paid to the subjects was larger than when it was paid to a charity, although it that case differences were not statistically significant.

[21] A Mann-Whitney test gives $Z = -1.383$, $p = 0.167$.

[22] In Appendix D (Table D2) we report an OLS regression that shows that the fact of being in *Worker8* treatment significantly increases the amount of data introduced in the second stage when we control for first-stage workers performance, supporting the idea that productivity alone does not explain the better performance in the second stage in *Worker8*.

5.4. Effect of paying a low piece-rate

In this section we compare workers' behavior when we pay a low piece-rate to either the worker or a charity. We see that results clearly go in the opposite direction than with high piece-rates; in fact, the difference-in-differences in productivity across piece-rates is highly significant (Z = 3.964, $p = 0.000$).[23]

Table 1 shows that a higher percentage of workers are willing to stay for the second stage when earnings are paid to a charity than to a worker. In particular, 73.33 percent of workers stayed when the money generated was sent to a charity (*Charity2*), while only 40.00 percent of subjects decided to stay when they were going to receive the money (*Worker2*); this extensive-margin difference is highly significant ($Z = 2.583$, $p = 0.009$).[24] Additionally, the amount of data entered (per person in the sessions) during the second part of the experiment was 48.23 in *Charity2* versus 15.47 in *Worker2*, and this difference is also highly significant ($Z = 3.579$, $p = 0.000$). So, we find support for Hypothesis 5.

As in the case in which the piece-rate was eight cents, the increased amount of data entered in the second stage in *Charity2* could reflect the presence of more able workers in this treatment. However, the difference is not statistically significant ($Z = 1.449$, $p = 0.147$) in the amount of data entered in the first stage of the two low-piece-rate treatments.[25] Ratio (all) shows that this is nearly three times as much data was entered in the *Charity2* treatment than in the *Worker2* treatment ($Z = 3.578$, $p = 0.000$), and Ratio (stay) also shows a strong intensive-margin treatment effect ($Z = 2.955$, $p = 0.003$). For low piece-rates, pro-social incentives have a stronger effect than financial ones on both the extensive and intensive margins of labor supply.

Result 5: *With a low piece-rate, production was much higher from workers if the earnings were to be donated to a charity than if they were paid directly to the workers. There are significant differences on both the extensive and intensive margins of labor supply.*

5.5. Pay to the charity or to the worker?

In the two previous sections we have shown that the best strategy for inducing performance depends on the piece-rate pay. In this section, we examine which approach leads to higher production *per se*, as well as which approach is more cost-effective. If a firm is relatively cash-constrained and can only pay a low piece-rate, it is better to send it to a charity (and of course to inform the workers of this); if a firm can pay a large amount, production is higher if this is paid directly to the worker.

From Table 1 we see that the amount of data entered is 66.40 and 48.23 in *Worker8* and *Charity2*, respectively ($Z = -1.927$, $p = 0.054$). Production is 37 percent higher on a Ratio (all) basis in *Worker8*, including all participants. This is influenced by the higher extensive-margin percentage of workers who decided to stay for the second part of the experiment in *Worker8* (93.33 percent compared to 73.33 percent, $Z = -2.061$, $p = 0.039$). When we control for this difference in stay rates in Ratio (stay), there is a weakly-significant difference between *Worker8* and *Charity2* (52.55 versus 48.75, $Z = -1.739$, $p = 0.082$). Thus, the greater production in *Worker8* reflects a combination of relatively modest differences on both the extensive and intensive margins.

Whether it is worthwhile for a firm to pay a large difference in piece-rates for the additional production depends on the cost-benefit ratio for the firm. It does not seem cost-effective for a firm to pay four times as much for a 37 percent increase in productivity, but it may nevertheless be worthwhile to pay the higher amount to the worker if this cost is a small enough portion of the overall cost of production. So the optimal strategy will depend on the weights of the factors in the overall production function for the firm.

In addition, it turns out that there is a larger gap for males than for females with respect to *Worker8* versus *Charity2*.[26] In fact, results show that the percentage of males staying for the second stage is 60.00 percent and 94.11 percent in *Charity2* and *Worker8*, respectively. However, for females these percentages are much closer and differences are not statistically significant (respectively 80.00 percent and 92.30 percent for *Charity2* and *Worker8*, $Z = -0.949$, $p = 0.343$). Similarly, differences in Ratio (all) are only significant for the male population ($Z = -2.468$, $p = 0.014$ and $Z = -1.292$, $p = 0.196$ for males and females, respectively). So the best strategy may also depend on the gender composition of the workforce.

Result 6: *Paying workers a high piece-rate leads to higher production than paying a low price to a charity. However, paying the low piece-rate to a charity is most likely more cost-effective, so that it may be optimal for a firm to pay this lower rate to a charity, perhaps particularly when the proportion of female workers is high.*

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[23] This is not surprising, since production is already significantly different across *Worker2* and *Charity2* and the difference in production across *Worker8* and *Charity8* goes in the opposite direction.

[24] he decision of whether or not to stay for the second stage does not depend on subjects' productivity since the difference between data entered in the first stage of those who did not stay for the second stage and the data entered for those who did stay is not statistically significant in any of the treatments ($p = 0.582$, $p = 0.313$, $p = 0.339$, $p = 0.243$, and $p = 0.899$ for *Worker2*, *Charity2*, *Worker8*, *Charity8*, and *Baseline*, respectively).

[25] In Appendix D (Table D3) we report an OLS regression that shows that the fact of being in *Worker2* treatment significantly reduces the amount of data introduced in the second stage when we control for first-stage worker performance.

[26] We find no other gender differences in our data. For example, there is no significant difference across gender in the data entered in the first stage (133.01 and 128.02 for males and females respectively), so fundamental ability is quite similar. Also, the overall amount of data entered in the second stage is nearly identical (37.79 and 37.21 for males and females respectively).

5.6. Baseline

We next study behavior when entering more data generates no further pay for either the worker or a charity. Readers might agree that there is little intrinsic pleasure in entering data into an Excel file, so one might expect that few would stay to enter more data. However, we see that 24.13 percent of the subjects decided to stay for at least part of the second stage. Why did such a high percentage of the subjects stay for no direct financial reward? Presumably this indicates that workers were motivated in some other dimension by the task.

We do have anecdotal evidence (from discussions with the participants after the fact) that people felt that their work had value for us; this was likely induced by the clear authenticity of the data (which, unbeknownst to the subjects, had already been entered; we made no statements concerning this point). More concrete evidence is provided by the fact that a number of people came to ask questions about issues in the data, trying to ensure that their entries were correct. We also observed a tendency for people to voluntarily stay just long enough to complete their then-current task. Note that participants were handed a large pile of papers with experimental data and had to type the data into an Excel file. In order to facilitate the work, some people divided the pile of papers into smaller piles. When they were done with the first smaller pile of data, they would work on the second one and so on until the end of the first stage.

Some of the workers stated that they stayed in the second stage only until they finished their task, meaning that they just wanted to finish with the remaining of the papers they had in the current small pile. We also see that many of the subjects (four out of the seven people who stayed) did only a very small amount in the second stage, which is consistent with them simply finishing the data-entry for a particular individual.

Production is lower in Baseline than in Worker2, but not greatly so. The modest difference reflects the fact that the percentage of subjects staying for the second part is lower in Baseline than in Worker2, where it is 40.00 percent. However, this difference is not significant ($Z = 1.292$, $p = 0.196$). So, it seems that paying two cents to the worker is not a strong enough incentive to induce a much higher stay rate; in any case, paying a small piece-rate does not reduce the amount of data entry. Turning to the data entered, we observe that the average amount of data entered in the second stage is 6.65 in Baseline, compared to 15.47 in Worker2 ($Z = 1.508$, $p = 0.132$). Controlling for the difference in second-stage entry, we do see a marginally-significant intensive-margin difference in Ratio (stay) for the Worker2 treatment compared to the Baseline treatment (32.49 percent versus 20.97 percent, $Z = 1.775$, $p = 0.076$). These results do not reject our fourth hypothesis on two-tailed tests, but some might argue for one-tailed tests in favor of the Worker2 treatment.

Comparing *Baseline* to *Charity2*, we see stronger differences. The difference in production (48.23 versus 6.65) is highly significant ($Z = 4.653$, $p = 0.000$, one-tailed test), as is the extensive-margin difference in stay rates (73.33 percent versus 24.13 percent, $Z = 3.747$, $p = 0.000$, one-tailed test), and as is the difference in the intensive-margin Ratio (stay) rates (48.75 percent versus 20.97 percent, $Z = 3.415$, $p = 0.000$).

These observations lead to the following result:

Result 7: *Workers produce only slightly less when they do not have any incentive than when they directly receive low additional pay, although there is more production when low-piece-rate earnings are instead paid to a charity. There does seem to be some intrinsic motivation vis-à-vis the task.*

6. Conclusion

This paper analyzes how a firm's corporate social responsibility policy (donating worker earnings from voluntary extra work) may affect workers' behavior. We find that when the piece-rate paid is relatively high, workers perform better when they are paid directly as compared to when their earnings are instead paid to a charity. However, with relatively low piece-rates, this relationship reverses. Now they are more motivated when the money is donated to a charity instead of being paid directly to them. Not only do more workers decide to stay for the charity but they also perform better, leading to a better outcome for the firm. So, it seems that the fact that the money is donated to a charity compensates for the low piece-rate paid by the employer, affecting both the extensive and intensive margins of labor supply.

We also find that when we only pay a small amount to workers, their behavior differs only modestly from the situation in which we do not pay at all. The difference in the voluntary (second-stage) stay rates only approaches statistical significance, and there is only a modest difference in workers' performance, which is slightly better when they are paid a piece-rate of two cents than when they are not paid at all.

We employed a careful and clean experimental design to ensure anonymity across subjects in order to avoid a sense of peer pressure and minimized the personal interaction with the experimenters to minimize audience effects (Charness et al., 2007; Andreoni and Bernheim, 2009). Thus, our results may well represent a lower bound for the effects we find, since peer pressure is present in most work environments and these environments are also most likely dynamic.

Potentially, our findings have interesting implications for remuneration policies and the labor market. The perception of even costless corporate social responsibility, as induced through the charitable contributions, can be an important source of motivation for workers, particularly when they are already receiving their basic pay. When the firm's production function is such that worker wages comprise a relatively small proportion of the overall cost, it seems worthwhile to pay a high piece-rate directly to the workers. However, when the labor cost is a high proportion of the production cost, it may be worthwhile to pay a much smaller piece-rate to workers and to donate this money to charity on their behalf. In this way the firm could receive relatively good performance despite spending less money.

Workers do not change their behavior according to how much is generated for charity from their effort, a finding that it is reminiscent of the notion that people derive "warm glow" from giving (Andreoni, 1990). It seems that subjects in this experiment value the effort exerted for the charity rather than the benefit charities receive from that effort. This insensitivity to the benefits of the donation for others has been found in several different experiments (see, for example, Imas, 2014; Hsee and Rottenstreich, 2004; Linardi and McConnell, 2011).

Given that in this particular setting workers are not donating directly money but are instead donating time in the second stage, it seems plausible that they perceive that they are working not only for their company but also for a charity. Should this be the case, it could readily change workers' perception about their jobs; now they wouldn't be working only to increase a firm's profits but also, to at least some extent, to help society. Perhaps this feeling of beneficence would increase their motivation to work more, so that both the firm and the charity would thereby benefit.

This approach is potentially a win-win outcome for firms and charities (or conceivably even a win-win outcome for firms, charities, and workers). If firms could incentivize workers through contributions to charities, firms might have lower labor costs and thus potentially increase their profits. In addition, firms would improve their reputation and external image since the perception of their CSR would improve from these charitable contributions. Charities could potentially approach firms with the appropriate labor costs and even gender composition. Perhaps one possibility would be to invite a firm to participate in a charitable project that would engage its workers. In principle, this could also benefit workers because they might feel pleased that they are working for a firm that values this charitable project and that the extra hours worked both help raise money for the charitable project and benefit the socially-conscious firm. Another possibility would involve making a matching donation to the charity, thereby enhancing the perception of CSR and perhaps leading to further increases in productivity.

Appendix A.

Instructions for the first stage of the experiment

1 Thanks for participating in this experiment. You are guaranteed at least $5 for showing up on time and will most likely earn substantially more.
2 In order to preserve anonymity, you have been randomly assigned a code. At the end of the experiment we will pay you using this code.
3 This experiment consists of two parts. Now, you will receive the instructions for the first part. When this part is finished, you will receive the instructions for the second part.
4 Your task will be the following. We have collected some experimental data from different individuals. You will have to record data from sheets of paper in an Excel file. There are two sheets for each of these individuals. Now, we list what information you must enter and how to do it. In the Excel file you will find the following columns
   a Decision: you must enter the decision (either A or B) that has been circled in the first sheet.
   b Age: this information in the second sheet for each subject.
   c Major: this information is in the second sheet for each subject. Enter the complete major in the same way you find it in the paper.
   d Gender: this information is in the second sheet for each subject. Enter the whole word for the gender (either male or female), not just F or M.
   e Height: this information is in the second sheet for each subject.
   f SAT: this information is in the second sheet for each subject. If this information is missing, just leave a blank space for the particular subject.
   g Guess: this information is in the last question of the second sheet for each subject. Enter the information writing including% at the end of the number.
5 You will enter data for 60 minutes.
6 You will be paid 12 cents per each completed subject you enter. Partial information for a subject will not count for the computation of the final payoffs.
7 When the time is over, please stay in this room for the second part of the experiment.

Instructions for the second stage of the experiment: Charity2 treatment

1. The 60 minutes you had to enter data are over.
2. Now, you have the opportunity to enter more data. The rules are the following.
   a You have a maximum of 30 minutes, but you can stop typing and leave at any time you want. You can even leave right now.
   b The money you generate in these 30 minutes will be donated to a **charity**.
   c You can choose the charity you want to donate the money. You can pick one of the following charities:
      d American Red Cross
      e Doctors Without Borders
      f Save the Children

g Braille Institute
h We will compute how much data you have entered in this second part. You will generate 2 cents per each completed subject's information that you enter. Partial information will not count for the final payment.
i We will write a check payable to this charity, will show it to you, and will put it in a closed stamped envelope with the address ready for you to mail.

When you decide to leave, go to room 2056. Take your id number with you and we will pay you privately the money you made in the first part. In the same way, we will write the check for the charity.

Instructions for the second stage of the experiment: Worker2 treatment

1 The 60 minutes you had to enter data are over.
2 Now, you have the opportunity to enter more data. The rules are the following.
a You have a maximum of 30 minutes, but you can stop typing and leave at any time you want. You can even leave right now.
b You will be paid 2 cents for each subject's information that you enter. Partial information will not count for the final payment.
c When you decide to leave, go to room 2056. Take your ID number with you and we will privately pay you the money you earned during both first and second parts.

Appendix B.

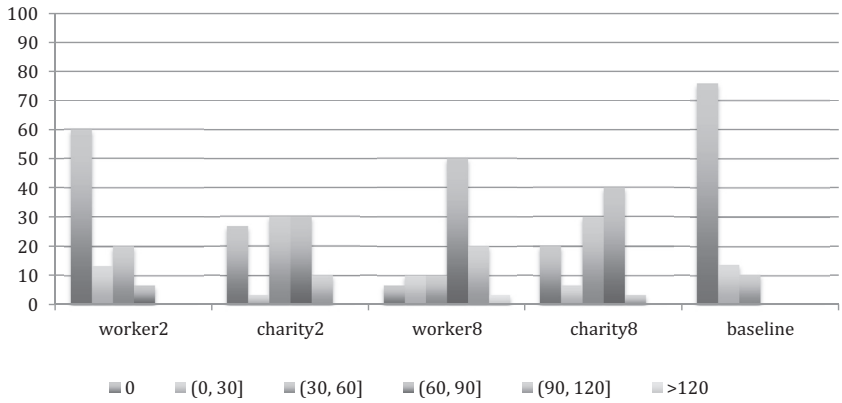

Fig. B1. Histogram data entered in the second stage.

Appendix C. *p*-values of two-tailed Mann-Whitney tests for the difference in the. average amount of data introduced in the first stage.

	Worker2	Charity2	Worker8	Charity8
Charity2	0.147			
Worker8	0.107	0.888		
Charity8	0.899	0.340	0.167	
Baseline	0.439	0.655	0.335	0.539

Appendix D.

Table D1
OLS regression on the data introduced in the second stage (comparison *Worker8* and *Worker2*).

	(1)	(2)
Constant	20.157	20.104
	(19.299)	(19.075)
Data1st	0.344**	0.343**
	(0.139)	(0.137)
Worker2	−46.610***	−46.593***
	(7.348)	(7.268)
Male	−0.262	–
	(7.236)	
n	60	60
R^2	0.479	0.488

Notes: Standard errors are in parentheses. ***, **, and * denote significance at $p = 0.01$, 0.05, and 0.10, respectively, two-tailed tests. We only consider data from *Worker2* and *Worker8*. *Data1 st* is the number of data introduced by the worker in the first stage. *Worker2* is a dummy variable that takes value 1 if the worker was paid 2 cents in the second stage and 0 otherwise. Male is a dummy variable that takes value 1 the subject is male and 0 otherwise.

Table D2
OLS regression on the data introduced in the second stage (comparison *Worker8* and *Charity8*).

	(1)	(2)
Constant	−0.959	1.922
	(15.898)	(15.869)
Data1st	0.361***	0.369**
	(0.115)	(0.115)
Worker8	12.668	14.755*
	(7.872)	(7.775)
Male	10.656	–
	(7.879)	
n	60	60
R^2	0.192	0.180

Notes: Standard errors are in parentheses. ***, **, and * denote significance at $p = 0.01$, 0.05, and 0.10, respectively, two-tailed tests. We only consider data from *Charity8* and *Worker8*. *Data1 st* is the number of data introduced by the worker in the first stage. *Worker8* is a dummy variable that takes value 1 if the worker was paid 8 cents in the second stage and 0 otherwise. Male is a dummy variable that takes value 1 the subject is male and 0 otherwise.

Table D3
OLS regression on the data introduced in the second stage (comparison *Worker2* and *Charity2*).

	(1)	(2)
Constant	15.292	16.999
	(17.476)	(17.852)
Data1st	0.279**	0.231*
	(0.126)	(0.126)
Worker2	−27.242***	−29.797***
	(7.523)	(7.572)
Male	−14.494*	–
	(7.605)	
n	60	60
R^2	0.295	0.262

Notes: Standard errors are in parentheses. ***, **, and * denote significance at $p = 0.01$, 0.05, and 0.10, respectively, two-tailed tests. We only consider data from *Charity2* and *Worker2*. *Data1 st* is the number of data introduced by the worker in the first stage. *Worker2* is a dummy variable that takes value 1 if the worker was paid 2 cents in the second stage and 0 otherwise. Male is a dummy variable that takes value 1 the subject is male and 0 otherwise.

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