

Incentives for Motivated Agents - An Experiment with Employees from a Non-profit Organization

Leonie Gerhards*

Goethe University Frankfurt

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Abstract

This paper studies the incentive effects of an organization's mission on agents' effort decisions in an online experiment. A unique subject pool of employees from a non-profit humanitarian organization participates in a principal-agent design. Two treatments are implemented, which differ in the degree of the agent's mission match to his project (*Low Mission* and *Mission Match*).

The results show that for any given piece rate agents choose significantly higher efforts in the *Mission Match Treatment*. Furthermore, evidence for a motivational crowding-out effect of high monetary incentives is observed. Principals do not take advantage of the fact that they could economize on monetary incentives when interacting with a motivated agent. In fact, piece rate choices are increasing in the principals' mission match to their agent's projects.

Keywords: mission, motivation, incentives, experiment

JEL Codes: C9, J3, M5

*Goethe University Frankfurt, Department of Management and Microeconomics, Grüneburgplatz 1, D-60323 Frankfurt, Germany; Tel: (+49)-(0)69-79834830; Fax: (+49) -(0)69-79835021; gerhards@econ.uni-frankfurt.de

1 Introduction

Over the last couple of years an emerging strand of literature has emphasized the effectiveness of non-monetary incentives. Theoretical and experimental studies have investigated the role of gift-exchange (e.g. Akerlof, 1984, Fehr et al., 1993, Fehr et al., 1997), peer pressure (e.g. Falk and Ichino, 2006) and the motivational effects of status and social recognition (e.g. Kosfeld and Neckermann, 2011). Moreover, there is a broad discussion about the motivational aspects of employees' intrinsic motivation (e.g. Frey and Oberholzer-Gee, 1997 or Bénabou and Tirole, 2006). Several theoretical papers focus particularly on public sector employees and discuss their motivations to work (e.g. Auriol and Brilon, 2010, Bénabou and Tirole, 2003, 2006, Delfgaauw and Dur, 2007, 2008, Dixit, 2002, Francois, 2000, 2007, Hansmann, 1980, Murdock, 2002 and Prendergast, 2001, 2007). A summary on the altruistic and pro-social motivation of social sector employees in particular is given in Francois and Vlassopoulos (2008).¹

Relatedly, another important motivational factor has increasingly been studied: the mission of an organization. Akerlof and Kranton (2005) argue that employees who identify with the goals of their organization need to be provided with lower powered incentives - i.e. less rewards and less punishment - to do their jobs properly. Besley and Ghatak's (2005) model likewise suggests that for agents who are motivated by their firm's mission this mission and monetary incentives can be substitutes. This implies on the one hand that motivated agents *ceteris paribus* exert higher effort. On the other hand this means that an organization can economize on monetary incentives if their employees are motivated by its mission. This paper provides an experimental test for these hypotheses, derived from Besley and Ghatak's (2005) model.

Empirical studies suggest that employees' pro-social preferences and their attachment to organizations' goals, such as providing a collective good, have motivational power. In a Brookings Institution Survey employees in non-profit organizations state high levels of intrinsic motivation while at the same time reporting to work for lower wages compared to their counterparts in for-profit organizations (Light, 2003). Gregg et al. (2011) show that controlling for income, employees in the non-profit sector work significantly more unpaid overtime than respective workers in the for-profit sector. Further survey studies show that comparatively fewer and lower performance related incentives are used in the public sector (e.g. Burgess and Metcalfe, 1999). Leete (2000) finds that also wage differentials, which are often applied as incentive devices in for-profit firms (e.g. in the form of Lazear and Rosen's (1981) rank-order tournaments) are less often implemented in non-profit organizations. She argues that one reason for this is the non-profit firm's comparatively strong reliance on employees' intrinsic motivation that can be negatively affected by wage differentials (cf. also Frey, 1997).

Although these empirical studies on non-profit organizations provide a first hint for the motivational power of missions, they do not allow to infer the substitutability of mission and monetary incentives. On the one hand, most of the papers study employees in public sector agencies. Their reasons to refrain from providing higher monetary incentives to their employees might be independent from Besley and Ghatak's (2005) substitutability argument. On the other hand it cannot be ruled out that the empirically observed behavior of employees working in non-

¹Francois and Vlassopoulos (2008) divide the literature by their underlying motives into models dealing with impure (action-oriented) and pure (output-oriented) altruism. Related to this, Tonin and Vlassopoulos (2010) analyze the motivational effects of these two forms of altruism in a real-effort experiment. They find no effect on efforts which can be attributed to motives of pure altruism. Furthermore, a motivational effect driven by warm-glow (impure) altruism is only reflected in female subjects' effort provision.

profit organizations is primarily driven by their reputational concerns. Some people might engage in non-profit organizations for low monetary incentives (and low pay) only to upgrade their CV in order to receive a better paid job later in their career. Using an experimental setup I am able to study the motivational effects of monetary incentives and missions on agents effort provisions in a controlled environment. It allows me to vary the agents' mission match exogenously and to rule out confounding factors.

The subject pool of agents in the present experiment consists of full-time employees from a non-profit humanitarian organization, who can be considered motivated employees in Besley and Ghatak's (2005) sense. They participate in an internet-based experiment with an adapted one-shot principal-agent game. The role of the principals is assumed by students. For both, principals and agents it is common knowledge that their assigned counterpart is an NGO employee or a student, respectively. Principal's and agent's earnings are determined by their respective piece rate and effort decisions. The agent's mission is implemented via an additional donation, which is generated by his effort choice. To model a high mission match in the main treatment, called *Mission Match Treatment*, the agent's effort decision generates a donation to his favorite aid project from his humanitarian organization. In the control treatment, called *Low Mission Treatment*, the agent's effort generates a donation to a local cultural project whose mission is independent from the organization's mission he works for. The match between the agent's and this organization's mission is thus comparatively low.

The main results are that, first, given any piece rate agents choose significantly higher effort levels in the *Mission Match* compared to the *Low Mission Treatment*. Hence, an agent's motivation and monetary incentives are substitutes as predicted by Besley and Ghatak's (2005) model. Second, the differences in effort choices between *Mission Match* and *Low Mission Treatment* are decreasing in piece rates. The negative correlation between incentives and agent's motivation to exert extra effort suggests a motivational crowding-out resulting from high powered incentives. Third, principals do not use the fact that mission and incentives are substitutes for motivated agents. They implement higher piece rates than they expect to maximize their own payoffs. Furthermore they even choose higher piece rates in the *Mission Match* than in the *Low Mission Treatment*. This can be explained by the principals' desire to support their agents' mission.

To shed light on the relevance of sorting and to disentangle it from the pure incentive effect of a mission I replicate the experiment with a standard student subject pool in the role of agents. Interestingly, similar findings apply to this second experiment. Given any piece rate level the agents' effort choices are significantly higher in the *Mission Match Treatment*. Thus, a high mission match creates incentive effects for both samples, for the NGO employees as well as for the students. This implies that the observed positive mission effect on effort choices is attributable to the pure mission's incentive effect, which is independent from a selection effect inherent in the subject pool of NGO employees. Furthermore, also in the second experiment principals' piece rate choices are increasing in their mission match. But interestingly, principals set equally high piece rates in both treatments, suggesting that factors apart from the desire to support one's own preferred mission seem to play a role in their decision making.

The remainder of the paper is organized as follows: The next section briefly describes the assumptions of Besley and Ghatak's (2005) basic model that I will use in my experiment and gives a short overview of related experimental studies. In Section 3 and 4 the recruitment procedure and details about the design of the agent's side of the experiment are presented. Subsequently,

in Section 5 I derive behavioral hypotheses for motivated agents and their principals. These are tested in Section 6. Section 7 discusses the results from the experimental replication with a student subject pool, Section 8 concludes.

2 Incentives and motivated agents

Consider the basic assumptions of Besley and Ghatak's (2005) model. A mission is exogenously attached to a project. The agent's utility function has the form

$$U^A = e(p + \theta_{ij}) - \frac{1}{2}e^2.$$

The agent's effort choice is denoted by e , p denotes the monetary incentives and the last term in the utility function represents the agent's convex effort costs. The agent's mission motivation is modeled by the factor $\theta_{ij} \geq 0$. It is equal to zero if neither the agent (j) nor the project or principal (i) he works for pursues a mission. The value of θ_{ij} is increasing in the match between the agent's own mission and the project's mission. Agents who exhibit positive mission values are called "motivated agents".

The principal's utility function is given by

$$U^P = (\pi - p)e - w.$$

From the agent's effort choice the principal receives a payoff of πe . In return he pays him a salary that consists of a variable component p and a fixed component w .

Since the agent's effort does not react to the fixed wage, w will be equal to zero in equilibrium. Furthermore, the optimal effort level and monetary incentives are given by $e^* = p^* + \theta_{ij}$ and $p^* = \frac{1}{2}(\pi - \theta_{ij})$, respectively. This indicates that for the same level of monetary incentives p an agent with a higher motivation θ_{ij} will exert additional effort. Hence, the principal can economize on costly pecuniary incentives as θ_{ij} and p are perfect substitutes. The more motivated an agent is the lower the monetary incentive p he has to be paid in equilibrium.

The experiments by Koppel and Regner (2011) and Fehrler and Kosfeld (2012) are most closely related to the present approach. Both experiments study effort decisions of agents who are motivated by a mission in Besley and Ghatak's (2005) sense. They use standard student subject pools and laboratory settings.

Koppel and Regner (2011) examine the incentive effects of a firm's mission on agents' effort choices in an adapted gift-exchange setup. They consider the special case of corporate social responsibility (CSR) activities. The firm's CSR activity is implemented by the principal's decision on which share (β) of his profit he donates to a charity. The main treatments, which differ in the available number of β -value options to choose from, are compared to a control treatment without any CSR activity at all. The authors' main result is that agents reward their firms' CSR activities with higher effort choices. But in their gift-exchange setup with only fixed wages they cannot answer the question whether a worker's mission and performance pay can be substituted as predicted by Besley and Ghatak (2005).

Fehrler and Kosfeld (2012) want to answer this particular question in their adapted principal-agent experiment. The matching is exogenous and remains fixed over ten periods. In each round the principal selects a fixed wage and a piece rate. The agent subsequently chooses his effort level. Additional to the payoffs generated by these decisions, a donation to a non-profit

organization of the agent’s choice is implemented to model a motivated agent’s mission in the main treatment. In the control treatment the receiver of the generated donation is a randomly selected student. The authors find no evidence for a higher motivation to provide effort in the main treatment - in contrast to Besley and Ghatak’s (2005) theoretical results. In an additional experiment they focus on the sorting effect rather than on the pure incentive effect of a mission. In this experiment there are no principals involved. Agents self-select into either a contract that resembles the mission-oriented contracts from the main treatments or one that resembles the control treatments described above. Piece rate incentives are kept constant, only the fixed wages vary across contracts. The authors observe that agents who self-select into the (costly) mission-oriented contract choose higher effort levels. From this they conclude that the self-selection effect is the key explanation for empirically observed lower wages and higher motivation levels in the non-profit sector.

But note that it cannot be ruled out that the private incentives in their first experiment overpower the motivational incentives of working for a mission in the main treatment. According to Irlenbusch and Sliwka (2005) the introduction of piece rate incentives besides a fixed wage changes the agents’ cognitive perception of the situation. Short term, individual profit maximizing behavior increases compared to a situation with purely fixed wages. Furthermore, the repeated interaction of principals and agents introduces reputational concerns which might additionally overpower the incentive effects of an agent’s mission.

To rule out confounding effects in the present study I implement a simple one-shot interaction. The principal only selects a piece rate and his agent makes a costly effort decision.² I recruit a unique subject pool of employees from a non-profit humanitarian organization for an online experiment. The subjects are expected to have a high match with their organization’s mission which can be incorporated into the experimental design. The details of the design will be presented in the following sections.

3 Recruitment and subject pool

In the beginning of August 2011 I invited all 160 full-time employees of a German branch of an international humanitarian organization to participate in an internet-based experiment. For these subjects pursuing the objectives of their particular mission is closely linked to fundraising. This allows me to model the effort they exert for their mission in a natural way: Besides providing them with individual monetary incentives, they are given mission incentives in the form of donations which they generate for their organization’s projects.

In the invitation letters information was given about the approximate duration of the experiment and the employees were informed about the possibility to earn individual payoffs as well as to generate a donation to an aid project of their choice. The experimental protocol guaranteed complete anonymity.³ Instructions to the experiment were displayed on the experimental

²Although one could argue that a real effort task adds realism, I opt for the implementation of an abstract chosen effort design. This design rules out confounding factors such as intrinsic motivations from performing the task. Furthermore it comes with the advantage of providing me with a precise measure of the individual’s effort costs. Moreover, Brüggem and Strobel (2007) show that the implementation of chosen effort and real effort tasks yield similar results in a comparable experimental settings.

³Each invitation envelope contained an individual anonymous code to access the experiment, which prevented a subject from multiple participation. Furthermore an affirmation letter of the non-profit organization’s human resources department was attached to the invitation, indicating that the organization would not receive any of the data collected in the course of the experiment.

website. It was emphasized that all individual payoffs generated during the experiment would be paid out on a predefined date when also the donations would be transferred to the respective aid projects. Since many employees work abroad or only part time at the organization’s office participants could access the online experimental platform over a 25 day period. This resulted in finally 42 subjects voluntarily participating in the experiment.⁴

4 Experimental design

4.1 Agents

The experimental design follows the contracts in Besley and Ghatak (2005). One agent is randomly matched to a principal for a one-shot interaction. The principal can only choose a piece rate to remunerate his agent’s performance. To rule out confounding effects the principal is not allowed to also set fixed wages. But as shown above these would be equal to zero in equilibrium anyway. The set of available piece rates consists of a small, medium and high option: $p \in \{1, 5, 10\}$. At the beginning of the experiment the agent receives an endowment of 100. He chooses a costly effort level e from the integer set $\{1, 2, \dots, 15\}$ which is multiplied by the piece rate and determines the agent’s earnings as well as the principal’s payoff.

The monetary payoff functions are given by

$$\Pi_{Agent} = 100 + p \cdot e - \frac{1}{2}e^2$$

for the agents and for the principals by

$$\Pi_{Principal} = (20 - p) \cdot e.$$

Furthermore the agent’s mission is implemented as an integral part of the experiment: By choosing the effort level e , the agent generates a donation which amounts to

$$D = 20 \cdot e.$$

I implement two treatments which differ only in one dimension: the receiver of the donation D . This allows to exogenously vary the degree of mission match by simultaneously keeping the sum of possible payments constant across treatments. In the main treatment, called *Mission Match Treatment*, the agent’s effort choice determines a donation to his preferred aid project. Agents can choose from a list of seven aid projects copied from their humanitarian organization’s website. Alternatively they can also fill in a different project in a free-text field if the favorite project they want to support is not on the list. This procedure guarantees the maximum match of the agent’s and the project’s mission.

The *Low Mission Treatment* serves as a control treatment to measure an individual’s basic motivation to work for a mission. In this treatment the agent’s effort choice generates a donation to a cultural project supporting the construction of a local theater. This project also pursues a mission, but it is independent from the organization’s mission he chose to work for as his main job. As the agents might not be familiar with this cultural project, they are given a short information text copied from the cultural project’s website and a hyperlink to access it.

⁴Approximately half of them are female (52%). The age of participants was elicited in intervals. of five years. Age ranges between 20 and 60 years with a median age interval of “36 - 40”.

Due to the online setup the number of participants in the role of agents is unknown in advance. This puts two constraints on the experimental design. First, this means that also the number of required matching principals is unknown ex-ante. Hence, agents have to take their decision in terms of time before the matched principals decide which piece rate they want to pay their agent. Therefore I apply the strategy method to elicit the agents' effort choices for each potential piece rate: low incentives ($p = 1$), medium incentives ($p = 5$) and high incentives ($p = 10$).⁵ Second, due to the ex-ante unknown participation rate of the human aid organization's employees I chose a within-subject design. This allows me to account for individual fixed-effects in the later data analysis, which increases the statistical power of the tests for small numbers of observations. In order to control for order effects potentially resulting from the within-subject design, I use a clean "A/B - B/A design."⁶ Approximately half of the 42 subjects (19) participated in the experimental design in which they took their decisions first in the *Mission Match Treatment*. The remaining subjects (23) participated in the reverse order design.⁷

Due to the strategy method and the implemented within-subject design, the agents have to take six effort decisions in total: one for each of the three possible piece rate levels in both treatments. The instructions inform them that only one of the six effort decisions actually becomes payoff relevant for themselves, their principals and for the donation. Which one, will be determined by the principal's decision and a random draw during the principals' part of the experiment.

All experimental instructions are given online. Before entering the decision stages of the experiment subjects are asked to answer a series of control questions. Additionally, subjects are provided with payoff tables on each decision screen indicating the payoff consequences of any possible effort decision for both, agents and principals and the resulting amount of the associated donation. At the end of the experiment agents fill out a final questionnaire measuring the match with their organizations' missions as well as with the mission of the local cultural project from the *Low Mission Treatment*.

The agents' part of the experiment was conducted online using the software LimeSurvey. During the experiment a fictitious currency called "points" was used. The exchange rate of 1 point = 0.15 Euro was announced in advance. Points were converted into Euros when subjects were paid out in private one week after the termination of the online experiment. On average participants earned 16.87 Euro and generated a mean donation of 27.64 Euro.

4.2 Principals

Beside the question if agents can be motivated by a project's mission, I am also interested in analyzing the behavior of their matched principals. 42 students assume the role of principals and each of them is randomly matched to one agent. At the beginning of the experiment principals

⁵According to Brandts and Charness' (2011) recent survey, this procedure should not cause any problems. They affirm that in the existing experimental literature treatment effects found with the strategy method can equally be found by using the direct-respond method.

⁶Half of the letters sent out to the non-profit organization's employees included invitations to an online experimental platform in which the *Mission Match Treatment* is played first and the *Low Mission Treatment* second. The other half of the letters included an invitation to an online experimental website with the reverse order of treatments.

⁷Note that all treatment effects reported in this paper are found independent of the treatment order. Therefore I pool the observations in the later analysis.

receive instructions, explaining all relevant details: Subjects know that the agent they are matched with is a full-time employee from the non-profit humanitarian organization from the *Mission Match Treatment*. They are fully informed about the agent’s part of the experiment and know the treatments in which they take their decisions, but receive no information about their agents’ actual effort choices. Furthermore principals receive information about the non-profit organization the agents work for as well as about the cultural project. Both information texts were copied from the respective organizations’ websites. The principal’s task is to decide which piece rate he wants to pay to his agent in the *Mission Match* and *Low Mission Treatment*, respectively. He can choose between the three piece rate levels which were also communicated to the agent: $p = 1$, $p = 5$ or $p = 10$. The decisions for each treatment are made on separate screens. On both decision screens the principal is firstly asked to specify which piece rate he expects to maximize his own monetary payoff. Subsequently he selects the piece rate that he actually pays to his agent. After all decisions are made, the toss of a coin determines which of the two treatments finally becomes payoff relevant and concludes all associated payoffs to principal and agent as well as the receiver and amount of donation.

The principals’ part of the experiment was conducted at the FLEX laboratory of the Goethe University Frankfurt. All subjects were students from different disciplines at the university and were recruited using ORSEE (Greiner, 2004). A session lasted approximately one hour. All decisions were made on a computer screen using z-Tree (Fischbacher, 2007). During the sessions the same fictitious experimental currency called “points” was used with the exchange rate 1 point = 0.10 Euro. Points were converted into Euros at the end of the experiment when subjects were paid out in private. On average participants in the principal’s role earned 12.48 Euro.

5 Hypotheses

In a first step we derive the optimal effort choices and piece rate levels, assuming a selfish, payoff-maximizing agent whose θ_{ij} is equal to zero. For this, refer to the equilibrium decisions derived in Section 2. For a selfish agent $e^* = p^*$ and $p^* = \frac{1}{2}\pi$ in equilibrium. As $\pi = 20$ in the experiment, the equilibrium piece rate and effort levels for a selfish agent are $p^* = 10$ and $e^* = 10$ in both treatments.

If an agent is motivated the predictions differ. In the experimental design the principal does not explicitly pursue any kind of mission. But as the agent’s effort choice generates a donation ($D = 20 \cdot e$ to different projects), one can nicely analyze the impact of a project’s mission on his motivation to exert effort.

The agent’s utility maximizing problem can be written as:

$$\max_e 100 + e(p + \theta_{ij}) - \frac{1}{2}e^2$$

From this we can deduce that in equilibrium a motivated agent will choose an effort level $e^{**} = p^{**} + \theta_{ij}$. Compared to the above equilibrium for selfish agents, the motivated agent’s optimal effort level is thus increased by his individual mission match θ_{ij} . Agents are expected to have a higher match with the donation receiver’s mission in the *Mission Match Treatment* compared to the *Low Mission Treatment*, i.e. we assume that on average $0 \leq \theta_{LowMissionTreatment} \leq \theta_{MissionMatchTreatment}$. This leads to the following hypothesis:

Hypothesis 1: *For any given piece rate agents choose higher efforts in the Mission Match Treatment compared to the Low Mission Treatment.*

If Hypothesis 1 holds this implies that given any effort level an agent has to be provided with lower powered incentives the more he is motivated by the mission he exerts effort for. From this we deduce the second hypothesis, dealing with the principals' decisions:

Hypothesis 2: *Principals anticipating the motivational effects of the agent's mission pay lower piece rates in the Mission Match Treatment compared to the Low Mission Treatment.*

6 Results

6.1 Agents

We first perform a treatment manipulation check based on agents' responses in the final questionnaire. For both treatments' organizations agents individually indicate how much they stand behind the respective organization's objective and how important they consider the organization's work.⁸ As the questions about the objectives and importance of their humanitarian organization are rather general, they provide a conservative measure for the agent's match to the project's mission from the *Mission Match Treatment*. The majority of agents indicate a higher mission match to their own organization than to the cultural project (33 subjects for the first pair of questionnaire items, 32 for the second). The remaining subjects have an equally high mission match to both organizations. A Wilcoxon signed rank test confirms that the agents are significantly more motivated by the mission of their own organization than by the cultural project's mission ($P = 0.000$ for both questionnaire items). From this we can conclude that the treatment manipulation of *Mission Match* and *Low Mission Treatment* works as anticipated.

Figure 1 and Table 1 illustrate the effort choices across treatments for each piece rate. In Figure 1 the upper and lower limits of the boxes indicate the 75th and 25th percentile. The horizontal lines inside the boxes denote the median. Three results are apparent. First, there is a positive relation between piece rates and effort levels chosen in both treatments. Second, the agents' performance is increasing in their mission match: Under each piece rate scheme the mean effort levels are significantly higher in the *Mission Match* compared to the *Low Mission Treatment*. As can be seen in Table 1 the same holds true for the implied degrees of mission match (θ_{ij}), that is the (positive) deviation from the optimal selfish effort level for a given incentive level. This confirms Hypothesis 1. Third, the treatment differences in effort choices and degrees of mission match are decreasing in piece rates.

The effects of the observed effort choices on motivated agent's earnings are substantial. Compared to the hypothetical Nash payoffs under selfish preferences agents forego a considerable amount of their earnings. For the lowest piece rate we observe a treatment difference in forgone earnings of 8.76 points (21.75 vs. 12.99, Wilcoxon signed rank test: $P = 0.000$). But since

⁸The actual questions were: "How much do you stand behind the objectives of [the humanitarian organization] / [the cultural project]?" with the answer options "Not at all", "partly", "mainly" and "100%" and "How important do you consider the work of [the humanitarian organization] / [the cultural project]?" with five answer options, the lowest labeled by "less important", the highest labeled by "very important".

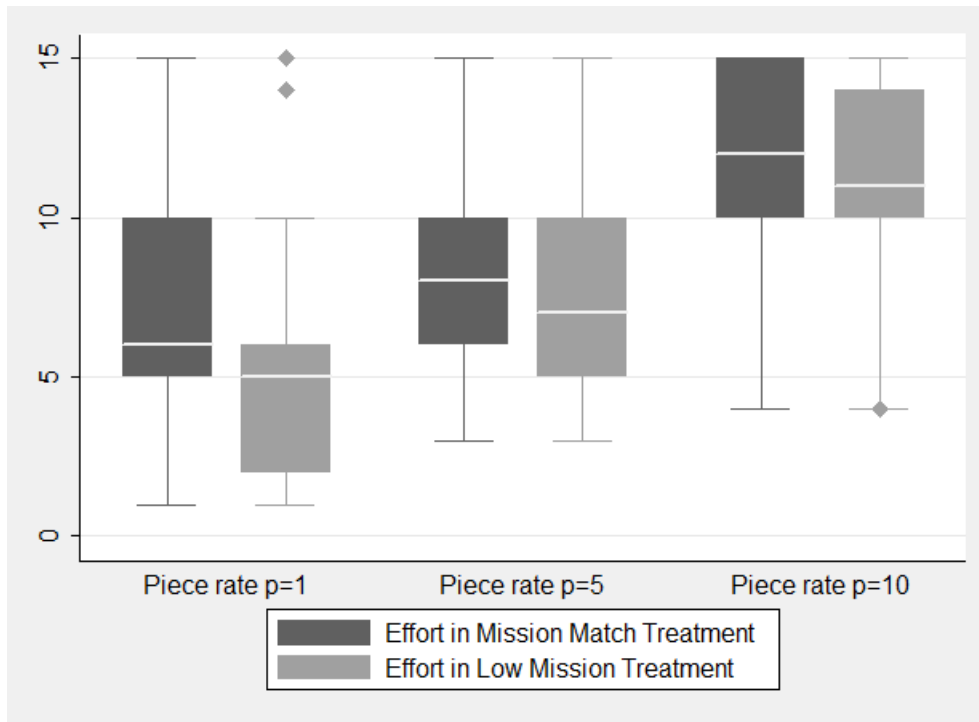


Figure 1: Effort choices across treatments

the treatment differences in effort choices decline for higher piece rates, so do the differences in forgone earnings. For the medium piece rate the treatment difference in forgone earnings decreases to 4.35 points (11.70 vs. 7.36, $P = 0.037$) and amounts to only 1.29 points (7.05 vs. 5.76 $P = 0.053$) for the highest piece rate.

Table 1: Mean effort choices and implied degrees of mission match across treatments

Piece Rates	Treatments	Effort Choices	Implied Degrees of Mission Match (θ_{ijs})	Within-Person Treatment Differences
$p = 1$	Mission Match	6.64 (3.46)	5.64 (3.46)	1.62***
	Low Mission	5.02 (3.17)	4.02 (3.17)	(2.31)
$p = 5$	Mission Match	8.74 (3.11)	3.74 (3.11)	1.21***
	Low Mission	7.52 (2.92)	2.52 (2.92)	(2.59)
$p = 10$	Mission Match	11.48 (3.49)	1.48 (3.49)	0.38*
	Low Mission	11.10 (3.25)	1.10 (3.25)	(1.92)

θ_{ij} : $\theta_{MissionMatchTreatment}$ and $\theta_{LowMissionTreatment}$, respectively. Mean values of effort choices, and implied mission matches and their respective differences are denoted in points. Standard deviations are given in parentheses. Significance levels of differences are derived from Wilcoxon signed rank tests. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Result 1: *For any given piece rate, agents choose significantly higher efforts in the Mission Match compared to the Low Mission Treatment.*

Result 2: *The observed degree of mission match as well as the treatment difference in effort choices are decreasing in piece rates.*

Result 2 was not predicted by Besley and Ghatak's (2005) model. In the OLS regressions reported in Table 2 we take a more detailed look at this finding. In the first two models we regress

effort differences between the *Mission Match* and the *Low Mission Treatment* on dummies for the three piece rate levels. The dependent variable in the third and fourth model is the observed degree of mission match θ_{ij} . The independent variables are dummies for the three piece rate levels, a treatment dummy for the *Mission Match Treatment* and interaction terms between the piece rate levels and the treatment dummy.

The first model shows that subjects exhibit significantly higher treatment differences under low and medium piece rates compared to the baseline piece rate $p = 10$. But as indicated by the second model there is no significant difference in treatment differences between the medium piece rate $p = 5$ and this model's baseline piece rate $p = 1$.

The third and fourth models reveal highly significant differences in the degree of mission match between all three incentive levels. Furthermore, we observe that the effect of decreasing degrees of mission matches in piece rates is even more pronounced for the *Mission Match Treatment*. This is indicated by the positive and highly significant coefficients for the interaction terms between piece rate and treatment dummies.

Table 2: OLS Regressions on treatment differences in effort choices and implied degrees of mission match (θ_{ij})

Dependent variable:	Treatment Differences	Treatment Differences	θ_{ij}	θ_{ij}
Piece Rate = 1	1.238*** (0.44)		2.929*** (0.59)	
Piece Rate = 5	0.833** (0.37)	-0.405 (0.30)	1.429*** (0.42)	-1.500*** (0.31)
Piece Rate = 10		-1.238*** (0.44)		-2.929*** (0.59)
Mission Match Treatment			0.381 (0.30)	1.619*** (0.36)
Piece Rate=1 x Mission Match Treatm.			1.238*** (0.44)	
Piece Rate=5 x Mission Match Treatm.			0.833** (0.37)	-0.405 (0.30)
Piece Rate=10 x Mission Match Treatm.				-1.238*** (0.44)
Constant	0.381 (0.30)	1.619*** (0.36)	1.095** (0.51)	4.024*** (0.49)
Observations	126	126	252	252
Independent observations	42	42	42	42
R^2	0.049	0.049	0.193	0.193

Standard errors are given in parentheses. ** $p < 0.05$, *** $p < 0.01$.

Summing up, we observe that the treatment differences are decreasing in incentives - marginally between the lowest and medium piece rate and more significantly between the medium and high piece rate. This similarly applies to the decrease in the degree of mission match for higher incentives: The incentive effects of missions, (measured as the degrees of mission match), are significantly more pronounced for lower piece rates and decline for higher piece rates - in par-

ticular in the *Mission Match Treatment*.

These findings suggest a motivational crowding-out effect of high powered incentives as discussed in Deci’s (1975) and Deci and Ryan’s (1985) seminal papers. Higher monetary incentives crowd-out the agent’s intrinsic motivation to exert effort for the projects. The fact that this effect is particularly stronger in the *Mission Match treatment*, to whose mission the agents have a higher mission match additionally supports this argument.⁹

It is important to note that the observed decreases in treatment differences and in the degree of mission match for higher piece rates can neither be explained by the upper bound of available effort choices ($e_{max} = 15$) nor by the payoff structure used in the experiment. The median effort choices for the highest powered incentives $p = 10$ is $e = 12$ in the *Mission Match Treatment*. Hence, there is still room for higher effort choices. And with regard to the payoffs: Under the applied quadratic cost function a given deviation from the optimal selfish effort level is at all piece rate levels equally costly for the agents. Relative to the possible payoff it would be even cheaper to provide extra effort at higher piece rates.

6.2 Principals

Figure 2 illustrates the principal’s decisions in the experiment. The upper two graphs a) and b) show the principals’ expectations concerning own payoff maximizing piece rates in the *Low Mission* and the *Mission Match Treatment*, respectively.¹⁰ In both treatments the majority of the principals believes that choosing the lowest piece rate $p = 1$ maximizes their monetary payoff. A Wilcoxon signed rank test does not reveal significant treatment differences at the individual level ($P = 0.206$).

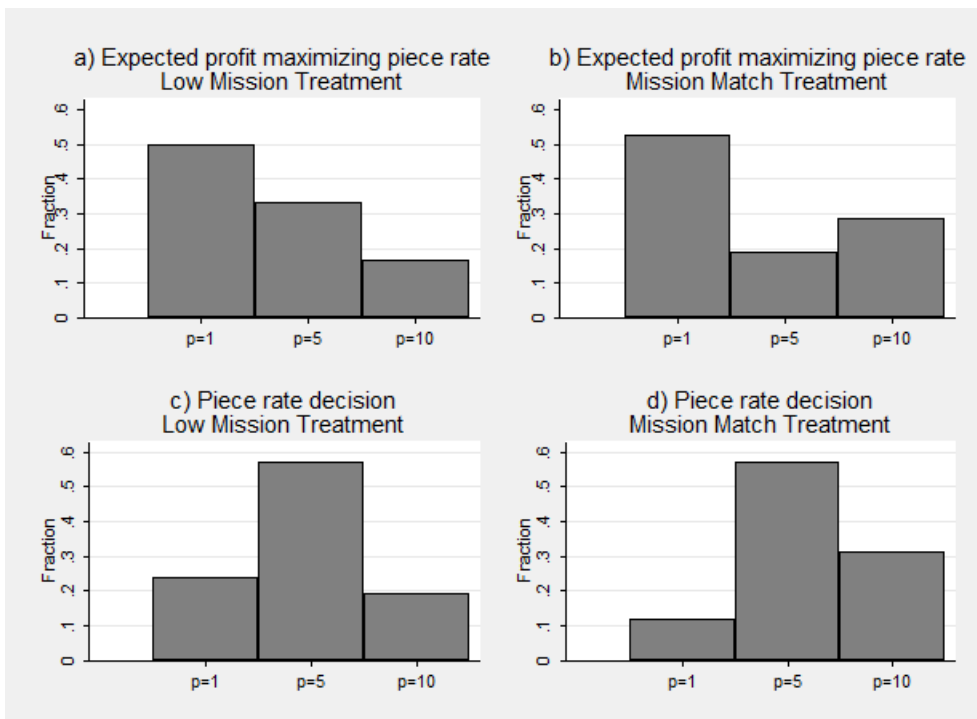


Figure 2: Expected own profit maximizing and actually chosen piece rates across treatments

⁹A recent and extensive survey on the crowding-out literature is for instance given by Bowles and Polonía-Reyes (2012).

¹⁰The exact text of the question was: “In your opinion, which wage will maximize your own payoff?”

The actual piece rate decisions are depicted in the lower two graphs c) and d) in Figure 2. Comparing the graphs a) and c) as well as b) and d), respectively we observe that in both treatments principals implement on average higher piece rates than they expect to maximize their own payoffs. Wilcoxon signed rank tests confirm this observation ($P = 0.001$ for the *Mission Match* and $P = 0.014$ for the *Low Mission Treatment*). Furthermore, from graph c) and d) it becomes evident that principals choose to pay significantly higher piece rates in the *Mission Match* compared to the *Low Mission Treatment* (Wilcoxon signed rank test $P = 0.004$). Besley and Ghatak’s (2005) model predicts the opposite result: According to their theory principals anticipate their agent’s mission (θ_{ij}) correctly and economize on monetary incentives in equilibrium. We thus have to reject Hypothesis 2 which states that lower incentives are provided in the *Mission Match Treatment*.

Result 3: In both treatments principals pay higher piece rates than they expect to be own profit maximizing. Moreover, average chosen piece rates in the Mission Match Treatment are higher than in the Low Mission Treatment.

The principals’ piece rate decisions to pay a higher than expected own payoff maximizing piece rate seem striking at first sight. One potential explanation for the observed behavior could be that student subjects have a “taste for incentives”. For example Fehr and Rockenbach (2003) and Fehr and List (2004) show in their trust game experiments that student subjects in the role of principals (i.e. the first movers) choose significantly higher than own payoff maximizing (punishment) incentives - especially in contrast to CEOs in the same roles. Also the principals’ preferences for equity (à la Bolton and Ockenfels, 2000 and Fehr and Schmidt, 1999) could provide an explanation for the more generous piece rate choices. A third candidate explanation is the principal’s mission: If principals believe that agents’ effort choices are increasing in piece rates they might expect to indirectly increase the amount of donation to their preferred projects by implementing higher piece rates.

All three possible explanation could apply. With the present experimental data no statement can be made about the principals’ taste for incentives and their equity concerns. But we are able to test the third explanation. The principal’s mission match with both treatments’ organizations is elicited in a post-experimental questionnaire. Principals indicate how much they stand behind the objectives of the humanitarian organization and those of the cultural project. The answers are used in ordered logit regressions. For each treatment separately the principals’ piece rate choices are regressed on their respective level of mission match. For the choices in the *Mission Match Treatment* the principal’s mission coefficient is positive and significant (*coefficient* = 1.222, $p = 0.005$), indicating that the higher piece rates can be explained by the principals’ match with the humanitarian organization’s mission. But this does only partially hold true in the regression for the *Low Mission Treatment*. Here the coefficient of the principal’s respective mission is also positive, but smaller and insignificant (*coefficient* = 0.298, $p = 0.385$). This can be explained by the comparatively low mission match with the cultural project (Wilcoxon signed rank test for similarity of principals’ mission matches in both treatments: $P = 0.011$).¹¹

¹¹Similar as for the agents, I also elicited the principal’s perception of the importance of the humanitarian organization and the cultural project. The regression results using these items yield similar results.

Result 4: *In both treatments chosen piece rates are increasing in the principal's match to the respective mission.*

From the above analysis we can also conclude that principals pay higher piece rates in the *Mission Match Treatment* compared to the *Low Mission Treatment*, because they are more motivated by the mission of the humanitarian organization. The other two candidate explanations - the principals' preferences for incentives or equity - cannot explain this finding. These preferences should not differ across treatments.

Finally it should be pointed out that although principals believe to pay higher piece rates than they expect to be own profit maximizing, within treatments the modal piece rate choice of $p = 5$ (see Figure 2 c) and d)) in fact maximizes their expected payoffs. The expected value of principal's earnings for $p = 5$ are 131.07 points in the *Mission Match* and 112.86 points in the *Low Mission Treatment*. The expected value of principal's payoffs for $p = 1$ amount to only 126.21 points in the *Mission Match*, and 95.45 points in the *Low Mission Treatment*. For $p = 10$ the respective values are 114.76 and 110.95 points.¹² These numbers moreover nicely show that principals can indeed benefit from their agents' motivation. For each incentive level the expected value of earnings are higher in the *Mission Match Treatment* (Wilcoxon signed rank test results for piece rates $p = 1$: $P = 0.000$, for $p = 5$: $P = 0.006$ and for $p = 10$: $P = 0.067$). And even the highest expected principal's payoff in the *Low Mission Treatment* (112.86 points for $p = 5$) is still smaller than the lowest expected principal's payoff in the *Mission Match Treatment* (114.76 points for $p = 10$), although this difference is statistically insignificant.

7 The role of self-selection - Experimental replication with a student subject pool

In a next step I want to test whether the above findings apply only to the unique subject pool of NGO employees, who have self-selected into the humanitarian sector and especially into jobs at the organization from the *Mission Match Treatment* or if the motivational power of a mission can be generalized to other subject pools. That means I want to disentangle a potential self-selection effect from the pure incentive effect of a mission on agents' effort choices.

In the fall of 2011 I replicated the experiment with a standard student subject pool. In this second experiment not only the principals', but also the agents' roles are assumed by students from the Goethe University Frankfurt. We will refer to this second experiment as the "student experiment" as opposed to the previous "NGO experiment".

In total 144 subjects participate in the student experiment, half of them in the role of agents, the other half in the role of principals. The general structure of the experiment remains unchanged. The agents' part of the experiment is again conducted online on a similar experimental website as before. Participants are provided with general information about both, the *Low Mission Treatment's* cultural project and the *Mission Match Treatment's* humanitarian organization, copied from the respective websites. Furthermore, they are provided with hyperlinks to those organizations' websites. In the *Mission Match Treatment* agents are offered the exact same list of seven aid projects as in the NGO experiment, again plus a free-text field if their favorite project is not on the list of options. To give the subjects the opportunity to take

¹²The expected value of principal's earnings for each treatment and piece rate level are calculated by plugging the respective observed mean agents' effort choices into the principal's payoff function.

well-founded decisions, information texts were copied from the organization’s website and the hyperlinks to the projects’ websites are displayed alongside the seven aid projects.

The agents’ part of the experiment was conducted online during an eleven day period. The principals’ part of the experiment was again run at the FLEX laboratory. It was made sure that the subjects had neither already participated in the previous NGO experiment nor in the agent’s role in the student experiment. For both, agents and principals the exchange rate of 1 point = 0.10 Euro was announced in the beginning of the experiment. On average agents earned 11.92 Euro and generated a mean donation of 16.47 Euro to the organizations. Principals received on average 10.83 Euro.

7.1 Agents

A similar treatment manipulation check as in the NGO experiment shows that also the agents in the student experiment are significantly more motivated by the mission in the *Mission Match* compared to the mission from the *Low Mission Treatment* (Wilcoxon signed rank test $P = 0.000$). Again the vast majority of agents indicate to have a higher mission mission match to the humanitarian organization (59 subjects for the first pair of questionnaire items, 58 for the second).¹³

Table 3: Student experiment - Mean effort choices across treatments

Piece Rates	Treatments	Effort Choices	Difference
$p = 1$	Mission Match	5.71 (4.35)	1.61***
	Low Mission	4.10 (3.23)	(3.23)
$p = 5$	Mission Match	8.25 (3.46)	1.36***
	Low Mission	6.89 (2.90)	(2.65)
$p = 10$	Mission Match	11.33 (3.52)	0.39*
	Low Mission	10.94 (3.16)	(2.22)

Mean values of effort choices and their respective differences are denoted in points. Standard deviations are given in parentheses. Significance levels of differences are derived from Wilcoxon signed rank tests. * $p < 0.10$, *** $p < 0.01$.

Turning to the agents’ actual effort choices, Table 3 provides a similar behavioral picture as Table 1 from the NGO experiment. Also for the sample of students we observe a positive relationship between piece rates and chosen effort levels in both treatments. Furthermore given any piece rate the average effort is higher in the *Mission Match Treatment* compared to the *Low Mission Treatment*. And finally, also Table 3 shows that the treatment differences decrease under high piece rates. This suggests that the student subjects exhibit a similar motivational crowding-out of high incentives as we observe for the NGO employees. To analyze this in more detail, we run similar OLS regressions as for the first experiment. The results are reported in Table 4.

The general picture is highly comparable to the findings from the NGO experiment: We observe that treatment differences decrease insignificantly from the lowest to the medium piece

¹³Note that in the student experiment I used slightly larger scales for the questionnaire items to measure the subjects’ mission match in a more precise way.

Table 4: Student experiment - OLS Regressions on treatment differences in effort choices and implied degrees of mission match (θ_{ij})

Dependent variable:	Treatment Differences	Treatment Differences	θ_{ij}	θ_{ij}
Piece Rate = 1	1.222*** (0.38)		2.153*** (0.40)	
Piece Rate = 5	0.972*** (0.30)	-0.250 (0.21)	0.944*** (0.28)	-1.208*** (0.26)
Piece Rate = 10		-1.222*** (0.38)		-2.153*** (0.40)
Mission Match Treatment			0.389 (0.26)	1.611*** (0.38)
Piece Rate=1 x Mission Match Treatm.			1.222*** (0.38)	
Piece Rate=5 x Mission Match Treatm.			0.972*** (0.30)	-0.250 (0.21)
Piece Rate=10 x Mission Match Treatm.				-1.222*** (0.38)
Constant	0.389 (0.26)	1.611*** (0.38)	0.944** (0.37)	3.097*** (0.38)
Observations	216	216	432	432
Independent observations	72	72	72	72
R^2	0.036	0.036	0.123	0.123

Standard errors are given in parentheses. ** $p < 0.05$, *** $p < 0.01$.

rates ($p = 1$ to $p = 5$), but significantly from the medium to high piece rates ($p = 5$ to $p = 10$). Furthermore, we detect a similar negative effect of increasing piece rates on the observed degree of mission match. And also for the student sample this effect is significantly more pronounced in the *Mission Match Treatment*.

To sum up, we find that missions create incentive effects in the vein of Besley and Ghatak's (2005) and Akerlof and Kranton's (2005) models in both experiments, meaning for NGO employees as well as for the student sample. Thus a sorting effect alone cannot explain the results from the NGO experiment - a finding contrary to Fehler and Kosfeld's (2012) experimental results. Also the crowding-out effect for high piece rates is observed in both subject samples.

7.2 Principals

Similar to Figure 2, Figure 3 presents the results from the principals' part of the student experiment. The upper two graphs a) and b) show the principals' expectations concerning own payoff maximizing piece rates in the *Low Mission* and the *Mission Match Treatment*, elicited in the same way as in the NGO experiment. A Wilcoxon signed rank test does not reveal significant differences in answers across treatments ($P = 0.179$). Just like in the NGO experiment most principals expect that choosing the lowest piece rate of $p = 1$ maximizes their own payoffs.

The lower two graphs c) and d) in Figure 3 depict the actual chosen piece rates. Comparing graphs a) and c) from the *Low Mission Treatment* as well as the graphs from the *Mission Match Treatment*, b) and d), we observe the same patterns as in the NGO experiment: In both treatments principals implement on average higher than believed own profit maximizing piece

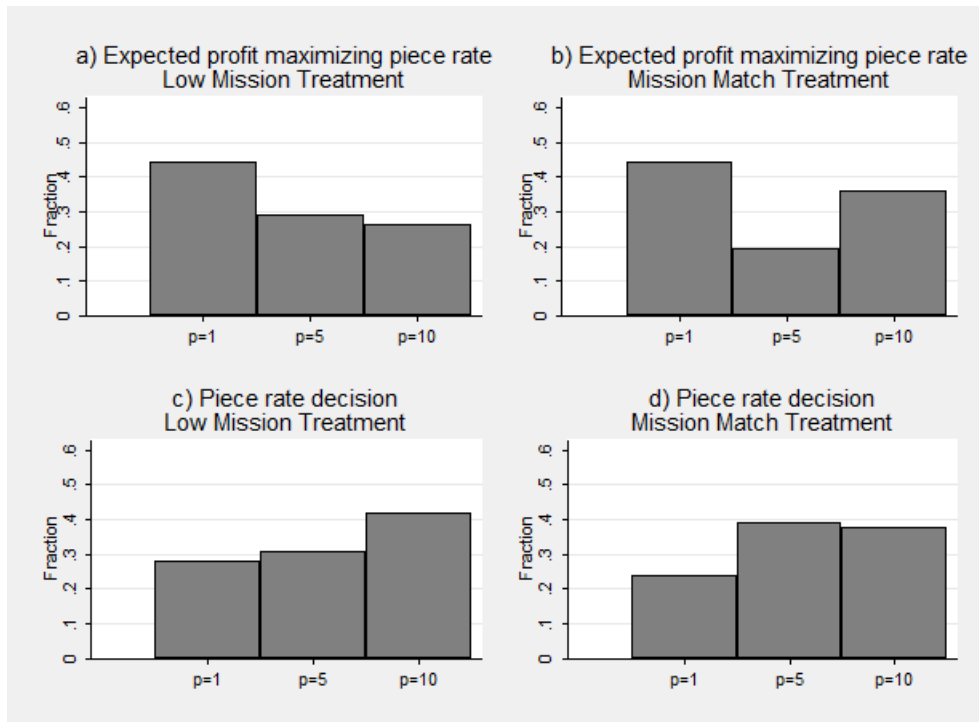


Figure 3: Student experiment - Expected own profit maximizing and actually chosen piece rates across treatments

rates (Wilcoxon signed rank tests: $P = 0.000$ for the *Low Mission* and $P = 0.011$ for the *Mission Match Treatment*). But in contrast to the NGO experiment, we do not observe treatment differences in principal's actual piece rate decisions in the student experiment (Wilcoxon signed rank test $P = 1.0$). In both treatments principals implement relatively high piece rate incentives.

To discuss potential explanations we perform similar ordered logit regressions as for the NGO experiment. Like before, the principals' piece rate choices and their respective mission match to the organization from the *Mission Match Treatment* are significantly positively correlated ($coefficient = 0.196$, $p=0.058$) and are only weakly positively correlated in the *Low Mission Treatment* ($coefficient = 0.072$, $p=0.402$). Similar to the NGO experiment this can be attributed to the on average relatively low mission match with the cultural project (Wilcoxon signed rank test for similarity of principals' mission matches in both treatments: $P = 0.000$). Thus, we can conclude that similar explanations concerning the principal's desire to support his own preferred mission by implementing higher than expected own-profit maximizing incentives are valid. But as we do not observe significant treatment differences in piece rate choices in the student experiment, additional factors that drive the principals' behavior seem to be at work. As discussed above these might be the students' taste for incentives or their equity concerns. Especially the latter explanation is supported by the fact that the agent's role in the second experiment is assumed by another student and not by an NGO employee. This might evoke an increased feeling of solidarity with the agent that leads to more payoff-equalizing piece rate choices.

8 Conclusion

The present study tested hypotheses derived from Besley and Ghatak's (2005) model on motivated agents, firstly stating that workers' efforts are increasing in mission match and secondly that principals economize on costly monetary incentives when interacting with a motivated agent. In an adapted principal-agent experiment two treatments were implemented. The *Low Mission Treatment* served as a control treatment to measure the individual's baseline motivation to work for a mission. In the *Mission Match Treatment*, on the contrary, agents had a high motivation to exert effort as they support their preferred mission by their effort decisions.

In the first experiment the role of agents was assumed by employees from a non-profit humanitarian organization. The main findings from this experiment confirm the first hypothesis: The agents' effort provision is increasing in their mission match. This holds true for any given piece rate level. Beyond that, agents exhibit diminishing treatment differences under higher piece rates - a finding that was not predicted by Besley and Ghatak's (2005) model. This observation can be explained by a crowding-out effect of high monetary incentives as discussed for instance in Frey (1997) or Frey and Oberholzer-Gee (1997). The principals did not use the fact that their agent's mission is an incentive substitute for pay for performance. They even chose to pay on average higher piece rates in the *Mission Match* compared to the *Low Mission Treatment*. The respective hypothesis thus has to be rejected. Regression results support the explanation that the principals' behavior is to a large extent driven by their motivation to support the mission of the humanitarian organization from the *Mission Match Treatment*.

To disentangle the pure incentive effect of a mission from a potential sorting effect inherent in the subject pool of NGO employees I replicated the experimental design with a standard student subject pool. Also in the student experiment, the effort choices are increasing in the agents' mission match for every piece rate level and again we observe a crowding-out of intrinsic motivation for high incentives.

One can thus conclude that the findings from the first study cannot only be attributed to the specific subject pool of NGO employees, but can be explained by the mission's pure incentive effect. Furthermore, also in the second experiment principals do not economize on costly monetary incentives. Instead they choose to pay relatively high piece rate incentives in both treatments.

The principals' piece rate decisions raise an interesting question. In both experiments principals have - just as their agents - a higher match to the mission of the humanitarian organization from the *Mission Match Treatment*. Furthermore, their piece rate choices in this treatment are significantly correlated with their mission. Hence, it seems as if "motivated principals" implement relatively high piece rates to reward or to incentivize their agents for pursuing their own preferred mission. But this is not what we observe in reality: When comparing mission-oriented non-profit to for-profit firms several empirical studies suggest that the exact opposite is true (see references cited in the Introduction). There are two potential explanations for these contradictory findings. First, non-profit firms cannot only vary piece rates, but have additional means at hand to remunerate and incentivize their employees that are not part of the experimental design. Second, in the present experiment we do not take into account that employees self-select into job contracts at non-profit firms. If non-profit firms offered contracts with high piece rate incentives this would not only attract motivated, but also selfish employees. Therefore non-profit firms have a good reason to refrain from providing high incentives, although they might prefer to use

them, as suggested by the experimental results.

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Appendix: Translated instructions [Not for publication]

Instructions for agents (Instructions for treatments in which the Low Mission Treatment is played first)

Instructions for the study

In the course of the study you are asked to take a number of decisions. Please read the following instructions carefully.

At the beginning of the study you receive 15 Euros. Depending on your decisions you can earn additional money. Furthermore you can generate a donation to a project of your choice.

The total amount of money you earn will be paid out to you in cash at your World Vision site in Friedrichsdorf at the end of the study on 8th September 2011. Your donation to the respective aid project's account will directly be transferred by the Goethe University Frankfurt.

Important notes:

- Your participation is anonymous. No identities will ever be revealed.
- Please do not talk to other participants about the contents of this study. This would affect their answers and bias the results.
- Please note: During the study monetary amounts will be specified in "points". These will be converted to and paid out in Euros at the end of the study. One point equates 0.15 Euro. *[Student experiment: One point equates 0.10 Euros.]*

To be able to allocate the payoffs that you earn in the course of the study, we would like to ask you to fill in your personal code below. Using this code we can identify you without being able to trace your personal details.

The code consists of six characters: First and last letter of your mother's first name, first and last letter of your father's first name and your mother's month of birth.

Example:

Anne = AE

Karl = KL

July = 07

yielding: AEKL07

Please fill in your personal code in the following box:

The study

This study is structured like a role play. You assume the role of an employee. The role of the employer is assumed by a *[Student experiment: another]* student from the Goethe University Frankfurt. Each employee is randomly matched to one employer.

Which decisions do you take as an employee?

You decide how much effort to provide for a given wage.

Which decisions does the employer take?

The employer sets a performance related wage of 1, 5 or 10 points. He pays this wage for each unit of effort you choose, i.e. you receive, depending on your employer's decision 1, 5 or 10 points per unit of effort.

You are endowed with 100 points. These are the 15 Euros *[Student experiment: 10 Euros]* that you have received at the beginning of the study. For any given wage you can choose an effort level between 1 and 15 points. The costs associated to the efforts are presented in the following table:

Effort (in points)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Costs of effort (in points)	0.5	2	4.5	8	12.5	18	24.5	32	40.5	50	60.5	72	84.5	98	112.5

Please note: By choosing your effort you affect your own payoffs and the payoffs of your employer. Additionally you generate a donation of the same size. Further details to follow.

How exactly does your effort choice affect the payoffs and donations?

Your payoff is comprised of your endowment of 100 points and your earnings that depend on your effort choice minus the associated costs of effort. The employer receives 20 times your effort choice minus the wage he pays for your effort. The generated donation is also 20 times your effort.

A short example: Assume your employer pays a wage of 5 points and you choose an effort of 10 points:

Initially, costs of 50 points are subtracted from your endowment of 100 points (see table: costs of an effort of 10 = 50 points). Your effort choice determines your wage earnings, these are $5 \cdot 10$ points = 50 points. Hence, you receive $100 - 50 + 5 \cdot 10 = 100$ points in total.

The employer receives 20 times your effort, i.e. $20 \cdot 10$ points, minus the wage he pays for your effort which amounts to $5 \cdot 10$ points. Therefore he earns in total $20 \cdot 10 - 5 \cdot 10 = 150$ points.

And finally, by choosing an effort of 10 you generate a donation of 20 times your effort, i.e. $20 \cdot 10 = 200$ points.

Question

To become familiar with the payoff consequences of your effort decision, please indicate if the following statements are correct or wrong:

	Cor- rect	Wrong
The higher your effort choice, the higher is the amount of donation.	<input type="radio"/>	<input type="radio"/>
The higher the effort you choose, the less points does the employee receive.	<input type="radio"/>	<input type="radio"/>
The employer's wage decision has an impact on the amount of donation.	<input type="radio"/>	<input type="radio"/>
The higher the wage, the higher are your earnings as an employee.	<input type="radio"/>	<input type="radio"/>
The higher the effort you choose, the higher are the associated costs.	<input type="radio"/>	<input type="radio"/>

Decisions

You and the employer who is matched to you do not take your respective decisions simultaneously. You will later be randomly matched to each other. This procedure is necessary, because the total number of participants in the role of employees will only be determined at the end of the study (due to the online setup).

The participant in the employer's role knows that the employee's role is assumed by an employee from World Vision [*Student experiment: another student from the Goethe University Frankfurt*]. He decides which wage (1, 5 or 10 points) he pays to his employee. At the moment when he takes his decision he has not yet learned his employee's effort choice.

What do you have to do now?

As the employer who is matched to you takes his wage decision in terms of time after you took your effort decision, you are asked to indicate for each potential wage level 1,5 or 10 which effort you choose. You are asked to take your decisions in two situations that will be explained in the following two parts of the study.

At the end of the study a random draw decides if the decisions from the first part or the second part will become payoff relevant. Matching your employer's wage decision to your effort decision determines the amount of donation and your as well as his payoffs. Therefore you should take carefully considered decisions in all the following decision situations.

Decisions - Part 1

Please indicate in the following for each possible wage level - 1, 5 and 10 - which respective effort level you choose. Your effort decision affects your own as well as the employer's earnings. Additionally, you generate a donation to the "Gesellschaft der Freunde Altes Hallenbad Friedberg / Wetterau e.V.". The payoffs and donation are determined as explained above. Therefore you should take carefully considered decisions in all the following decision situations.

This is a short information text about the Gesellschaft der Freunde Theater Altes Hallenbad Friedberg:

[*German Text copied from <http://www.theater-althallenbad.de/16.html>*]

We guarantee that all the donations that you generate for the Gesellschaft der Freunde Theater Altes Hallenbad Friedberg in the course of this study will actually be transferred to this project.

Please indicate in the following for each potential wage which effort you want to choose:

Decision 1:

Your employer pays a wage of 1. Your effort choice generates a donation to the Gesellschaft der Freunde Theater Altes Hallenbad Friedberg. The following table indicates for each effort level the resulting payoffs and amount of donation.

Effort (in points)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Your payoff as an employee (in points)	100.5	100	98.5	96	92.5	88	82.5	76	68.5	60	50.5	40	28.5	16	2.5
Employer's payoff (in points)	19	38	57	76	95	114	133	152	171	190	209	228	247	266	285
Amount of donation (in points)	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300

Which effort level do you choose? Please specify a number between 1 and 15. _____

Decision 2:

Your employer pays a wage of 5. Your effort choice generates a donation to the Gesellschaft der Freunde Theater Altes Hallenbad Friedberg. The following table indicates for each effort level the resulting payoffs and amount of donation.

Effort (in points)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Your payoff as an employee (in points)	104.5	108	110.5	112	112.5	112	110.5	108	104.5	100	94.5	88	80.5	72	62.5
Employer's payoff (in points)	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225
Amount of donation (in points)	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300

Which effort level do you choose? Please specify a number between 1 and 15. _____

Decision 3:

Your employer pays a wage of 10. Your effort choice generates a donation to the Gesellschaft der Freunde Theater Altes Hallenbad Friedberg. The following table indicates for each effort level the resulting payoffs and amount of donation.

Effort (in points)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Your payoff as an employee (in points)	109.5	118	125.5	132	137.5	142	145.5	148	149.5	150	149.5	148	145.5	142	137.5
Employer's payoff (in points)	10	20	30	40	50	60	75	80	90	100	110	120	130	140	150
Amount of donation (in points)	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300

Which effort level do you choose? Please specify a number between 1 and 15. _____

Decisions - Part 2

Please indicate in the following for each possible wage level - 1, 5 and 10 - which respective effort level you choose. Your effort decision affect your own payoff and the employer's earnings.

Additionally, you generate a donation to a World Vision project of your choice. The payoffs and donation are determined as explained above. Therefore you should take carefully considered decisions in all the following decision situations.

*[Student experiment: This is a short information text about World Vision:
[German Text copied from <http://www.worldvision.de/unsere-arbeit.php>]]*

Initially, please specify which World Vision project you want to generate a donation for:

- o General donation to World Vision *[Student experiment: A general donation enables World Vision to respond quickly and flexibly in areas of greatest need. (Further information: www.worldvision.de/spenden.php)]*
- o Current emergency aid: East Africa crisis appeal *[Student experiment: This project supports the East African people currently facing drought and hunger. (Further information: www.worldvision.de/spenden.php)]*
- o Bolivia: Soccer school for disadvantaged kids *[Student experiment: This soccer school supports girls and boys in the slums of Santra Cruz to make them strong against alcohol, violence and drugs. (Further information: www.worldvision.de/spenden-projektspence.php)]*
- o Uganda: A new beginning for child soldiers *[Student experiment: This project gives traumatized children from Uganda, who had been kidnapped and abused as soldiers a first home and medical as well as psychological care. (Further information: www.worldvision.de/spenden-projektspence.php)]*
- o Kenya: Protection against genital mutilation *[Student experiment: Some ethnic groups in Kenya still practice female genital mutilation - despite the legal prohibition and high risks to health. This project helps girls to ensure their rights to physical and emotional integrity. (Further information: www.worldvision.de/spenden-projektspence.php)]*
- o Sierra Leone: Fight against HIV and AIDS *[Student experiment: Primarily women and girls are endangered to be infected with HIV in Sierra Leone. This projects informs them how they can protect themselves and supports them in the fight against HIV and AIDS. (Further information: www.worldvision.de/spenden-projektspence.php)]*
- o Tansania: Micro credits *[Student experiment: This project supports micro credits, enabling in particular women to build their own mini company to escape poverty and to live a life in dignity. (Further information: www.worldvision.de/spenden-projektspence.php)]*
- o Other project: *[Student experiment: A selection of further projects can be found on www.worldvision.de/spenden-projektspence.php] _____*

We guarantee that all the donations that you generate for the aid project of your choice in the course of this study will actually be transferred to this project.

Please indicate in the following for each potential wage which effort you you want to choose:

Decision 1:

Your employer pays a wage of 1. Your effort choice generates a donation to the World Vision project of your choice. The following table indicates for each effort level the resulting payoffs and amount of donation.

Effort (in points)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Your payoff as an employee (in points)	100.5	100	98.5	96	92.5	88	82.5	76	68.5	60	50.5	40	28.5	16	2.5
Employer's payoff (in points)	19	38	57	76	95	114	133	152	171	190	209	228	247	266	285
Amount of donation (in points)	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300

Which effort level do you choose? Please specify a number between 1 and 15. _____

Decision 2:

Your employer pays a wage of 5. Your effort choice generates a donation to the World Vision project of your choice. The following table indicates for each effort level the resulting payoffs and amount of donation.

Effort (in points)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Your payoff as an employee (in points)	104.5	108	110.5	112	112.5	112	110.5	108	104.5	100	94.5	88	80.5	72	62.5
Employer's payoff (in points)	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225
Amount of donation (in points)	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300

Which effort level do you choose? Please specify a number between 1 and 15. _____

Decision 3:

Your employer pays a wage of 10. Your effort choice generates a donation to the World Vision project of your choice. The following table indicates for each effort level the resulting payoffs and amount of donation.

Effort (in points)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Your payoff as an employee (in points)	109.5	118	125.5	132	137.5	142	145.5	148	149.5	150	149.5	148	145.5	142	137.5
Employer's payoff (in points)	10	20	30	40	50	60	75	80	90	100	110	120	130	140	150
Amount of donation (in points)	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300

Which effort level do you choose? Please specify a number between 1 and 15. _____

Instructions for principals

Instructions for the study

In the course of the experiment you are asked to take a number of decisions. Please read the following instructions carefully.

During the experiment your decisions determine your earnings.

The total amount of money you earn will be paid out to you in cash at the end of the experiment.

Important notes:

- Your participation is anonymous. No identities will ever be revealed.
- Please do not talk to other participants. This would affect their answers and bias the results.
- Please note: During the study monetary amounts will be specified in "points". These will be converted to and paid out in Euros at the end of the study. One point equates 0.10 Euro.
- If you have any questions, please raise your hand. The experimenter is there to help.

The experiment

This experiment is structured like a role play. You assume the role of an employer. The role of the employee is assumed by an employee from the humanitarian organization World Vision. *[Student experiment: The role of the employee is assumed by another student from the Goethe University.]* Each employee is randomly matched to one employer.

Which decisions do you take as an employer?

You decide which wage you pay to your employee. You can set a performance related wage of 1, 5 or 10 points, i.e. you pay this wage for each unit of effort that your employee chooses.

Which decisions does the employee take?

He decides how much effort to provide for a given wage. His as well as your payoff depends on the wage you choose and his effort provision. For any given wage he can choose an effort level between 1 and 15 points. The effort choice is costly (the costs associated to the efforts are presented in a table below).

Please note: By choosing an effort the employee does not only affect your own payoff as an employer. Additionally he generates a donation to a charitable organization of the same size. Further details to follow.

How exactly does the effort choice affect the earnings and the donation?

You as an employer receive 20 times your employee's effort minus the wage you pay for his effort. Your employee's payoff is comprised of his endowment of 100 points and his earnings that depend on his effort choice minus the associated costs of effort. The costs associated to the efforts

Effort (in points)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Costs of effort (in points)	0.5	2	4.5	8	12.5	18	24.5	32	40.5	50	60.5	72	84.5	98	112.5

are presented in the following table:

The generated donation to the charitable organization is also 20 times your employee's effort choice.

A short example: Assume you as an employer pay a wage of 5 points and your employee chooses an effort of 10 points:

You receive 20 times the employee's effort, i.e. $20 \cdot 10$ points, minus the wage you pay for his effort which amounts to $5 \cdot 10$ points. Therefore you earn $20 \cdot 10 - 5 \cdot 10 = 150$ points in total.

For the employee, initially costs of 50 points are subtracted from his endowment of 100 points (see table: costs of effort 10 = 50 points). His effort choice determines his wage earnings, these are $5 \cdot 10$ points = 50 points. Hence, he receives in total $100 - 50 + 5 \cdot 10 = 100$ points.

And finally, by choosing an effort of 10 he generates a donation of 20 times his effort, i.e. $20 \cdot 10 = 200$ points.

Decisions

You and the employee who is randomly matched to you do not take your respective decisions simultaneously. Your employee took his decisions already in the past. His decisions will be assigned to your choices today.

The effort decisions that the World Vision employee in the role of your employee had to take look as follows: *[Student experiment: The effort decisions that your employee had to take look as follows:]*

At the moment when the employee took his decisions you had not yet decided which wage to pay to him. Therefore he chose for each possible wage level - 1, 5 and 10 points - an effort between 1 and 15 points.

The employee took his decision in two decision situations. In both situations his effort choice affected his own payoff as well as your earnings. In one of the situations his effort choice additionally generated a donation to a World Vision project of his choice. In the other situation his effort choice generated a donation to the Gesellschaft der Freunde Altes Hallenbad Friedberg / Wetterau e.V.

The payoffs to him, to you as his employer and the donation to the charitable organizations are determined as explained above.

What do you have to do now?

On the decision screens you are asked to indicate which performance related wage (1, 5 or 10 points) you want to pay to your employee. In the first decision situation the employee generates a donation to World Vision besides determining his own earnings. In the second decision situation the employee generates a donation to the Gesellschaft der Freunde Altes Hallenbad besides determining his own earnings.

Your today's earnings are determined as follows: At the end of the experiment a toss of a coin concludes if the decision situation associated with a donation to a World Vision project (*head*) or

Decision Situation 1: Your employee's effort generates a donation to World Vision .

In your opinion, which piece rate do you expect to maximize your own payoffs? Wage of 1 point
 Wage of 5 points
 Wage of 10 points

This decision determines your and your employee's actual payoffs as well as the amount of donation. Which wage do you choose? Wage of 1 point
 Wage of 5 points
 Wage of 10 points

Weiter

Decision Situation 2: Your employee's effort generates a donation to the Gesellschaft der Freunde Theater altes Hallenbad .

In your opinion, which piece rate do you expect to maximize your own payoffs? Wage of 1 point
 Wage of 5 points
 Wage of 10 points

This decision determines your and your employee's actual payoffs as well as the amount of donation. Which wage do you choose? Wage of 1 point
 Wage of 5 points
 Wage of 10 points

Weiter

the decision situation associated with a donation to the Gesellschaft der Freunde Altes Hallenbad (*tail*) is relevant for your and your employee's earnings. Therefore you should take carefully considered decisions in both situations.

A short overview of World Vision's activities: [*German Text copied from <http://www.worldvision.de/world-vision.php>*]

Short information about the Gesellschaft der Freunde Theater Altes Hallenbad Friedberg: [*German Text copied from <http://www.theater-althallenbad.de/16.html>*]

After you have answered all questions at the end of these instructions correctly, please indicate on the computer screen which wage you want to pay to your employee.

In the following tables you find information about the resulting payoffs and donations for each possible wage-effort combination.

Resulting payoffs if you pay a performance related wage of 1:

Given effort (in points)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Your payoff as an employer (in points)	19	38	57	76	95	114	133	152	171	190	209	228	247	266	285
Employee's payoff (in points)	100.5	100	98.5	96	92.5	88	82.5	76	68.5	60	50.5	40	28.5	16	2.5
Amount of donation (in points)	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300

Resulting payoffs if you pay a performance related wage of 5:

Given effort (in points)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Your payoff as an employer (in points)	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225
Employee's payoff (in points)	104.5	108	110.5	112	112.5	112	110.5	108	104.5	100	94.5	88	80.5	72	62.5
Amount of donation (in points)	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300

Resulting payoffs if you pay a performance related wage of 10:

Given effort (in points)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Your payoff as an employer (in points)	10	20	30	40	50	60	75	80	90	100	110	120	130	140	150
Employee's payoff (in points)	109.5	118	125.5	132	137.5	142	145.5	148	149.5	150	149.5	148	145.5	142	137.5
Amount of donation (in points)	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300

Question

To become familiar with the payoff consequences of the wage and effort decisions, please indicate which of the following statements are correct or wrong:

	Cor- rect	Wrong
The higher the employee's effort choice, the higher is the amount of donation.	<input type="radio"/>	<input type="radio"/>
The higher the effort that the employee chooses, the less points do you receive as an employer.	<input type="radio"/>	<input type="radio"/>
Your wage decision as an employer has an impact on the amount of donation.	<input type="radio"/>	<input type="radio"/>
The higher the effort that the employee chooses, the higher are his associated costs.	<input type="radio"/>	<input type="radio"/>

Please note: The experiment starts only after the experimenters ascertain that all participants have answered the above questions correctly.