Earning Honor or Money? Self-Selection of Motivated Workers

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Abstract

How is a worker's choice of employer affected by the wage in a context where job-specific motivation matters? In contrast to standard theory we conjecture that higher wages do not necessarily attract the right workers. Specifically, we hypothesize that mission-oriented organizations should pay wages below the market wage: Hereby, the organization will attract only those applicants that genuinely care about the organization and not so much about the wage. We test this selection mechanism in a laboratory experiment in which subjects face a choice between two jobs. This choice represents a trade-off between personal monetary payoff and a contribution to a prominent mission-oriented organization. We find that a higher monetary wage gap leads to a smaller, but significantly more intrinsically motivated applicant pool for the mission-oriented job. However, effort that workers exert remains unchanged. We conclude that mission-oriented organizations profit from underpaying relative to the market wage.

JEL Code: C91, J31, L31, M52.
Key Words: Intrinsic Motivations, Labor Economics, Selection, Lab Experiment.

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1. Introduction

> *Honour makes a great part of the reward of all honourable professions. In point of pecuniary gain, all things considered, they are generally under-recompensed, as I shall endeavour to show by and by.*
>
> (Adam Smith, Book X, The Wealth of Nations)

Economists traditionally assume that a firm or an organization can attract better workers by paying higher wages. This idea goes back to the work by Akerlof (1970) with the basic intuition that higher wages will attract workers with higher levels of skills that are unobservable to the employer. A frequent assumption in applying models of sorting or self-selection (e.g., Roy 1951) to the labor market has been that workers will choose the job that pays the highest wage among the feasible alternatives.

Recently, economists have hypothesized that identity (Akerlof and Kranton 2010) as well as workers' motivation to work for a particular firm or a particular cause (Besley and Ghatak 2005, Heyes 2005, Delfgaauw and Dur 2007, Brekke and Nyborg 2010, Barigozzi and Turati Forth.) are important determinants of self-selection in the labor market. This line of research stresses that the utility derived from a job goes beyond wages and other perks, and also encompasses idealistic benefits such as the comfort to know that one works for a worthy cause. Casual observations and introspection suggest that the latter can indeed be an important motif in shaping vocational choices. When workers are heterogeneous in their motivation to work for a particular firm or organization, paying higher wages may lead to an applicant pool that is on average less motivated or identifies less with the potential employer. Conversely, by paying lower wages, an organization will attract applicants that genuinely care about the organization and its goals. If wages are high, the organization will also attract applicants that do not identify much with the organization but apply merely because of the high wage. In practice, it is possibly hard for an employer to distinguish between applicants with a high or a low degree of identification with this particular employer - for instance because screening is costly - so that the characteristics of the applicant pool persist among the hired workforce. There are several reasons why employers might care about the cause-specific motivation of their applicants and employees. For instance, there could be a direct correlation between job-specific skills and motivation; for instance, competent teachers could tend to be more motivated to teach. Moreover, even without a direct correlation of motivation and skills, job-specific motivation could alleviate moral hazard problems that arise in the presence of incomplete contracts as mission-oriented organizations can put more trust in motivated

agents (Fehrler and Kosfeld 2010). Finally, it could be that more motivated workers exert more effort on the job because they are less likely to shirk.

Overall, there are a number of reasons to believe that - in some circumstances - paying lower and not higher wages will attract the "right" workers. There is some empirical evidence suggesting that such a selection mechanism may exist in real labor markets. For instance, some authors have documented a wage gap between workers in the non-profit and the for-profit sector (see, e.g., Hansmann 1987, Leete 2001, Benz 2005). Insofar as non-profit organizations aim to attract workers with cause-specific motivation (more so than for-profits), this can be seen as evidence consistent with a selection mechanism such as the one described in the previous paragraph. However, this evidence is far from conclusive in evaluating the validity of a selection mechanism based on job-specific motivation. Moreover, it is hard to test such a mechanism empirically because of a number of confounding factors. In particular, the mechanism we have described so far was an analysis of worker behavior in response to different wages; however, the outcomes observed empirically are determined by a labor market equilibrium that depends on both workers' and firms' or organizations' optimizing behavior. Moreover, observational data usually lacks exogenous variation in the wage gap between different types of jobs. In addition, it is hard to obtain measures of workers' attitudes toward different potential employers before choosing jobs. All in all, these factors obstruct a clean identification of the effect of wage differentials, between, e.g., jobs in the non-profit and for-profit sector, on workers' self-selection.

We have chosen to implement a laboratory experiment to address this research question since it provides a controlled environment that allows identification of the causal effect of wage differentials on workers' self-selection. According to Falk and Heckman (2009) laboratory experiments provide an important tool for causal inference in the social sciences: previous work (e.g., Falk and Ichino 2006, Falk and Fehr 2003, Falk and Gachter 2008) demonstrates that laboratory experiments are an especially valuable source of knowledge about the functioning of labor markets. The key advantage of implementing a laboratory experiment in our case is the ability to exogenously vary the wage gap between different types of jobs and to obtain clean measures of subjects' ability and attitudes toward different causes before choosing a job.

This allows us to shed light on two main questions:

(i) How do wage gaps affect the self-selection of heterogeneous workers into jobs that they potentially care about? In particular, do lower wages attract the "right" workers from the perspective of an employer that cares about the job-specific motivation of his or her employees?

(ii) Do workers that sacrifice a higher wage, in order to work towards a goal that they care about, provide more effort?

In the experiment, we give subjects the choice between a job with a low wage in which their work helps a well known environmental organization like Greenpeace Germany, providing a clear mission-oriented goal (labeled as "green" job in the following) and a job that pays a higher wage but that does not generate benefits for any mission-oriented organization (labeled as "standard" job). In both potential jobs, subjects engage in a somewhat monotonous task - counting numbers in a table - for about one hour. Both jobs pay a fixed but different wage up front and a small remuneration for each table counted correctly. In addition to that, if subjects choose the "green" job, they generate a donation to Greenpeace, for each table counted correctly. The donation is paid by the experimenters on behalf of the subjects. We implement two treatments with different positive wage gap and a control treatment in which both jobs pay the same fixed wage. We elicit subjects' environmental attitudes and identification with the environmental organization in a survey that is conducted before the main phase of the experiment and before subjects choose their job.

We find that subjects that identify with the environmental organization are more likely to choose the "green" job. With respect to the effect of the different treatments, we find evidence that a higher wage gap leads to less workers choosing the "green" job. There is evidence for a selection of *greener* agents into the "green" job when the wage is lower: The workers choosing the "green" job in the treatment with equal wages identify more with Greenpeace than the workers population average, and this difference is increasing when we switch to a positive wage gap. However, individuals that identify stronger with the environmental organization do not exert more effort in the "green" job than individuals with lower degrees of identification. If individuals care about the amount of money they generate for Greenpeace - rather than merely enjoying working for Greenpeace regardless of their output - one would expect that, holding identification with Greenpeace constant, more productive workers are more likely to choose the "green" job and that "greener" agents exert more effort conditional on choosing the "green" job. This finding is consistent Tonin and Vlassopoulos (2010) in that it is evidence against "pure" altruism (sometime also called "output-oriented altruism", compare earlier working papers and Francois and Vlassopoulos 2008). It is also consistent with recent finding by Fehrler and Kosfeld (2010) that matching a worker with an NGO that he identifies with (and that receives some of the output he produces) does not increase output relative to a treatment in which random strangers take up the role of the NGO. However, both in the case of Fehrler and Kosfeld (2010) and in our experiments, private incentives might have been too high for motivation

to play a role in the determination of effort and output.

Our experiment and the results are relevant for a number of different literatures. In particular, we can provide some empirical support for the theories that posit an effect of worker motivation or identity on an individual's choice of job or employer (Besley and Ghatak 2005, Heyes 2005, Delfgaauw and Dur 2007, Brekke and Nyborg 2010, Sauermann and Roach 2010). To the best of our knowledge, there is no experimental evidence concerning the role of wages on worker self-selection in environments where individual motivation or identification with an employer matters. Our findings are also relevant for the literature on the importance of intrinsic motivation for the provision of effort (e.g., Ryan and Deci 2000, Kreps 1997, Besley and Ghatak 2005, Francois and Vlassopoulos 2008, Fehr and Falk 2002 for a survey). Since non-profit organizations are often engaged in activities that might carry a lot of meaning for some individuals but at the same time offer lower wages, our analysis allows us to shed light on one explanation of the wage differentials between for-profit and non-profit organizations (Hansmann 1987, Leete 2001, Benz 2005).

The rest of the paper is structured as follows. In section 2 we develop a theoretical model that represent the road map for our study. Section 3 describes the experimental design. Section 4 is devoted to the analysis of the data. Section 5 concludes.

2. Model

We present a conceptual framework to analyze output decisions and self selection in light of heterogeneity of workers' ability and job-specific intrinsic motivation. We assume that workers' preferences can be represented by the utility function

$$U(e, \alpha, \gamma) = w(e) - \alpha \cdot c(e) + \gamma \cdot I \cdot g(e), \tag{1}$$

with

$$\begin{aligned} &\alpha > 0,\ \gamma \geq 0,\ I \in \{0, 1\}, \\ &c_e(e) > 0,\ c_{ee}(e) > 0, \\ &g(e) \geq 0,\ g_e(e) \geq 0,\ g_{ee}(e) \leq 0. \end{aligned}$$

In this setup, $e \geq 0$ denotes the output produced by a worker and $w(e)$ is the wage earned.[1] The costs of producing output are captured by the convex function $\alpha \cdot c(e)$.

[1] We are reluctant to interpret e as "effort", because we assume heterogeneity in workers's ability, meaning that workers experience different effort costs when producing the same amount of output. We think that the concept of "effort" is closer related to the costs of producing some fixed amount of

Workers are heterogeneous in their ability which is captured by varying cost parameters α.

The term $\gamma \cdot I \cdot g(e)$ captures a "non-standard" utility component, i.e. the component that is not captured by the monetary incentives and effort costs. There are two possible types of jobs, one with $I_S = 0$ and one with $I_G = 1$. On a job that has $I_G = 1$, the worker experiences some non-monetary utility. This model is flexible enough to account for two different types of preferences: This utility could be derived from contributing to something like a public good while working on the job, but it could also be that the worker is just enjoying the job without caring about the output. The relative weight of this utility part is measured by γ. The parameter γ can thus be interpreted as measuring the overlap between a worker's identity and the goals of a firm. The function $g(\cdot)$ is identical across workers, but the parameter γ varies between workers.

The functional form of $g(\cdot)$ reflects the property of the worker's social preference. If $g_e(e) > 0$, the worker gets additional positive non-monetary marginal utility from producing output. This type social preference can represent pure (or outcome-oriented) altruism as well as warm-glow (or action-oriented) altruism (compare Andreoni 1989, Andreoni 1990, and Tonin and Vlassopoulos 2010). If $g_e(e) = 0$ and $g(0) > 0$, the worker receives utility from working at a job with $I_G = 1$ as opposed to $I_S = 0$, but they do not receive extra (non-monetary) marginal utility by producing more output. This social preference could be labeled as "participation utility".

Suppose that the worker's payment is a fixed wage plus a piece rate, i.e. $w(e) = w + p \cdot e$. In this case, the optimal output level e^* is chosen satisfying the FOC[2]

$$U_e(e^*) = p - \alpha \cdot c_e(e^*) + \gamma \cdot I \cdot g_e(e^*) = 0. \tag{2}$$

Now suppose that workers can choose among the two jobs with $I_S = 0$ and $I_G = 1$. In the following, one job is referred to as the "standard" job (S) and the other is labeled the "green" job (G). While the piece rate is equal for both jobs, the fixed payments w_G and w_S may differ. Having chosen some job $i \in \{S, G\}$, the optimal output level e_i^* produced by the worker is the one satisfying the FOC (2). By applying the implicit function theorem, we see that the optimal output level decreases with the cost parameter

output then to the amount of output itself.

[2]In the following we assume that the functions $c(\cdot)$ and $g(\cdot)$ are continuously differentiable up to the degree needed and that internal solutions exist.

and (weakly) increases with the identification parameter:

$$\frac{\partial e_i^*}{\partial \alpha} = \frac{c_e(e^*)}{\gamma_G \cdot I_i \cdot g_{ee}(e^*) - \alpha \cdot c_{ee}(e^*)} < 0 \qquad \text{and} \tag{3}$$

$$\frac{\partial e_i^*}{\partial \gamma} = \frac{I_i \cdot g_e(e^*)}{\alpha \cdot c_{ee}(e^*) - \gamma \cdot I_i \cdot g_{ee}(e^*)} \geq 0, \tag{4}$$

where the second expression holds with equality if $I_i \cdot g_e(e^*) = 0$, i.e. if the marginal non-monetary utility is zero.

Prediction 1 *Low-cost workers produce more output.*

Prediction 2 *On the 'green' job, output increases with the motivation γ iff the marginal non-monetary utility is positive.*

One of the key question we want to address is what job a worker will select into when faced with different alternatives. When choosing among two alternative jobs associated with fix wages components w_G and w_S and job characteristics $I_G = 1$ and $I_S = 0$, the worker compares the indirect utility associated with each job and chooses the green job over the standard job if

$$U(I_G, w_G, e_G^*, \alpha, \gamma) \geq U(I_S, w_S, e_S^*, \alpha, \gamma). \tag{5}$$

Clearly, a worker with $\gamma > 0$ will choose the 'green' job if the wage gap is negative, i.e. $w_S - w_G < 0$. However, we are interested in cases where the wage gap is positive, i.e. $w_G < w_S$. This is the more interesting case which also seems to be more prevalent empirically, as observed by the wage gap between non-profit and for-profit organizations. When w_G is lowered (increasing the wage gap $w_S - w_G$), inequality (5) holds for less subjects. The first sorting implications of the wage gap is straightforward:

Prediction 3 *Raising the wage gap $w_S - w_G$ results in a smaller pool of subjects opting for the 'green' job.*

Prediction 4 *Applicants for the 'green' job are more motivated then applicants for the standard job.*

Beyond that, our goal is to analyze how the distribution of intrinsic motivation and cost parameters of those choosing the 'green' job is influenced by the wage gap. We do this by analyzing how the marginal worker, i.e. the one who is indifferent between the standard and the 'green' job, is affected by changes of w_G holding fixed w_S. If the characteristic of the marginal worker rises, then the averages of this characteristic in applicant pools for

both jobs move in the same direction. We can analyze the marginal type by applying the implicit function theorem to the indifference condition:

$$F(w_G, w_S, e_G^*, e_S^*, \alpha, \gamma) = U(I_G, w_G, e_G^*, \alpha, \gamma) - U(I_S, w_S, e_S^*, \alpha, \gamma) = 0. \tag{6}$$

Holding ability constant, this leads to a negative effect of w_G on the marginal worker's intrinsic motivation $\tilde{\gamma}_G$ and, using (4), to a weakly negative effect on his output $\tilde{e_G}$:

$$\frac{\partial \tilde{\gamma}_G}{\partial w_G} = \frac{-1}{g(1, e_G^*)} < 0 \qquad \text{and} \tag{7}$$

$$\frac{\partial \tilde{e}_G}{\partial w_G} = \frac{\partial \tilde{e}_G}{\partial \tilde{\gamma}_G} \frac{\partial \tilde{\gamma}_G}{\partial w_G} \leq 0. \tag{8}$$

Prediction 5 *Raising the wage gap increases the average intrinsic motivation of applicants for the 'green' job.*

In a next step, we analyze how the ability of the marginal type $\tilde{\alpha}$ is affected by changes in w_G when holding motivation constant. It follows from (6) that the cost parameter of the marginal type $\tilde{\alpha}$ increases in w_G and the output $\tilde{e}_G$ decreases:

$$\frac{\partial \tilde{\alpha}}{\partial w_G} = \frac{1}{c(e_G^*) - c(e_S^*)} \geq 0 \quad \text{and} \tag{9}$$

$$\frac{\partial \tilde{e}_G}{\partial w_G} = \frac{\partial \tilde{e}_G}{\partial \alpha} \frac{\partial \tilde{\alpha}}{\partial w_G} \leq 0. \tag{10}$$

Both equations hold with equality if $g_e(e) = 0$, because this implies $e_G^* = e_S^*$.

Prediction 6 *Raising the wage gap lowers the average cost parameter of applicants for the 'green' job iff the marginal non-monetary utility is positive.*

Both (8) and (10) provide the same and last implication:

Prediction 7 *Raising the wage gap increases the average output produced on the 'green' job iff the marginal non-monetary utility is positive.*

Predictions 5 to 7 where derived using a ceteris paribus analysis, i.e. we assumed that the cost parameter and motivation respectively do not change. In fact, the predictions also hold true under the assumption that the cost parameter and motivation are distributed independent. If they are not distributed independently, the joint distribution can cause non-monotonic sorting (compare Barigozzi and Turati Forth.).

3. Experimental Design

We set up an experiment that allows testing the predictions of the model described in the previous section and, more generally, sheds light on self-selection in contexts where identification with a potential employer matter (Besley and Ghatak 2005, Heyes 2005, Delfgaauw and Dur 2007, Brekke and Nyborg 2010). Therefor, the experiment offers subjects the choice between a "green"' job that pays an equal or lower wage and supports a well known environmental organization (Greenpeace), and a "standard"' job that pays a higher wage but that does not generate any positive externality. In both potential jobs, subjects engage in a tediou real effort task for 40 minutes. This design models the key difference between jobs at non-profit and for-profit organizations and allows us to exogenously vary the wage gap between the jobs. We can directly observe the job choice and the subsequent We elicit and measure subjects' environmental attitudes and identification with a Greenpeace in a survey that is conducted before the main phase of the experiment and before subjects choose their job. The experiment was programmed using the "Bonn Experiment System"' software BoXS through Seithe (2010) and students recruited through ORSEE (Greiner 2004).

The experiment is partitioned into four different phases. Subjects receive the instructions for the current phase at the beginning of each phase on the computer screen.

3.1. Survey Phase: Elicitation of Intrinsic Motivation

The experiment starts with a survey. The questionnaire is designed to give the subjects the impression that they take part in a small socioeconomic survey. The questions ask about important demographic characteristics like gender, age, and field of study and also measures preferences as well as personality traits using the "Big Five"' inventory. The survey also asks how much subjects identify themselves with the mission pursued by Greenpeace and some other quite well-known, albeit non-environmental, non-profit organizations (on an 11-point-scale, reaching from 0 to 10).[3] The survey also contains questions asking subjects more general questions about their attitude towards the environment and other causes.

From a methodological point of view, it is important to conduct the survey before the choice phase of the experiment because this allows a clear identification of subjects' attitudes toward Greenpeace that is not affected by treatment assignment. Conducting the survey after the main phases of the experiment would have been problematic be-

[3] An analogous method has been used by Ariely, Bracha, and Meier (2009), Fehrler and Kosfeld (2010). We will refer to this variable as 'identification' in the following.

cause subjects' answers on the survey may be affected by their choice of job and thus the treatment; for instance, subjects might have a preference for consistency (Falk and Zimmermann 2011) leading them to assess Greenpeace more favorably if they chose the "green" job. Our design circumvents this type of problem and provides us with a clean measure of subjects' attitudes that is orthogonal to treatment assignment.

3.2. Training Phase

In a next step, subjects enter a training phase of 5 minutes that is supposed to familiarize them with the task in the main phase. The task consists in counting the number of ones in a table that consisted of 120 randomly ordered zeros and ones (compare Abeler, Falk, Götte, and Huffman 2011)[4]. Subjects have to count the number of ones in the block and enter it into the computer. For each correctly solved block they get a piece-rate of 0.10 €. After entering the number, "correct" or "false" is displayed for 2 seconds, then the next table is displayed (see Figure 1). This phase provides an exogenous skill measure

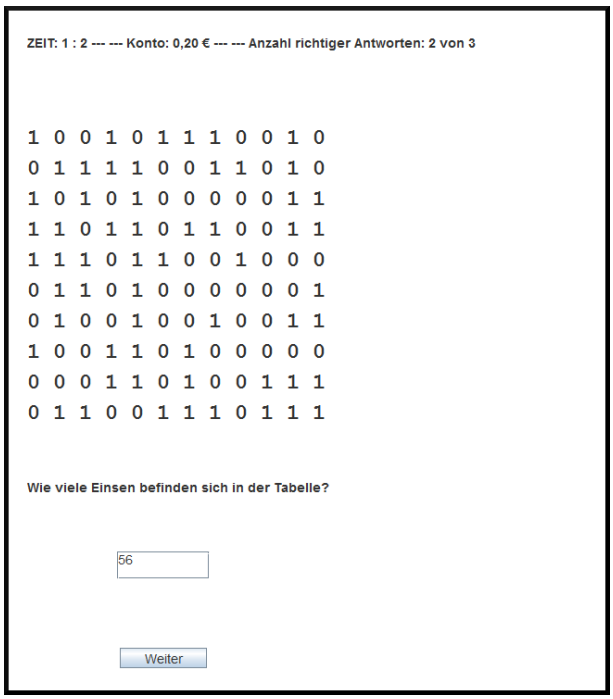

Figure 1: Real Effort Task - (Training Phase)

because this phase is identical across treatments. In the following, we will refer to this variable as "skill". We interpret skill as an inverse measure of the cost parameter we used in the model. Before the training phase we make sure that subjects understand the task

[4] *"This task does not require any prior knowledge and performance is easily measurable; at the same time, the task is boring and pointless and we can thus be confident that the task entailed a positive cost of effort for all subjects. The task was also clearly artificial, and output was of no intrinsic value to the experimenter."* (Abeler, Falk, Götte, and Huffman 2011)

by displaying one table and having them count the numbers. The training only starts after a correct number has been entered.

3.3. Treatment Phase

After the training phase, subjects are randomly assigned to one of the three treatments. They are not told about the other treatments. In each treatment, they have 40 minutes to work on the real effort task described before and get a (private) piece-rate of 0.10 € for each correctly solved block. At the beginning of the treatment phase, subjects have the opportunity to choose between two alternative job arrangements: In the "standard" job, the fixed wage component is $w_S = 8$ €, while in the "green" job the fixed wage component is either 8 € (Treatment 0 , wage gap=0€), 7 € (Treatment 1, wage gap=1€) or 5€ (Treatment 2, wage gap=3€) according to the different treatments. In the "green" job, subjects additionally generate a donation of 0.10 € for each correctly solved block that is donated by the experimenters on behalf of the subjects to Greenpeace Germany. The wage gap between the two jobs rapresents the key treatment variable. An overview over the different treatments can also be found in Table 6. The jobs where explicitly labeled as "jobs" to make the job-market aspect somewhat salient. The exact labels in the experiment where "Job A" and "Job B (Greenpeace)". Subjects are not allowed to quit the job [5] but may stop counting whenever they want even though they have to wait until the 40 minutes are over[6].

We make sure that the subjects understand the payment schemes of both jobs and make an informed decision[7].

3.4. Final Phase: Robustness Check

After the main phase, all subjects are asked whether they plan to contribute money to Greenpeace in the near future. If they answer affirmatively, they are given the opportunity to donate any amount between zero and the total amount they earned for themselves in the experiment. This allows us to rule out a potential alternative strategy that subjects may choose because of potential "efficiency concerns": Subjects might choose Job A in order to donate part of the personal payoff afterwards.

[5] This is to avoid any possible peer-effect (e.g. Falk and Ichino 2006, Linardi and McConnell 2011)

[6] Subjects were allowed to bring in the cubicles readings and other items to be used during the eventual waiting time.

[7] Subjects have to answer three control questions of the form: *Imagine you managed to solve 60 tables in the following 40 minutes. How much would you earn, and how much would be donated to Greenpeace in "Job A" and in "Job B (Greenpeace)"?* Subjects cannot proceed until they found the correct solutions.

The experiment ends with a short final survey section eliciting general personal characteristics.

4. Results

We conducted six sessions with a total of 143 subjects. All sessions were conducted at the BonnEconLab using the laboratory's subject pool. 95% of the subjects were students of various disciplines, 56% of them were female.

The two key variables that we elicit in the first two phases will be called "identification" and "skill" in the following. "Identification" is the answer to the survey question of how much subjects identify with the goals of Greenpeace (on a 11-point scale) and thus corresponds to the motivation parameter γ in the model. "Skill" measures the number of correctly solved tables during the training stage (5 minutes), it corresponds to the inverse of the cost parameter α from the model. The distribution of the variables "identification" and "skills" for the whole sample are displayed in Figure 2.

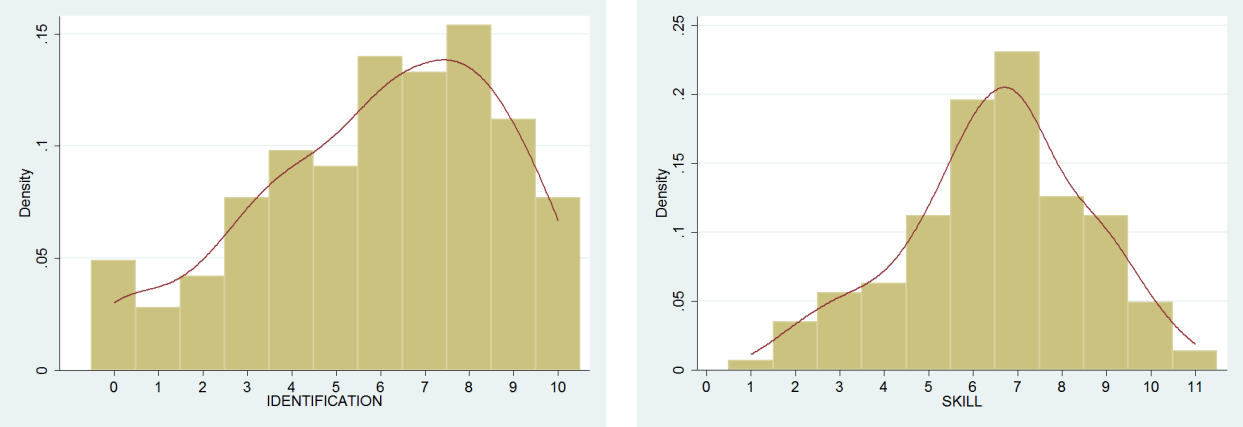

Figure 2: Distributions (histogram and Gaussian kernel density) of "identification" and "skill".

The subjects' average private payoff was 14.27 €. Among those choosing to work for Greenpeace the average contribution to Greenpeace (excluding the voluntary donation at the end of the experiment) was 6.29 € . Summary statistics by treatment and job choice can be found in Table 6 (Appendix).

Table 1 provides the results from a regression of output in the main stage on skill, the identification with Greenpeace, and the wage gap. The first two columns show the results for workers in the standard job and in the green job, respectively, while the third column shows the results for all workers, adding a dummy variable indicating the choice of the green job as a regressor.

Table 1: Number of tables correctly counted in the main stage for the standard and the 'green' job (OLS)

VARIABLES	(1) Standard Job	(2) 'Green' Job	(3) ALL
IDENTIFICATION	-0.161	0.357	0.194
	(0.691)	(0.682)	(0.485)
T1	-9.254	0.777	-0.738
	(8.794)	(3.416)	(3.030)
T2	-2.387	-0.821	1.455
	(8.370)	(5.366)	(3.958)
SKILL	3.650***	4.508***	4.161***
	(0.916)	(0.784)	(0.594)
Choice of GREENPEACE Job			2.523
			(3.527)
Constant	40.87***	30.08***	31.29***
	(9.822)	(7.100)	(5.667)
Observations	53	90	143
R-squared	0.261	0.288	0.276

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Finding 1 *High-skill workers produce more output.*

In fact, skill is the only variable having a significant effect on output, and it is sizeable and highly significant in all three specifications.[8] As stated earlier, we interpret skills as an inverse measure of a cost parameter, high skills correspond to low costs. Thus, this finding supports Prediction 1. This finding indicates that there is in fact heterogeneity in the workers' ability which we are measuring with the variable skill.

Finding 2 *Output does not increase with identification in the green job.*

As expected, identification has virtually no effect on output in the standard job. In the green job, the effect is positive, but far from being statistically significant. In light of Prediction 2, we thus conclude that workers do not receive positive marginal utility from

[8] Note that the coefficient on skill is surprisingly low: The time available in the main stage is eight times longer compared to the test stage, and subjects in fact managed to solve approximately ten times more tables in the main stage. The low coefficient (around 4, which is half of the expected effect) is probably due to a very specific "measurement error": Since we elicit "skill" in phase of 5 minutes, our measure includes an error because (i) output has a random component (there is some probability of entering a wrong number), and (ii) we only measure an integer, i.e. the number *completed* tables. The interpretation as an "errors in regressors" effect is also supported by the fact that the "inverse" regression of skill on output in the Treatment Phase gives a coefficient of about 0.07, which is approximately the inverse of 14.

generating the donation for Greenpeace.[9] This explanation is in line with Fehrler and Kosfeld (2010) who suggest that "the view that motivation by, or identification with, an employer's mission could work as a substitute for piece rate payments might be inadequate." It is also in line with recent evidence against pure (or output-oriented) altruism (Tonin and Vlassopoulos 2010). Though our finding of "participation utility" is not identical to the warm-glow altruism described in named paper, there are similarities: In both cases the agent does not derive utility from his effective impact, but rather from being involved personally. When facing the hypothetical decision to match oneself and another agent to one 'green' and one standard job, an agent with either "participation utility" or warm-glow altruism strictly prefers to match the 'green' job to himself, while a purely altruistic agent is indifferent.[10] There remains one caveat: One might objects that private monetary incentives (i.e. the piece rate) have been too high for motivation to play a sizable role for the effort decision since it might have induce subjects to work close to their maximum speed anyway. Unfortunately, we cannot fully rule out this objection.

Finding 3 *Raising the wage gap results in a smaller pool of workers opting for the 'green' job.*

In Treatment 0, 45 out of 48 subjects chose the "green" job, in Treatment 1, 35 out of 47 subjects chose to work for the "green job", whereas only 10 out of 48 subjects chose the "green" job in Treatment 2.

The effect of the wage gap on the sorting behavior can also be seen in probit regression of job choice on identification, wage gap and skills, reported in Table 2. An increase of the wage gap by 1 € reduces the probability of choosing the 'green' job by 34%.

Finding 4 *The average identification with Greenpeace is significantly higher in the 'green' job than in the standard job.*

This finding of "favorable selection" in terms of identification is visualized in Figure 3 (this figure aggregates all treatments). The average identification with Greenpeace of workers in the standard job is 4.94, while it is 6.57 in the 'green' job. Both a Wilcoxon rank-sum test and a t-test reject the equality of the distribution (p-value < 0.01 in both cases).

This notion of favorable selection is also supported by the fact that the degree of identification with Greenpeace positively influences the probability of choosing the 'green' job:

[9] We cannot test the properties of the utility function and Prediction 2 at the same time. Thus, from Finding 2 we draw inferences about the utility function rather then actually addressing the formal validity of Prediction 2.

[10] This illustrative example neglects effort decisions and just assumes that both agents perform identical and independent of the job match.

VARIABLES	(1) ('Green' Job)	(2) ('Green' Job)
IDENTIFICATION	0.0979***	0.0979***
	(0.0215)	(0.0214)
Wage Gap	-0.336***	
	(0.0482)	
T1		-0.435***
		(0.136)
T2		-0.874***
		(0.0594)
SKILL	0.00672	0.00691
	(0.0223)	(0.0220)
Observations	143	143

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2: Choice of the "green" job(probit regression, marginal effects at the mean)

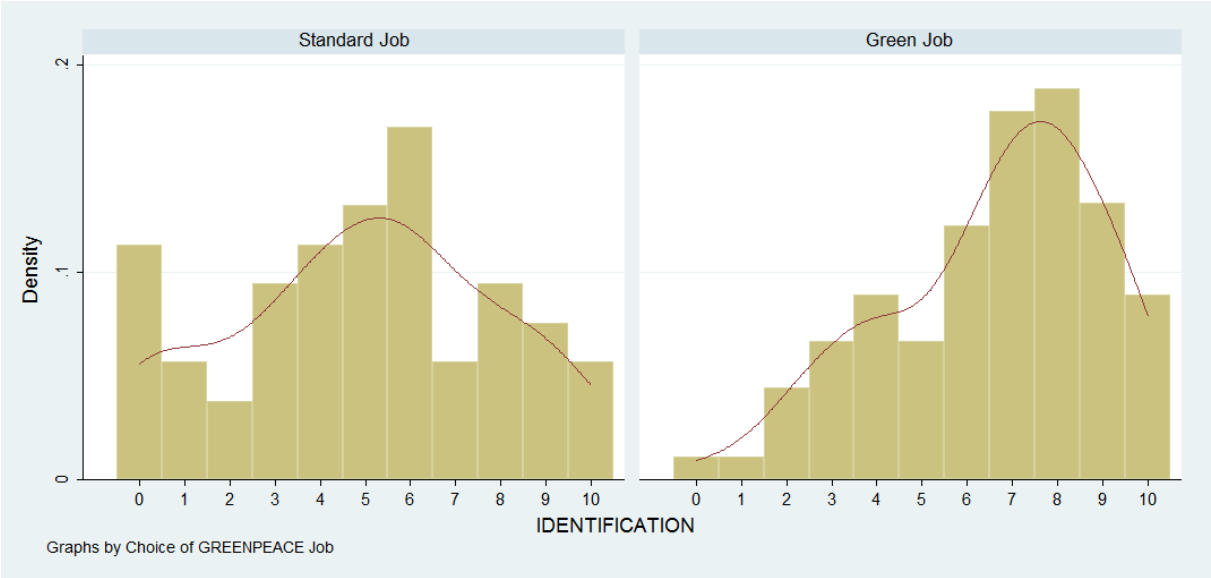

Figure 3: Distribution and Gaussian kernel density of "identification" by job choice (all treatments).

The probit regression in Table 2 shows that an increase in the identification measure by one point increases the likelihood of choosing the 'green' job by 10%. This effect is highly significant.

Finding 5 *Raising the wage gap increases the average identification of workers in the 'green' job.*

Figure 4: Gaussian kernel densities of the "identification" measure across treatments ("no wage-gap" vs. "positive wage-gap"). The left diagrams shows all workers, the right one those choosing the "green" job.

Figure 4 shows how the distribution of identification varies across treatments and job choice. We aggregate the two treatments with positive wage gaps (T1 and T2) and contrast them to the treatment with zero wage gap (T0). The left diagram of Figure 4 shows the distribution of the identification measure of all subjects across the two treatment categories. We see that there is almost no difference, confirming that our randomized assignment to the different treatments produced comparable groups. The right diagram shows how the identification of those choosing the 'green' job changes when we are moving from zero wage gap to a positive wage: Under a positive wage gap, there is more mass at the upper identification levels, this distribution statistically dominates the distribution under a zero gap. The Wilcoxon rank-sum test confirms that this difference is statistically significant (p-value of 0.0267).[11]

The left diagram of of Figure 5 also illustrates the strong and positive effect of the wage gap on the average identification of those workers choosing the "green" job.

Finding 6 *Raising the wage gap does not affect the average skill of workers in the 'green' job.*

[11] A t-test yields a difference of 1.22 with a p-value of 0.0144.

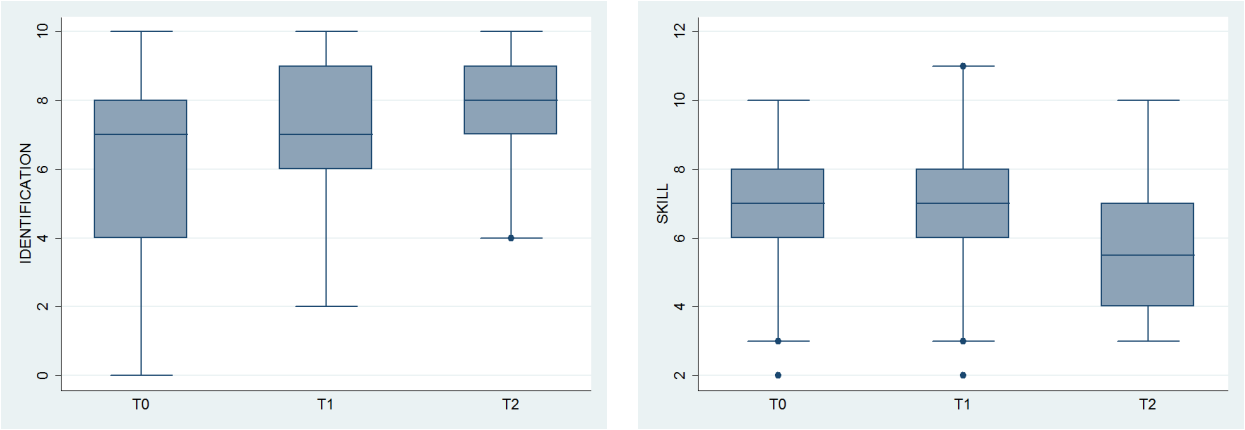

Figure 5: Comparison of "identification" (left diagram) and "skill" (right diagram) for workers in the 'green' job, by Treatment

We find hardly any difference in the skill level of workers in the 'green' job across treatments, compare Figure 5 (right panel). While our model predicts a favorable selection based on skills (if any), it appears as though we have a slightly lower skill level in Treatment 2. While this difference is not statistically significant, it also turns out that this difference is caused by the fact that overall skill level of all subjects in Treatment 2 is lower then in both other treatments.

In terms of the model prediction this again indicates that the 'green' job does not seem to provide additional marginal non-monetary incentives. However, it is important to notice that negative selection is not happening either.

This finding indicates that there is no self-selection of workers based on skills. This is confirmed by the analysis of the selection decision: The probit regression displayed in Table 2 shows no effect of skills on the probability of choosing the 'green' job.

Finding 7 *Raising the wage gap does not influence the average output of workers in the 'green' job.*

The regression of output in Table 1 shows that the wage gap does not have any effect on the output produced in the green job. This finding is in line with the Findings 4 and 6. Again, the effect is neither positive nor negative. The latter point deserves some attention. Though the model predicted a weakly positive effect, one could also argue that when workers exert negative reciprocity or similar preferences towards the experimenter, a lower wage in the 'green' job might lead to lower productivity. However, this is not the case. Although paying less to the workers, Greenpeace does not suffer any negative effect, neither in terms of sorting nor in terms of subsequent effort decisions.

Above, we already mentioned the relationship between output in the Treatment Phase,

skills and effort. So far, we only made statements about the former two. To assess effort, we now analyze the "skill-normalized output", i.e. the ratio between the output in the Treatment Phase and skills. This ratio measures how hard a subjects works in the treatment as compared to the training stage and can thus be interpreted as an effort measure when assuming that all subjects worked equally hard (according to their skills) in the training phase. Figure 8 (Appendix) shows the averages across treatments and jobs. None of the differences are statistically significant. It appears that neither job choice nor treatment variations can induce subjects to work harder.

We have replicated some of our key result using factor analysis to extract a single factor of individual "greenness" instead of the 11-point scale identification with Greenpeace. For the factor analysis, we use the answers to several questions related to 'green' themes (dangerousness of climate change, seriousness of environmental problems) as well as the original 11-point scale identification with Greenpeace. Responses to the different items are highly correlated which is consistent with the different questions capturing the same factor. Our results are basically unchanged when we use the "green" factor instead of the identification with Greenpeace for the analysis. Further details can be found in the Appendix A.

At the end of the experiment, only 15 subjects said that they planned to donate money to Greenpeace in the near future, and only 7 subjects actually made a positive donation. Only one of them had not chosen the "green" job. The average donation amongst those who made a positive donation was 1.16 €. This alleviates the potential concern that subjects might choose the standard job in order to earn more money and donate part of it afterwards.

5. Conclusion

We assess how wages affect an individual's choice of employer. To the best of our knowledge, we are the first to experimentally assess the self-selection of individuals into jobs in contexts where individual's identity regarding the job matters. While standard theory tells us that an employer can attract better workers by paying higher wages, we conjecture that the opposite may be true in some important contexts. Specifically, we hypothesize that mission-oriented organizations which aim to attract employees that identify with the organization's goals should pay lower wages: Hereby, the organization will attract more of those applicants that genuinely care about the organization and less of those applicants

that apply because of the high wage. We describe a model of this selection mechanism and test its predictions in a laboratory experiment in which subjects can choose between two alternative real-effort jobs: a "green" job which pays a lower wage and in which effort provision generates donations to an environmental organization as well as a "standard" job which pays a higher wages but generates no extra benefits to said organization. We vary the wage in the "green" job to analyze how the size of the wage gap between the two jobs affects the type and behavior of the individuals choosing the "green" job. We find that increasing the wage gap – or, put differently, lowering the wage in the "green" job – reduces the number of subjects choosing the green job. We find that the individuals opting for the "green" job in the low-wage treatment have higher degrees of identification with the environmental organization than the ones who do so when there is no wage gap. This implies that it can pay off for mission-oriented organizations to underpay their employees relative to the relevant market wage. We do not find ability to influence the job decision. Interestingly, highly motivated agents do not exert more effort when choosing the "green" job. This is broadly consistent with empirical evidence against pure (or output-oriented) altruism as put forth by Tonin and Vlassopoulos (2010).

One interesting avenue for future research is the relationship between identity and image concerns. In our setting, individuals act isolated from any community and their actions are not visible to any outsiders. Evidence from social psychology and economics (Benabou and Tirole 2003, Benabou and Tirole 2006, Kosfeld and Neckermann 2011, Ariely, Bracha, and Meier 2009 and Linardi and McConnell 2011) suggests that social recognition is an important factor in understanding pro-social behavior. A further extension of our current design could shed some light on the interplay of intrinsic motivations, monetary incentives and social recognition on the effort provision margin for intrinsically motivated workers.

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Appendix

A. Factor Analysis

We use the answers to the following questions - as well as the question about identification - to construct a measure of 'greenness':

"On a scale from 0 to 10, how worried are you about:

- *nuclear power stations and nuclear waste?*
- *air pollution?*
- *damage of the ozone layer?*
- *pollutants in food?*
- *climate change?*
- *species extinction?"*

The answers to these questions are all highly correlated with each other and with the original measure of identification with Greenpeace, as Table 3 shows.

Table 3: Inter-item correlation of "green" questions

Variable	"identification"	nuclear	air	ozone	food	climate	species
"identification"	1.000						
nuclear	0.602	1.000					
air_pollution	0.553	0.806	1.000				
ozone	0.534	0.765	0.843	1.000			
food_pollution	0.279	0.391	0.405	0.401	1.000		
climate_change	0.600	0.657	0.684	0.758	0.473	1.000	
species	0.620	0.488	0.546	0.533	0.420	0.602	1.000

We conducted a factor analysis that suggests that one factor should be retained (eigenvalue of 4.43) which we interpret as 'greenness'. See the Table 4 for details for the factor analysis.

This factor is highly correlated with the original measure for identification with Greenpeace. For the rest of the appendix, we standardize the factor to have the same mean and variance as the original 11-point identification measure we use. We conduct the same analyses as in the results section of the paper yielding essentially the same results. The statistical tests we conducted to test the hypothesis whether the mean identification of

Table 4: Factor Analysis of "green" questions

Variable	Factor1	Factor2	Factor3	Factor4	Uniqueness
gp	0.6986	0.2446	-0.208	-0.0046	0.4089
nuclear	0.8378	-0.1731	-0.1115	0.0195	0.2553
air_pollution	0.877	-0.2254	-0.0265	0.0118	0.1793
ozone	0.8783	-0.2137	0.0589	-0.024	0.1789
food_pollution	0.4945	0.1176	0.2295	0.0229	0.6884
climate_change	0.8306	0.0972	0.1167	-0.0198	0.2867
species	0.6872	0.3211	-0.0004	0.0039	0.4247

the workers choosing the green job is the same in the wage gap and the no-wage gap treatments now reject the null hypothesis at much lower p-values (p=0.0017). Next, consider the analysis of job choice. As can be seen in Table 5, there is virtually no difference if we replace our 'green' measure in the probit regressions (Table 2) with the 'green factor' from the factor analysis. The different point estimates stem from the normalization of the factor variable.

Table 5: Probit Estimation of the choice of the 'green' job (marginal effects)

	(1)	(2)
VARIABLES	('Green' Job)	('Green' Job)
Scores for factor 1	0.0776***	0.0795***
	(0.0203)	(0.0205)
Wage Gap	-0.308***	
	(0.0452)	
T1		-0.434***
		(0.130)
T2		-0.827***
		(0.0660)
SKILL	-0.00251	-0.00183
	(0.0231)	(0.0228)
Observations	143	143

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The Figure 6 show the distribution of the factor in the whole sample and the sample choosing the green job (split by treatment). We replicate the result we obtained using the 11-point scale: All in all, the analysis using the 'greenness' factor shows the robustness of the original measure of identification with Greenpeace that we use.

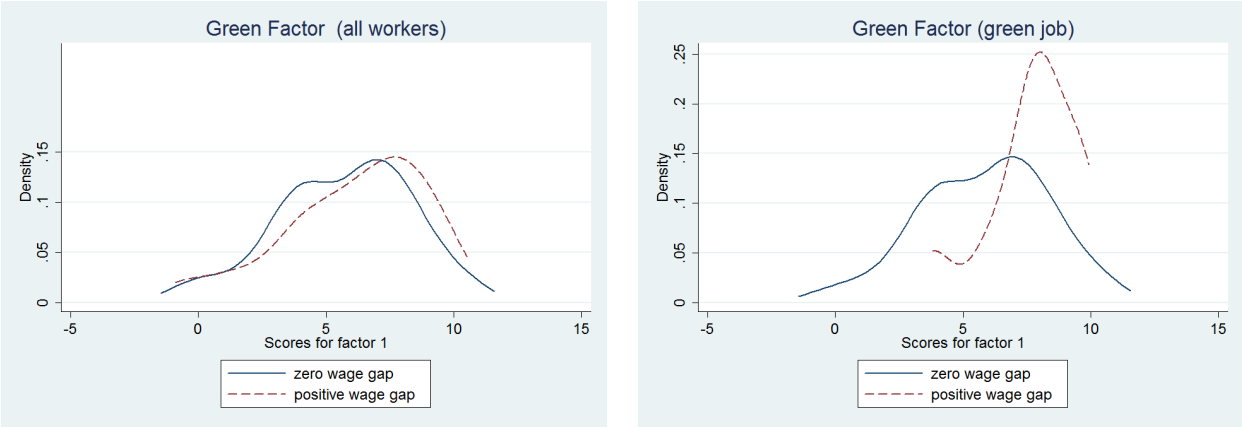

Figure 6: Gaussian kernel densities of the green factor across treatments ("no wage-gap" vs. "positive wage-gap"). The left diagrams shows all workers, the right one those choosing the "green" job.

B. Translation of the Instructions

After Phase 2 (Training), subjects were given printed instructions. This is the translated version of the treatment in which the fix wage in the 'green' job was 5 €.

You have the choice between two jobs, "Job A" and "Job B". Both jobs are identical to the task of the "counting ones" that you are already familiar with; the payment however will be different. The working time will be 40 minutes for both jobs. After this time there will be a short survey (about 5 minutes).
While "Job A" offers a higher personal payoff than "Job B", the latter one gives you the opportunity to generate a donation to GREENPACE Germany.

Job A:
You get a fixed payment of 8 € regardless of the number of correct answers. In addition, you get 10 cents for each correct answer. GREENPEACE does NOT receive any money when you choose this job.
The following examples illustrate the payment scheme for "Job A":

- If you correctly count 100 tables during the 40 minutes, you receive a payoff of 8 € + 100*0.10 € = 18 €.
- If you correctly count 40 tables during the 40 minutes, you receive a payoff of 8 € + 40*0.10 € = 12 €.
- If you correctly count 70 tables during the 40 minutes, you receive a payoff of 8 € + 70*0.10 € = 15 €.

Job B:

You get a fixed payment of 5 € regardless of the number of correct answers. In addition, you get 10 cents for each correct answer. Furthermore, the experimenters also pay 10 cents for each correct answer as a donation to Greenpeace Germany. Please note that the donation which you generate in this way is not deducted from your personal payoff, but is paid in addition. After the experiment, you will get a receipt for the donation, which enables you to verify that the money will actually be donated to Greenpeace.

The following examples illustrate the payment scheme for "Job B":

- If you correctly count 100 tables during the 40 minutes, you receive a payoff of 5 € + 100*0.1 € = 15 €.
  In addition, GREENPEACE receives a donation of 100*0.10 €= 10 €.

- If you correctly count 40 tables during the 40 minutes, you receive a payoff of 5 € + 40*0.1 € = 9 €.
  In addition, GREENPEACE receives a donation of 40*0.10 €= 4 €.

- If you correctly count 70 tables during the 40 minutes, you receive a payoff of 5 € + 70*0.1 € = 12 €.
  In addition, GREENPEACE receives a donation of 70*0.10 €= 7 €.

C. Additional Graphs and Figures

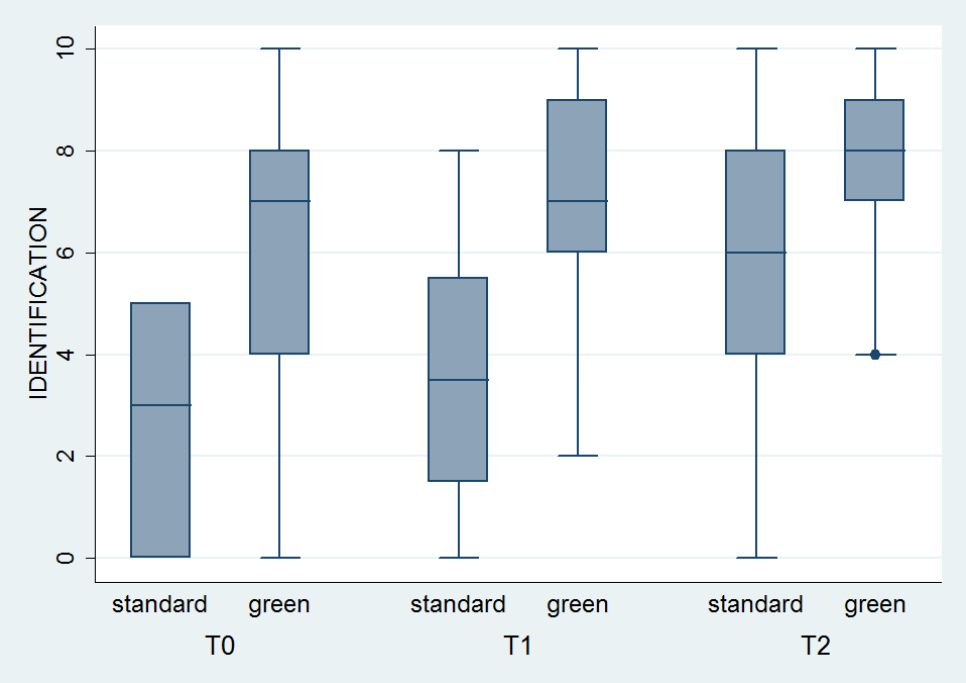

Figure 7: Greenpeace identification - by Job selection / Treatment

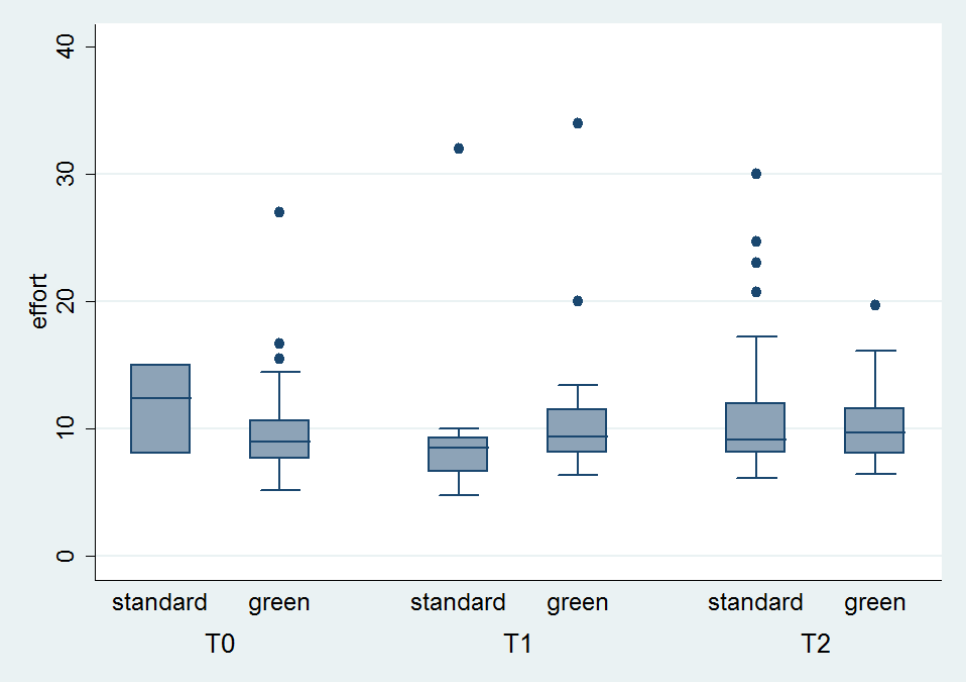

Figure 8: Distribution of skill-normalized output ("effort"), by Job selection and Treatment

Table 6: Treatment overview and Descriptive Statistics

	Treatment 0		**Treatment 1**		**Treatment 2**	
	Standard Job	**Green Job**	**Standard Job**	**Green Job**	**Standard Job**	**Green Job**
Fix wage	8 €	8 €	8 €	7 €	8 €	5 €
Private Piece-rate	0.10 €	0.10 €	0.10 €	0.10 €	0.10 €	0.10 €
Piece-rate for GREENPEACE	0 €	0.10 €	0 €	0.10 €	0 €	0.10 €
applicants (share)	6%	94%	26%	74%	79%	21%
# applicants	3	45	12	35	38	10
Average GP identification	2.66 (2.51)	5.95 (2.61)	3.41 (2.53)	7.02 (2.03)	5.60 (2.80)	7.70 (1.80)
Average skill	6.00 (3.60)	6.91 (1.81)	6.83 (2.59)	6.71 (2.20)	5.92 (1.81)	5.90 (2.23)
Average output (treatment phase)	62.3 (17.5)	63.4 (18.0)	56.0 (19.4)	63.6 (15.8)	59.2 (13.8)	58.6 (18.7)
Average normalized effort[a]	11.80 (3.53)	9.72 (3.72)	9.85 (7.14)	10.59 (5.16)	11.16 (5.39)	10.73 (4.18)

Standard errors in parentheses.

[a]Ratio of output in the treatment phase (40 minutes) and skill (output in the training phase (5 minutes))