DISCUSSION PAPER SERIES

DP14283

MATERIAL INCENTIVES AND EFFORT CHOICE: EVIDENCE FROM AN ONLINE EXPERIMENT ACROSS COUNTRIES

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DEVELOPMENT ECONOMICS

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Material Incentives and Effort Choice:
Evidence from an Online Experiment Across Countries[*]

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December 2019

Abstract

We conduct in the an interactive online experiment framed as an employment contract between employer and worker. Subjects from the US and India are matched in pairs within and across countries. Employers make a one-period offer to a worker who can either decline or choose a high or low effort. The offer is made from within a restricted and variable set of possible contracts: high and low fixed wage; bonus and malus contracts; and bonus and malus with reneging. High effort is always efficient. Self-interest predicts a fraction of observed choices, but many choices indicate conditional or unconditional cooperation instead. Indian subjects are more likely to play unconditional cooperation and provide high effort more often. US subjects are more likely to follow self-interest. Indian subjects reach a more efficient outcome than US subjects in 5 of the 6 treatments. Survey data on demographics and attitudes to incentives is unable to predict behavioral differences between the two countries, suggesting the possible existence of cultural differences in the response to labor incentives.

JEL Codes: J31, D9, O12, O57

Keywords: work incentives; labor contracts; intrinsic motivation; conditional cooperation; cross-country comparisons

1   Introduction

Worker performance is a key determinant of the productivity and international competitiveness of firms, bureaucracies, and non-profit organizations. There are large differences in worker performance across countries, and in an increasingly globalized world, understanding the determinants of these differences is crucial to bridge productivity gaps within and across countries. Apart from the well documented roles of schooling and job experience, other sources of differences in worker performance remain poorly understood (e.g., Hall and Jones, 1999; Bloom and Van Reenen, 2010).

One empirical regularly that has attracted some attention is the fact that labor markets differ, both over time and across countries, in the extent to which material incentives are used to motivate workers. Some labor markets are characterized by a large dispersion of earnings, others are much more compressed (e.g., Cohen et al. 2014). Some view the low usage of incentive contracts in some economies is a manifestation of poor management skills. Others blame labor laws and regulation that constrain the use of material incentives [1].

Without denying the validity of these explanations, this paper focuses on another possible channel of causation, namely systematic differences in the way employers and workers from diverse populations react to incentives. The theoretical literature has proposed several mechanisms to induce effort using material, behavioral, and social incentives (Rebitzer and Taylor, 2011; MacLeod, 2011). The identification of which mechanism works best ultimately remains an empirical question. Dellavigna and Pope (2018a, 2018b) provide a summary of the experimental evidence on the effect of various worker incentives in advanced economics, and they test whether experts are able to predict them. Experimental results confirm that material incentives increase effort, but the marginal effectiveness of additional incentives is quite low. While they find that experts are able to predict a number of key patterns in the data, a sizeable share of experts – economists and non-economists alike – mistakenly expect a small piece rate to crowd out incentives to provide effort.

In this paper, we are particularly interested in the finding that highly leveraged material incentives fail to elicit significantly more effort. Why this is the case is unclear. One possibility is that workers are dedicated and conscientious even in the absence of strong material incentives – a feature sometimes ascribed to reciprocal altruism towards the employer. Alternatively, workers may find highly leveraged incentives to be unfair, thereby crowding out non-material incentives. If either of these cases, employers would find it unnecessary and unprofitable to introduce highly leveraged incentives.

Although there is evidence that workers respond to material incentives (e.g., Lazear 2018),

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[1] Examples include: restrictions on firing; pay scales set by governments or in consultation with unions; limits on corporate bonuses; and restrictions on wage reductions imposed by the employer. It is our understanding, for instance, that in the US the employer is allowed to dock pay unless otherwise specified by law. In contrast, in the UK it is illegal for an employer to dock pay unless specifically authorized by law.

their effectiveness can be reduced by fairness considerations. Breza et al. (2018), for instance, find that incentivizing Indian casual workers through relative pay has a negative effect on performance. Ockenfels et al. (2015) find that a multinational corporation operating in the US and Germany has a much more compressed bonus scale for its managers in the latter than in the former. The authors ascribe this difference to the fact that, in Germany, the size of bonuses paid is public to the workers and this, the authors speculate, reduces their effectiveness in eliciting effort and thus the need to pay large bonuses. In agreement with this interpretation, Cullen and Perez-Truglia (2018) find that workers in an international multinational reduce their effort level when informed that other workers similar to them in the firm earn more than them.[2] Bandiera et al. (2010) similarly find that when workers who know each other well are placed in the same piece-rate work team, more productive workers reduce their effort so as to not overshadow their workmate. In all these examples, workers seem to have a distaste for pay differences across similar or proximate workers: in Cullen et al. (2019) and Breza et al. (2018), workers reduce effort when they learn that their peers are paid more; and in Bandiera et al. (2010) high performance workers exert lower effort to reduce the pay difference with less able colleagues. Bandiera et al. (2013) nonetheless show that rank tournaments among workers do increase productivity, thereby drawing a distinction between the effect of tournaments per se and the way they are rewarded – an observation that also appears in Ockenfels et al. (2015).

Other research suggesting that workers fail to react – or react negatively – to certain incentives can be found in Kajackaite and Werner (2015). The authors show that a minimum performance requirement has a no direct effect on output in a real effort experiment but has undesired effects in the dynamics of controlled agents' working performance. In a similar vein, Sliwka and Werner (2016) find that agents work harder under increasing wage profiles only if they do not know these profiles in advance. The authors interpret these findings as evidence of reciprocal altruism in a game with varying reference points. In a related paper, DellaVigna et al. (2019) vary piece rates in addition to gift treatments. They do not detect any effect of the gifts on productivity but find a sizable positive impact on labor supply, a finding that the authors also interpret as evidence of reciprocation. Experimental evidence further indicates that non-material incentives can increase effort (e.g., DellaVigna and Pope 2018a; Ashraf et al. 2015).

The avenue of enquiry that we explore in this paper is the possibility that populations and countries differ in what arrangement of labor relations they regard as fair. Impressionistic evidence to support this conjecture arises from the observation that countries differ systematically from each other – and across time – in terms of labor regulation. Some of these differences may be driven by variation in material labor market conditions or political organization. But others seem embedded in different beliefs or social norms about what employment contracts are socially and politically acceptable. Differences in norms and fairness across populations have

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[2]The authors also show that workers increase effort when informed that their immediate supervisor earns more than they initially thought.

been noted in the literature. Many social norms and behavioral expectations are known to vary systematically across populations (e.g., Heinrich et al. 2006; Schulz et al. 2018a, 2018b; Falk et al. 2018; Enke 2019). Bazzi et al. (2018), for instance, shows that US districts that spent more time on the frontier – and received little state support during that time – tend to share more individualistic attitudes and are less trusting of the state. As a result they tend to vote conservative and to reject pro-labor regulation. In a similar vein, Fisman et al. (2014) show that large differences exist between sub-populations of the US regarding attitudes towards social redistributive justice. As a result individuals more sensitive to redistribution are likely to object to – and vote against – incentive structures that generate large wage disparities (Fisman et al. 2017).

Taken together, these findings suggest that social and legal norms may affect the way that labor incentive operate, together with other contextual effects. Yet, to the best of our knowledge, there seems to be no comparative experimental work on labor incentives across countries. The aim of this paper is to offer cross-country evidence about the acceptability and effectiveness of incentives across different countries. To throw light on this issue we conduct an interactive online experiment in two countries with widely different economies, namely, the United States and India. We keep things simple in this initial experiment by focusing on attitudes towards material incentives and by abstracting from relative pay considerations.

The object of the experiment is to compare how participants naturally respond to different material incentives. The focus is on identifying attitudes and beliefs rather than studying strategic interactions. Subjects play four incentivized games in pairs and never play twice with the same person. This rules out incentives based on repeated play (e.g., Brown, Falk and Fehr 2004, 2012; Davies and Fafchamps 2019). Half of the subjects play with someone from their own country; the other half plays with someone from the other country. Each of the four games is framed as a one-shot employment contract between two subjects, one of which is assigned the role of employer and the other the role of workers. This framing serves to trigger wage employment heuristics among subjects. Employers choose to offer a job or not, and they select a contract type: low or high wage, conditional on effort or not, with full commitment or not. Games differ in the type of contracts in the choice set of the employer. Workers choose to accept the offer or not, and then select an effort level – i.e., high or low. High effort always maximizes aggregate efficiency but is costly to the worker. While this design is reminiscent of Brown et al. (2004, 2012), here employers choose a contract, not a wage level.

Participants are recruited through Amazon Mechanical Turk (AMT). Turkers are an ideal population for our study since they participate in the 'gig economy' and are thus familiar with short employment contracts with different incentive and pay structure. The main limitation is the fact that, at the time of writing, only the US and India offer large enough populations of Turkers to conduct an online experiment. Because our focus is on heuristics and beliefs, we want subjects to interact with each other in real time so as to make human interaction more vivid. Given the time constraints imposed by interactive online experiments in two countries – i.e., 15

minutes of interactive play at most – this rules out using real effort tasks. Participants also fill an online questionnaire before and after the game.

While both subject populations behave similarly whether they are matched with someone from they own country or not, US and Indian subjects respond to incentives in starkly different ways. US subjects choose low effort more frequently than Indian subjects. The difference is especially stark in low wage contracts where 65% of US subjects choose low effort compared to 30% of Indian subjects. US subjects are also more likely to choose high effort in contracts that offer material incentives, as opposed to a fixed wage. Furthermore, they are less likely to choose high effort when the employer can renege on an incentive contract – suggesting that US workers are less trusting when the contract is not perfectly enforceable. There is more similarity in play among subjects assigned the role of employer, except that US employer are less likely to offer work when the only option is a fixed high wage. This is especially true when they are matched with another US subject.

This paper contributes to various literatures. First, it adds new insights to the above-mentioned literature on experimental response to incentives. Second, it complements the literature on labor market differences across countries, such as the work of Nickel (1997) who compares the rigidities that affect labor markets in continental Europe to those in the North America. Fields (2010) provides a broader international coverage on this issue, including a number of developing countries. Less is known about other parts of the world such as South Asia. We therefore provide valuable new insights on an understudied dimension of heterogeneity across countries.

Third, we contribute to a growing literature on the relationship between culture and economic outcomes through its influence on people's expectations and preferences (Guiso et al, 2006). Empirical work at the macro level has provided evidence that culture matters for financial development (Guiso et al, 2004), performance of large organizations (La Porta et al, 1997), and venture capital investment (Bottazzi et al, 2011).[3] In controlled experimental settings, culture affects play in dictator (Henrich et al, 2006), ultimatum (Henrich et al, 2001), coordination (Jackson and Xing, 2014), minimum effort, and prisoner's dilemma games (Chen et al, 2014). This study documents important differences in the way human subjects from two different countries respond and use incentives in a game framed as a short-term employment contract. This finding is consistent with the idea that individuals from different cultures rely on different heuristics when interacting with each other, a feature that can impact the use and effectiveness of different incentive mechanisms across countries.

We start in Section 2 by presenting a brief overview of the conceptual framework underlying our work. The experimental design is discussed in detail in Section 3. Results from the experiment itself are the object of Section 4. In Section 5 we investigate whether individual behavior

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[3]Chu and Fafchamps (2018) provide qualitative evidence of culture clash between Chinese employers and local workers in Ethiopia.

in the experiment can be predicted based on individual characteristics and answers to questions about the acceptability and effectiveness of various incentives. Section 6 concludes.

2 Conceptual framework

The theoretical literature has proposed several mechanisms to incentivize efforts via material, behavioral, and social incentives (Rebitzer and Taylor, 2011; MacLeod, 2011). What is less clear is how effective these incentives are in practice. In the context of labor markets, there is an abundance of contextual data about workers in a range of industries. But identifying the causal effect of an incentive mechanism on worker effort is challenging because of the difficulty in disentangling environmental factors, endogeneity, and general equilibrium effects.

Laboratory experiments have been used extensively to provide a clean causal identification on how incentive mechanisms influence behavior (Charness and Kuhn, 2011). Much of the laboratory evidence, however, comes from a restricted pool of participants. Henrich et al (2010) point out that 96% of participants in a sample of published laboratory experiments are "WEIRD," i.e. coming from a Western, Educated, Industrialized, Rich and Democratic background (see also Schultz et al. 2018). Participants with a WEIRD background represent only 12% of the world population, and the majority of studies focus on the even smaller subset of WEIRD university students. This is a severe limitation for the study of the incentive mechanisms because students have little or no working experience and tend to be more culturally homogenous across developed countries than the population at large.

We overcome these limitations by conducting a real-time interactive experiment conducted online with subjects recruited from Amazon Mechanical Turk (AMT), a real labor market with more than a half-million registered workers. The AMT population has a more diverse cultural background than subject pools available in university laboratories, and it mainly comprises workers from the US and India (Horton et al, 2011). The size and economic significance of these two countries make them a promising starting point to investigate cultural differences in two large economies of the developed and developing world, respectively.

Economics has long recognized that non-material rewards can incentivize behavior. Material – and especially financial – rewards remain the gold standard, however, probably for two reasons. First, money can be exchanged for a variety of goods and services while non-material rewards are, by nature, consumed in kind and offer no choice. It follows that financial incentives are deemed more efficient in terms of welfare – in the same way as food vouchers are a less efficient form of welfare than monetary transfers. Secondly, non-monetary incentives are seen as inherently manipulative: people are induced to work in exchange for symbolic rewards (e.g., praise, public recognition, adherence to a business culture or work ethic) that benefit the employer at little cost.

What has been less acknowledged is that material incentives need not be legitimate – either

because they break the law, or because they contradict cultural and social norms of propriety and fairness. This certainly holds for incentives that take the form of punishment for unwanted behavior. In a seminal article, Abreu (1988) argues that the optimal penal code in a repeated game is to impose the most costly punishment possible on any player for any deviation from equilibrium. In practice, this would be seen as unduly harsh, as it violates the commonly held view that 'punishment must fit the crime'. Most legal codes have safeguards against certain categories of punishments, with a lot of variation across countries and over time. For instance, prison for debt is legal in Zambia but not in present-day France. Similarly, docking pay may be acceptable in the US but much less so in continental Europe. The same holds for firing a permanent employee without cause, which is illegal in some countries but not in others. There is less a priori resistance for rewards rather than punishment. For this reason, offering a bonus to a worker for high effort may be more acceptable than reducing pay for low effort – even though the material incentive is the same. One of the objectives our experimental design is to test this conjecture.

Conditional rewards too may be seen as inappropriate in some contexts. We have already discussed experimental evidence suggesting that human subjects dislike incentive structures that result in unequal pay for the same job – even if how much inequality they are prepared to accept may vary across populations. Some of it is related to the ethical tension between ex ante and ex post distributional concerns – i.e., between equal opportunity and equal outcomes. Andrioni et al. (2018), for instance, provide experimental evidence that subjects value both, even if it results in logical contradictions – e.g., allowing other players to take risky gambles but compensating them ex post if they have a bad draw. Applied to labor contracts, this would predict that people like highly leveraged incentive contracts ex ante – but want to redistribute ex post from high to low earners. Applied to labor contracts, this may lead employers to offer but then 'renege' on highly leveraged incentive contracts.

Conditional rewards may also be seen as mercenary. In many evolved societies, moral precepts often are unconditional – i.e., 'thou shall not steal', not 'though shall not steal from those who do not steal from you'. Applied to labor relations, this could translate into employers being expected to pay workers fairly irrespective of their individual productivity or failings. Hence productivity bonuses could be regarded as manipulative and disrespectful since they imply that workers do a bad job without incentives. Put differently, material incentives may crowd out intrinsic incentives (e.g., Gneezy and Rustichini 2000). It is even conceivable that workers would reject jobs with a highly leveraged pay structure.

Conditions for rewards and punishments are sometimes clearly stipulated in labor contracts. In practice, the employer often has some discretion in their use – e.g., a punishment may be overlooked or a reward omitted – and their level – e.g., the employer may set the size of a bonus or fine based on unspecified criteria. From an economic point of view, discretionary rewards and punishments fail to provide clear incentives and, as such, should be less effective in eliciting effort. More importantly, they can also be seen as a potential source of abuse, e.g., when a

worker expects to receive a large bonus for exerting high effort, but receives a small one. It follows that jobs with discretionary rewards and punishments may be seen with suspicion and, as a result, rejected by workers.

Our objective is to investigate the above conjectures about the effect of different incentive structures on effort and on job acceptance. We also examine employers' willingness to offer particular labor contracts. Indeed, if employers expect a particular incentive structure to be counterproductive, they are expected to refrain from offering such contracts to potential workers. Furthermore, because views about what is ethical and fair vary across populations, we expect our conjectures to apply differently across societies, and to be potentially damaging to efficiency in cross-cultural working environments (Kirkman and Shapiro, 2001; Chu and Fafchamps 2019).

3 Experimental design

We design an experiment to test the conjectures presented in the previous section. To this effect, we create an online game between two subjects, one of whom is assigned the role of employer and the other the role of worker. Each subject plays four such games in sequence and is re-matched with a different partner each time. Subjects then switch roles and play four more games.

Each game has the following structure. The employer moves first. In most treatments, the employer can choose between two different contracts. In all treatments, the employer can also decide not to offer any contract. If no contract is offered, the game ends. If a contract is offered, it is the worker's turn to move. The worker can decide to refuse the contract, in which case the game ends. If the worker accepts the contract, the worker then chooses a level of effort, either high or low. High effort is costly for the worker but produces a higher production income for the employer.

The different types of contracts are presented in Table 1 below. The first two treatments, dubbed High and Low, only allow one labor contract paying either a fixed high wage or a low high wage. In these contracts worker pay is not conditional on effort. The employer's payoff is the income from production minus the wage paid to the worker. The worker's payoff is the wage paid in the contract minus the cost of effort. In these fixed wage contracts, the optimal selfish strategy for the worker is to exert low effort since the game is not repeated with the same employer, and reputational sanctions are ruled out by design.

In the Bonus treatment, the employer can either offer a fixed high wage, or offer a conditional bonus contract that guarantees a low wage but increases it to the high wage if the worker exerts high effort. In the Malus treatment, the employer can either offer a fixed low wage, or a conditional malus contract that offers a high wage but reduces it to a low wage if the worker exerts low effort. Although the Bonus and Malus contracts are identical in terms of final payoff, they are framed differently. In the bonus and malus contracts, the payoffs of both employer and worker are determined by the effort level chosen by the worker. The worker's optimal selfish

strategy is to exert high effort. In all contracts, the high and low wage levels are the same.

Two additional treatments introduce discretion in the way conditionality is applied by the employer. In practice this means that the employer can override the contract's conditionality – i.e., 'renege' on it. In the bonus contract with discretion, the employer should in principle pay a high wage if the worker exerts high effort; but the employer can ex post decide to pay a low wage instead. The employer can also decide to pay a high wage even if the worker exerts low effort. The same applies to the malus contract with discretion. In the BonusWD treatment, the employer chooses between a low fixed wage contract or a bonus contract with discretion; in the MalusWD treatment the employer chooses between a high fixed wage and a malus contract with discretion. If a contract with discretion is selected by the employer and accepted by the worker, the employer has an additional move to decide the final wage level after the worker's effort choice – i.e., the employer can decide to pay the low wage after high effort or the high wage after low effort, irrespective of the offered contract.

Table 1. Choice of contracts available to the employer

	High wage treatment	Low wage treatment	Bonus treatment	Malus treatment	BonusWD treatment	MalusWD treatment
High fixed wage	√			√		√
Low fixed wage		√	√		√	
Bonus for high effort			√			
Malus for low effort				√		
Bonus w/ discretion					√	
Malus w/ discretion						√
No contract	√	√	√	√	√	√

Payoffs for the different contracts and effort levels are as follows. Each value corresponds to a number of points that subjects redeem for cash at a fixed exchange rate at the end of the experiment. The low wage is 10 and the high wage is 20. The size of the malus or bonus is the difference between the low and high wage levels. The cost of low effort to the worker is zero; the cost of high effort is 5. In the case of no accepted job offer, the default payoff of the employer is 20 and the reservation payoff of the worker is 10. Production income is 10 with low effort and 40 with high effort. Since the cost of high effort is 5, it maximizes aggregate welfare.

The experiment is specifically designed to eliminate or at least minimize dynamic play considerations. Repeated play effects *across* games are deliberately minimized by rematching subjects before each game and by keeping full anonymity across all games. While we cannot rule out that subjects learn over the eight games that they play as employer and worker, they never play the same game twice in the same role, thereby reducing what they can learn about one particular

strategic environment. The order of play between games is also randomized, making it harder for subjects to keep track.[4]

3.1 Nash equilibrium

We first examine how rational players with self-interested material motives are expected to play the different games. We first consider the low wage contract. If the effort level is low, the employer's final payoff is $\pi_l^L = 20 + 10 - 10 = 20$ – which is the same as making no contract offer – and the worker receives $u_l^L = 10$. If the effort level is high, the employer receives $\pi_h^L = 20 + 40 - 10 = 50$ while the worker receives $u_h^L = 10 - 5 = 5$. It is clearly in the interest of the worker to choose low effort, in which case the worker gets the same payoff as rejecting the contract. If the employer believes that there is even the slightest chance for the worker to choose high effort, it is best to offer the contract than do nothing – i.e., offering a contract is a weakly dominating strategy for the employer. Since the worker is expected to either reject the contract or accept the contract with low effort, in the Nash equilibrium of this game both the employer and the worker get their reservation payoff and neither of them gains anything from contracting. Rejecting the contract is nonetheless weakly dominating for the worker if the worker puts a non-zero probability on exerting high effort, e.g., by mistake.

In the high fixed wage contract, the employer payoffs for low and high effort are $\pi_l^H = 20 + 10 - 20 = 10$ and $\pi_h^H = 20 + 40 - 20 = 40$, respectively.[5] The corresponding payoffs for the worker are $u_l^H = 20$ and $u_h^H = 20 - 5 = 15$. Since both u_l^H and u_h^H are larger than the worker's reservation payoff of 10, it is in the interest of the worker to accept the contract. If the employer expects high effort with a probability $p < 1/3$ it is better not to offer any contract than to offer a fixed high wage. When $p = 1/3$, the employer is indifferent between offering the contract and offering nothing:

$$p\pi_h^H + (1-p)\pi_l^H = 20 \quad \Leftrightarrow \quad p = \frac{1}{3}$$

Since low effort is the optimal choice for the worker, i.e., $p = 0$, the Nash equilibrium of this game is no contract.

In the bonus and malus contracts, employer and worker receive their low-fixed-wage payoff if effort is low and their high-fixed-wage payoff if effort is high. It follows that the optimal choice for the worker is high effort ($u_h^H = 15 > u_l^L = 10$), and the optimal contract choice for the employer is the conditional contract:

$$(1-p)\pi_l^L + p\pi_h^H = (1-p)20 + p40 \geq 20 \text{ for any } p$$

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[4]By the same logic, it would be difficult for subjects to follow a contagious equilibrium strategy a la Kandori (1992): each game is different, and signal extraction about types or equilibrium strategies is probably beyond the computational capacities of the overwhelming majority of players, especially given the fact that the entire experiment lasts approximately 15 to 20 minutes.

[5]Note that, conditional on a given level of effort, paying a lower wage is always in the ex post interest of the employer, i.e., $\pi_l^H < \pi_l^L$ and $\pi_h^H < \pi_h^H$.

The Nash equilibrium of the bonus and malus treatments are for the employer to make a conditional offer and for the worker to accept the contract and exert high effort. This results in both employer and worker having a higher payoff in equilibrium. Since the bonus and malus treatments yield identical payoffs and incentives to employer and worker, their Nash equilibrium is identical.

In the two treatments where the employer can renege on the incentive contract, BonusWD and MalusWD, it is ex post optimal for the employer to pay the low wage since, conditional on effort, $\pi_l^H < \pi_l^L$ and $\pi_h^H < \pi_h^L$. Hence in these contracts, rational workers should expect to receive a low wage irrespective of effort. Given this, the Nash equilibrium should be the same as in the fixed low wage: offering the renege contract is a weakly dominating for employers; workers always apply low effort; and employers always renege. In equilibrium workers are indifferent between rejecting the contract or accepting it and exerting low effort. However, if workers put a non-zero probability of getting a high wage, accepting the contract is a weakly dominating strategy.

If we restrict the set of Nash equilibria to those that are trembling-hand-perfect, we can limit our attention to those strategies that are weakly dominating. With these assumptions, all equilibrium predictions are summarized in Table 2. Employers and workers are predicted to get their reservation payoff in all treatments except the bonus and malus treatments. Note that in the Low, BonusWD and MalusWD treatments, offering a contract is weakly dominating for the employer but offering nothing is a Nash equilibrium since the employer's payoff with low effort and low wage is the same as offering nothing. Accepting the contract is always a dominating strategy for workers, except in the low wage treatment where rejecting is weakly dominating against one's own trembling hand.

Table 2. Best responses for rational self-interested players

	High wage treatment	Low wage treatment	Bonus treatment	Malus treatment	BonusWD treatment	MalusWD treatment
Employer offers:	no contract	contract	bonus contract	malus contract	bonus contract	malus contract
Worker accepts:	yes (*)	no	yes	yes	yes	yes
Worker effort:	low effort (*)	low effort (*)	high effort	high effort	low effort	low effort
Ex post employer pays:	n.a.	n.a.	n.a.	n.a.	low wage	low wage
Nash worker payoff:	10	10	15	15	10	10
Nash employer payoff:	20	20	40	40	20	20

Note: The table only considers weakly dominating strategies. (*) Off equilibrium path behavior.

3.2 Behavioral strategies

So far we have focused on strategies predicted by standard game theory models with rational players only interested in their own material payoff. As shown in Table 2, these strategies fail to achieve aggregate efficiency in four of the six treatments. We now turn to behavioral strategies that can potentially sustain efficiency in all treatments. The most obvious candidates are two types of strategies discussed in the public good games literature: unconditional and conditional cooperation. In public goods games played with a strategy method, conditional cooperators are those who give more conditional on others giving more, while unconditional cooperators are those willing to give irrespective of what they expect others to give.

Unconditional cooperators (UC) can be defined as subjects who strive towards aggregate efficiency irrespective of what others do. In other words, they choose an action that a benevolent social planner would regard as desirable. By construction, achieving efficiency in our experiment requires that the worker accepts the contract and chooses high effort. Hence, an unconditional cooperator who is assigned to be a worker will accept any employment contract and provide high effort irrespective of the wage or incentives offered. This is because high effort maximizes the joint surplus.

In our experimental design the employer can only reduce aggregate efficiency by not offering a contract. An employer who is an unconditional cooperator therefore always offers a contract. Furthermore, conditional on effort, the employer can affect the division of surplus by setting the wage level. If we broaden the definition of unconditional cooperation to encompass an equity dimension, we can narrow down the choices that an unconditionally equity-minded employer would make. Since the worker always has a lower payoff than the employer in our experiment, we expect an equity-minded social planner to opt for the high wage option whenever available.

Taken together, this reasoning predicts the following employer choices: offer a contract in the High and Low treatments; offer a bonus contract in the Bonus treatment because that is the only way to pay a high wage to the worker; offer a bonus contract in the BonusWD treatment and renege on that contract to offer a high wage even if the worker provides low effort; offer a high wage in the Malus treatment; offer a high wage in the MalusWD treatment – or offer a malus contract but renege to pay a high wage in case of low effort. These predictions are summarized in Table 3 below. Comparing to Table 2, it is immediately clear that if both subjects are unconditional cooperators, efficiency is achieved in all treatments.

Table 3. Best responses of unconditional cooperators

	High wage treatment	Low wage treatment	Bonus treatment	Malus treatment	BonusWD treatment	MalusWD treatment
Employer offers:	contract	contract	bonus contract	high wage	bonus contract	high wage
Worker accepts:	yes (*)	yes (*)	yes (*)	yes (*)	yes (*)	yes (*)
Worker effort:	high effort (*)	high effort (*)	high effort (*)	high effort (*)	high effort (*)	high effort (*)
Ex post employer pays:	n.a.	n.a.	n.a.	n.a.	high wage	high wage
Worker payoff:	15	5	15	15	15	15
Employer payoff:	40	50	40	40	40	40

Note: (*) Irrespective of contract offer.

While unconditional cooperation is good for efficiency, experimental evidence from public good games suggests that few subjects can be classified as unconditional cooperators. Conditional cooperation/reciprocity (CC) is more common. For the purpose of our experimental design, conditional reciprocity is best defined as picking an action favorable to the other player provided that the other player reciprocates. For workers, conditional reciprocity means picking high effort if the employer pays a high wage, and low effort otherwise; for employers it means picking a high wage if the worker applies high effort and a low wage otherwise. Conditional reciprocity often depends on subjects expectations about the other player's behavior. Our experiment is no exception. It follows that, in some treatments, more than one action can be rationalized as conditional reciprocity by varying players' (unobserved) expectations. As a result conditional reciprocity does not make entirely unambiguous predictions. But it nonetheless restricts the range of actions that we ought to observe. This is illustrated in Table 4.[6]

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[6]Some model predictions depend on (unobserved) beliefs about the other player being a conditional or unconditional reciprocator. Workers who receive a fixed high wage exert high effort if they are unconditional or conditional cooperators; if they play Nash, they exert low effort. It follows that for employers in the High treatment, offering a high wage is optimal only if the worker is a conditional or unconditional cooperator with probability $p > 1/3$. In the two discretionary contracts, the effort applied by the worker depends on beliefs about the employer's discretionary ex post behavior. If the employer is an unconditional cooperator, the worker will receive a high wage irrespective of effort. If the employer is a conditional cooperator, the worker receives a high wage only if providing high effort. If the employer plays Nash, the worker receives a low wage irrespective of effort. Let q_u, q_c and q_n be the worker's belief about the probability of the employer being UC, CC or Nash. The worker's expected payoff from low effort is $q_u 20 + (q_c + q_n)10$; the expected payoff from high effort is $(q_u + q_c)15 + q_n 5$. Choosing high effort is optimal when:

$$(q_u + q_c)15 + q_n 5 > q_u 20 + (q_c + q_n)10$$
$$q_c \geq 1/2$$

Table 4. Best responses of conditional reciprocators

	High wage treatment	Low wage treatment	Bonus treatment	Malus treatment	BonusWD treatment	MalusWD treatment
Employer offers:	no contract if $p<1/3$ contract if $p>1/3$	contract	bonus contract	malus contract	bonus contract	malus contract
Worker accepts:	yes	no or yes	yes	yes	yes	yes
Worker effort:	high effort	low effort	high effort	high effort	high effort iff $q_c>1/2$	high effort iff $q_c>1/2$
Ex post employer pays:	n.a.	n.a.	n.a.	n.a.	high wage if high effort	high wage if high effort
Worker payoff:	10 if no offer/15 if offer	10	15	15	15	15
Employer payoff:	20 if no offer/40 if offer	20	40	40	40	40

Note: p is the employer's belief that the worker is a conditional or unconditional cooperator. q_c is the worker's belief that the employer is a conditional reciprocator.

The three types of strategies presented in Tables 2 to 4 form the main basis of our empirical investigation. Other strategies and motivations are nonetheless possible. For instance, some subjects may perceive incentive contracts as patronizing or signaling lack of trust in workers' intrinsic motivation. Such subjects would be more likely to reject incentive contracts in favor of fixed wage contracts. The same reasoning would lead such subjects to be, if anything, less likely to exert high effort in an incentive contract, e.g., out of contempt. Such behavior would indicate that material incentives crowd out intrinsic motivation. Alternatively, subjects may reject certain types of incentive contracts. For instance, they may reject malus contracts in which the employer reduces the reference wage, but accept bonus contract because it increases the wage. Such behavior would be consistent with loss aversion anchored on the default contract wage as reference point. If crowding out or reference point effects are anticipated by employers, they too may shun incentive contracts. Another possibility is that workers resent the unequal distribution of surplus between worker and employer and reject all offers to prevent employers from benefitting from the game. This type of behavior has been documented in 'money burning' experiments (e.g., Zizzo and Oswald 2001, Zizzo 2003, Kebede and Zizzo 2015, Fafchamps and Hill 2018). We examine all these possibilities in the empirical section as well.

3.3 Differences across populations

The different strategies discussed above all find some grounding, either in standard game theory or behavioral regularities observed in the lab or in the field. What we do not know is which strategies subjects are most likely to adopt and whether the type of strategies they adopt vary systematically across populations when the game is framed as being about employment contracts.

Strategies could vary for a variety of reasons – e.g., because of differences in beliefs about the choices other players would make; differences in social norms that affect intrinsic motivation, crowding out, or the legitimacy of particular incentives. It is therefore instructive to explore whether the predictions in Tables 2, 3 and 4 are followed differently across different populations. In particular, we wish to know whether conditional and unconditional cooperation vary across populations and whether they are more easily crowded by explicit incentives in some populations than in others.

It is also conceivable that subjects hold different expectations regarding players from other populations – e.g., they may hold stereotypes or be prejudiced about what individuals from other populations would do when faced with certain incentive contracts. For instance, if subjects from population A believe that subjects from population B are less intrinsically motivated (i.e., they have a higher p), they should refrain from offering a fixed high wage contract to them. Alternatively, population A may believe that individuals from population B only respond to incentives when in fact these incentives are not required. With such erroneous beliefs, A players would refrain from making fixed wage offers when in fact, according to Table 3, such offers would be most profitable. Similarly, if A players do not realize that certain types of extrinsic incentives crowd out the intrinsic motivation of B players, they would offer malus contracts, say, when in fact these contracts only elicit refusal or low effort. One purpose of our experiment is to investigate these possibilities.

3.4 Implementation

The experiment was implemented online using subjects recruited from Amazon Mechanical Turk (AMT). The main reason for using AMT is to be able to easily pay subjects conditional on their performance in the experiment while ruling out multiple play by the same subject. Indeed, paying online subjects in multiple countries is fraught with difficulties (certainly at the time that the experiment took place) and survey outfits such as Qualtrics do not pay subjects anything other than a fixed fee. Since the two largest pools of subjects on AMT are from India and the US, the online experiments uses a 2x2 country design summarized in Table 5.

At the time that we initiated the experiment, O-Tree did not yet exist. This means that the experiment was coded directly by the researchers using a combination of Python and Java. Subjects were then channelled from Qualtrics – used for the survey and consent form – to the experimental interface and finally to MTurk – used for payment. In the online appendix, we present screen shots for all the stages of the online game. As is clear from these pictures, a lot of effort went into making the interface friendly and easy to use. To minimize the cognitive burden of the game and allow subjects to concentrate on strategic issues rather than mental arithmetic, we calculate all payoffs for subjects directly and, in some cases, we depict payoffs graphically in colored bar charts. As a result, few subjects drop off during the experiment and we received no direct complaints.

The total number of subjects participating in the online experiment is 1004. In principle all subjects are expected to play 8 games in total but in practice some subjects arrive late and some leave early, either because of internet connection issues or because subjects get distracted. This means that the number of subjects in an online session varies somewhat over time. The experimental protocol is specifically designed to take this into account by re-matching subjects on the fly to minimize disruption.[7] The total number of games played is 3060, meaning that subjects on average played 6.1 games instead of the maximum possible of 8.[8] Subjects spent an average of 6 minutes on each batch of four games, with a median of 5 minutes. Each of the six treatments was played by between 482 to 554 pairs of subjects, depending on the treatment.

Table 5. Sample breakdown.

	Subjects from:	
Matched with subject from:	US	India
US	279	254 (*)
India	266 (*)	205
Total	545	459

(*) except for 9 subjects (5 US and 4 Indians) who are matched with someone from the other country only part of the time

Each subject started by filling an online questionnaire on Qualtrics. In addition to collecting basic information about each subject, the questionnaire also gathers information about their work experience. Six vignette-style questions focus on the acceptability of different incentive schemes, and six questions elicit subjective beliefs about the reliability of incentivized and un-incentivized workers in the US, India and South Africa – the latter country being included as additional information.

After filling an online survey on Qualtrics and giving informed consent for their participation to the experiment, subjects were offered a choice of time windows at which they were invited to join a specific online session of their choosing. Each session was designed for 8 players so as to ensure random rematching. Subjects were identified by their AMT identifier and no subject was allowed to play more than one session. As soon as the desired number of online subjects was reached in a session, the sequence of games was initiated. Sessions were organized over a period of several months between the summer of 2017 and the spring of 2018. In total 2,260 individuals filled the online questionnaire. Of those, 1,004 participated to the experiment. The exchange rate for points is US$0.03 per point. On average subjects who participated to the experiment received a compensation of 3.5$,[9] which is considered normal for MTurk experiments. Those who only filled the questionnaire received a fixed fee of 2$.

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[7] As a result some individuals are not rematched with someone from the intended country and are rematched with someone else to avoid losing observations.

[8] The first game is played by 414 pairs of players, the second by 433 pairs, games 3-6 by around 400 pairs, and games 7 and 8 by 308 or 309 pairs of players.

[9] $3.45 in India and $3.49 in the US.

We present in Appendix Table A1 a breakdown of individual characteristics by country. The average participating subject is in his or her thirties, with US subjects on average 6.8 years older. 42% of US subjects are women compared to 26% of Indian subjects. Indian subjects are on average more educated, with nearly half of them having post-secondary education compared to 32% of US subjects. In terms of employment status, 69% of US subjects are in short-term wage employment compared with 48% of Indian subjects who, in contrast, are self-employed with no employees in 21% of cases vs. 1% of US subjects. Very few subjects are in permanent wage employment or unemployed. In terms of balance within the experiment, we find no difference across countries in treatment, mix of employer and worker role, or in being matched with a partner from the same country.

The questionnaire includes a few attitudinal questions about the acceptability of various types of work incentives. The first question is a vignette of the following form: "Worker A is hired to perform a task for which he/she claims to be qualified. After a week on the job, it becomes clear that A is unable to perform the task. Worker A is laid off by the employer." Respondents are then asked to rate the employer's decision from 0 to 10 in terms of acceptability, with 0 being fully unacceptable and 10 fully acceptable. Questions 2 and 3 follow the same format by vary the employer's response, i.e., to cut the worker's wage by 30% or to eliminate the worker's 30% bonus. The next three questions follow the same sequence, but the vignette focus on a worker who is caught shirking. Responses are shown in Table A2. We see that, in both countries, subjects generally find it acceptable to lay off or cut the bonus of incompetent or shirking workers. They are less sympathetic to a wage cut of equivalent magnitude. There are some significant differences between subjects from the two countries, but they are not large in magnitude.

The questionnaire also includes questions on whether workers "can be trusted to exert high effort if their earnings and continued employment depend on their performance on the job". This question is asked separately about workers from the US, India and South Africa. A similar question is asked for when the workers' earnings and continued employment *do not* depend on their performance on the job. Responses are shown in the second panel of Table A2. We see that respondents from both countries agree that incentivized workers can be trusted much more than unincentivized. There is some evidence that subjects from both countries believe unincentivized Indian workers to be more trustworthy than US workers, but the difference is small.

4   Empirical results

4.1   Average results

We start by documenting average play in the six treatments across all subjects, without referring to strategy types. To recall, employers decide which contract to offer, if any; then workers decide

whether to accept the offer; if they do, they choose between low and high effort; and finally, in the renege treatments, employers decide whether to renege on the incentive contract or not. Next we discuss what the choices made by subjects indicate regarding their strategies and motivations.

4.1.1 Employer offers

Employer offers are displayed in Table 6 for all six treatments. If employer follow self-interested equilibrium strategies, they should always offer the bonus and malus contracts when available. They are also predicted never to offer a fixed high wage contract. In three of the treatments offering nothing is a self-interested equilibrium although, in the BonusWD and MalusWD treatments, offering the discretionary contract is a weakly dominant strategy. Similarly, in the Low treatment, offering a contract weakly dominates offering nothing.

Observed behavior often diverges from these predictions. Self-interested reasoning best accounts for behavior in the Bonus treatment: 67% of subjects offer the bonus contract while 28% offer a fixed low wage and 5% offer nothing. It works much less well in the Malus treatment where only 51% of subjects offer it, while 42% offer a fixed high wage and 8% abstain. The difference with Table 3 predictions is most striking in the High treatment, where 76% of subjects are observed offering a contract and only 24% refraining from doing so. An even higher proportion of employers – 84% – offers a contract in the Low Wage treatment. We also find hardly any difference in offers between the full commitment versions of the bonus and malus contracts, and those that give ex post discretion to employers.

These behavioral patterns suggest that a large fraction of employers expect workers to be self-motivated – i.e., many offer a fixed high wage contract in the High, Malus and MalusWD treatments, something that would not make sense otherwise. Furthermore, many employers prefer offering a fixed high wage rather than a malus contract, with or without ex post discretion. In contrast, employers are more likely to opt for an incentive contract in the Bonus and BonusWD treatments. Taken together, these results suggest that a non-negligible fraction of employers expect workers to react negatively to a malus contract when the employer had the option to give them a high fixed wage. In other words, a significant fraction of employers expect contractual incentives to crowd out intrinsic worker motivation.

4.1.2 Worker acceptances

Next we turn to worker acceptances conditional on the offer received. Results are shown in Table 7. We first note that acceptance rates are highest for high wage contracts. We nonetheless observe 10% of subjects rejecting, a number similar to the proportion of subjects who pay to destroy the endowment of other players in money burning games with unequal distribution of material outcomes (e.g., Zizzo and Oswald 2001, Kebede and Zizzo 2003). The proportion of workers who reject low wage contracts is higher, although less so if the employer could have

offered a bonus contract. We also find that workers are less likely to accept a malus contract than a high wage contract. This is true in both Malus treatments, although the difference is highest in the MalusWD treatment. The rejection rate is higher for discretionary contracts, with one quarters of offers rejected across both BonusWD and MalusWD treatments. Acceptance rates are higher for hard commitment incentive contracts, but we still find 17-18% of subjects rejecting them. These findings suggest that workers find incentive contracts not as equally appealing as high wage contracts.

4.1.3   Worker effort

Worker effort is presented in Table 8 for those workers who accept the contract. We find that approximately half of the workers choose high effort in fixed wage contracts, irrespective of whether the wage level is high or low. This is half-way between self-interested strategies – which predict low effort always – and intrinsically motivated agents – who should choose high effort conditional on accepting the contract. Effort is higher in incentivized contracts, with approximately two third of workers choosing high effort in bonus contracts. The malus contract is associated with the largest incentive effect, with 76% of subjects choosing high effort compared to 53% for those paid a high fixed wage. This effect, however, disappears if the punishment for low effort is left at the discretion of the employer – in which case the effort level is the same for both contracts.

These findings are hard to reconcile with either purely self-interested or pure intrinsic motives. It appears instead that some subjects follow a self-interested strategy while others are more intrinsically motivated. What is certain, however, is that material incentives are not the panacea that economists often believe them to be. The reason why is not yet clear, but it could be due to the fact that self-interested workers only exert effort when incentivized while intrinsically motivated workers get disincentivized by material incentives. We revisit this hypothesis below when we seek to classify subjects into different categories based on their choices across games.

4.1.4   Employer discretion

In the BonusWD and MalusWD treatments, employers have the option to renege ex post on the incentive contract. This goes both ways: they can pay a high wage even though the worker provided low effort, or pay a low wage even though the worker provided high effort. Wages paid are shown in Table 9 conditional on effort. We see that a majority of employers stick to the terms of the contract. But a large minority – i.e., between 21 to 38% – deviates ex post. Contrary to expectations, employers do not always deviate in their interest, e.g., by paying a low wage after high effort – this only happens in 21 to 31% of the contracts. A large proportion – i.e., 30 to 38% – pay a high wage after low effort. Why this is the case is not entirely clear,

but it may reflect a redistributive desire on the part of employers, i.e., to make the distribution of surplus between worker and employer more equitable.

4.1.5 Efficiency

Offers, acceptances and effort choices combine to produce a more or less efficient outcome. High effort yields the highest aggregate payoff. By design, low wage/low effort gives worker and employer their reservation utility but, from an aggregate point of view, we can regard no trade as a less desirable outcome since if all employers and workers failed to trade, aggregate output would fall and so would reservation utilities.

In Table 10 we rank the six treatments in terms of their aggregate efficiency. We see that the Malus and Bonus treatments generate the highest efficiency level, with approximately 50% of the worker-employer interactions resulting in high effort/output. The two incentive contracts with ex post discretion yield an efficient outcome approximately 40% of the time, while the two fixed wage contracts yield a lower efficiency level. The fixed low wage treatment yields the lowest efficiency level, in large part because no trade occurs in 43% of the cases. The proportion of no-trade interactions is nonetheless high in all treatments – including with full commitment incentive contracts.

Table 11 does the same thing for different contract offers. Here we ignore the cases where the employer chooses not to make any offer. Conditional on an offer being made, we find that the malus contracts yields the highest efficiency level, with 63% of offers resulting in high effort. The full commitment bonus contracts does nearly as well, with 56% full efficiency. Low fixed wage is again the contract least likely to result in full efficiency.

Taken together, these results suggest that although the predictions from a self-interested equilibrium presented in Table 3 explain some of the variation in the data – e.g., the fact that full commitment incentive contracts do better than other contracts – there is also a lot of behavior that contradicts them. Some subjects appear reluctant to engage in unequal trade, or refrain from making offers for fear of rejection. The end result is a large loss of efficiency even when subjects are allowed the use of efficient incentive contracts.

4.2 Population differences

We now turn to possible differences across the two sample populations. The results presented in Tables 6 to 11 are broken down by country in Tables A3 to A8 in Appendix. Key insights are summarized in Table 12. Each cell of the Table represents the percentage point difference between US and India subjects. A positive number means a higher value for US subjects. The first panel of the Table looks at the behavior of subjects when assigned the role of employer. The only statistically significant difference is that US employers are about 10 percentage points less likely to make a job offer in the fixed high wage treatment, suggesting a lower level of

trust in workers' willingness to exert high effort in the absence of incentive. This interpretation is confirmed on the following row where we see that, when given a choice between offering a fixed wage contract or an incentive contract, US employers are much more likely to opt for an incentive contract.

Turning to worker behavior, we find that US workers are generally less likely to accept the job offer made by the employer, except when this offer is for a fixed high wage. In terms of effort, US workers are much less likely to choose high effort than Indian workers in all contracts except the full commitment malus contract, in which they work more. The differences between countries is most noticeable in fixed wage contracts, where US subjects choose high effort 26% to 36% *less* often than Indian subjects.

Finally we look at the ex post wage choices made by employers in the two discretionary incentive contracts. We find US subjects are more likely to underpay in discretionary bonus contracts – i.e., 21% of them refrain from giving a bonus to a worker who has provided high effort. The difference goes in the opposite direction for the discretionary malus contract, however: US employers are less likely to give a low wage to a worker who has chosen high effort. This difference suggests that the framing of the contract has a different impact on subjects' behavior across the two countries. One possible interpretation is that US employers consider default wage level as the worker's endowment. In the discretionary bonus contract, the default wage is a low fixed wage, perhaps making employers feel that the workers are not fully entitled to the bonus. In contrast, in the malus contract, the default wage is the high wage, and US employers seem less willing to reduce that wage if the worker has provided high effort, suggesting an entitlement effect working in the opposite direction. However, the biggest difference in the use of discretion between US and Indian employers is when employers decide to over-ride the contract to give a high wage to workers who have chosen low effort: Indian subjects are on average 27 percentage points more likely to make that choice. Could this behavior be driven by equity considerations? Indeed, on average employers have a higher payoff than workers. But since all subjects play four games as employer and four as worker, such inequality aversion explanation would require narrow framing within each set of four games, which is unlikely. A more likely reason is that subjects apply heuristics about how employers should treat workers, and Indian subjects share social norms that dictate employers should pay workers a decent wage irrespective of work performance.

Next we examine whether employers from the two countries treat workers differently depending on whether they are from their own country or another country. The idea is that subjects may hold stereotypes about how workers in other countries behave, and this may affects the offers they make. Results are summarized in Table 13a. Since we are now slicing the data into smaller cells, we have less power to identify significant differences. But the general pattern is that Indian and US subjects make similar offers to workers from the two countries. The only exceptions are that: US employers are more likely to offer a malus contract to a US worker than to an Indian worker; and Indian employers are more likely to offer bonus and malus contracts

to US workers rather than fixed wage contracts. The latter result is driven mostly by the two treatments with discretionary incentives. This suggests that Indian subjects believe that US workers respond more to incentives, a belief that seems shared by US employers. In terms of ex post discretion in incentives, we see no statistically significant differences in treatment of foreign workers.

Table 13b presents a similar analysis for the behavior of US and Indian workers relative to employers from their country or another country. We find that US workers are more likely to accept discretionary offers from US employers and less likely to accept a low wage contract – but sample sizes are small and the differences are not statistically significant. We observe a somewhat similar pattern for Indian workers. Regarding effort, we see that US workers – who exert low effort on average – are also more likely to reduce effort when matched with an Indian employer. Although significant across all contracts, the difference is most significant for high fixed wage contracts. This possibly suggests a lower intrinsic motivation when matched with a foreign employer. We see no such effect among Indian workers. But they seem to work more in both malus contracts when matched with an Indian employer – but less in the two bonus contracts. These differences, however, are in general not statistically significant, possibly due to insufficient power (i.e., around 100 observations per cell).

To close this Section, we test whether efficiency varies systematically across the two countries depending on treatment or job offer. In Table 14 we present the results from an ordered probit regression of the efficiency level on treatment (top panel) and on job offer (bottom panel). For the purpose of this Table, efficiency takes value 0 for no contract, 1 for low effort, and 2 for high effort. Standard errors are clustered at the session level. We see that, in general, efficiency levels are not significantly different whether the employer is from the US or India – although the Indian employer dummy is significant at the 10% level in the High and Bonus treatments. In contrast, we see that efficiency is much higher when the worker is Indian rather than American. This is due to the fact that US workers are more likely to reject a contract and, when accepting, they are less likely to exert high effort (see Table 12). This is especially true of workers who are offered a fixed wage or a discretionary malus contract.

In terms of payoff, however, subjects from the two countries fare nearly equally. On average across all treatments, US and Indian workers earn about the same while US employers receive a slightly higher average payoff (significant at the 10% level). Indian workers do significantly worse than US workers in fixed wage treatments, but they fare better in all incentive treatments. This, however, is due mainly to the different mix of offers that workers receive and accept: conditional on the job offer made, US and Indian workers fare equally in all contracts except the pure bonus contract where Indian workers fare slightly better on average since they are more likely to choose high effort. In terms of employer payoffs, US and Indian employers tend to have similar average payoffs, except in the two bonus treatments where US employers fare significantly better.

5 Types

Having described in detail the results from the experiment, we now investigate the extent to which the subjects' behavior can be rationalized as following at least one of the three behavioral strategies discussed in Section 2 and presented in Tables 2, 3 and 4, namely: self-interested Nash play (extended to avoid weakly dominated strategies); unconditional cooperation; and conditional cooperation. We also identify behavior that cannot be rationalized by any of our three strategies – which we dub 'non-rationalized play' for short. In practice we create, for each subject in each game, four dummies for each of the above categories. Depending on the treatment or offer made by the employer, the same action can fall in several categories. For workers, play is uninformative when the employer makes no offer, in which case all four dummies are set to missing. We then average these dummies across games for each subject.

Results are shown in Table 15. We see, for instance, that on average 51% of the actions made by a US subject are consistent with self-interested play. Similarly, 58% of the actions taken by an Indian subject are consistent with unconditional cooperation. Country differences in self-interested play and unconditional cooperation are significant at the 1% level, with US subjects following self-interested equilibrium strategies more often and Indian subjects following unconditional cooperation more often than US subjects. We also find that non-rationalized play is relatively uncommon in the experiment, but more common among US subjects. Similar results obtain if we control for age, gender, education and employment status.

In Table 16 we break down the analysis between employer and worker roles. Results confirm that Indian subjects are less likely to follow a pure self-interest strategy both as employer and worker. They are also much more likely to follow an unconditional cooperation strategy as workers. We find that Indian subjects are less likely to act as conditional cooperators when acting as employer, but not so when acting as worker. Finally, a smaller proportion of actions by Indian workers cannot be rationalized by one of the three types considered here, mostly because Indian subjects are less likely to reject an offer.

These findings confirm that subjects from the two countries play in a systematically different way, although this does not seem to affect their average payoffs which, as shown Tables 15 and 16, are not statistically different across the two countries. This does not imply, however, that strategies have no effect on payoffs. As we show in Table 17, self-interested play is associated with significantly higher payoffs for employers as well as workers. Unconditional cooperation is associated with higher payoffs for employers but lower payoffs for workers. Reassuringly, non-rationalized play is associated with a large fall in payoff for both employers and workers. This implies that differences in strategies across US and Indian subjects do potentially have strong effects on payoffs, but these effects happen to cancel out in our specific experiment.

6 Predicting behavior

Since it is easy to field online surveys internationally but cumbersome to run interactive online experiments across countries, we would like to know whether it is possible to predict experimental behavior using unincentivized survey questions such as demographics (age, age squared, gender, and education dummies) and answers to the Likert-style attitudinal questions reported in Table A2. We are interested in two types of question: first, can we use our survey answers to predict player type out of sample; second, can individual characteristics captured by survey questions account for differences in player type that are observed between the two study populations in the experiment.

To investigate our ability to predict the four player types discussed in the paper, we estimate a random forest machine-learning algorithms on half of our combined data and test its predictive performance on the other half – and vice versa. For comparison purposes, we do the same using OLS. In the first column of Table 18 we show the p-value of the F-test and the R^2 statistic for the out-of-sample predictions for one particular random split of the data. In-sample estimates, of course, suffer from overfitting – which tends to be particularly strong when using random forest. For this reason, we do not expect out-of-sample predictions to fit better than in sample. We therefore report the in-sample fit of both random forest and OLS, as an informal upper bound on what we can hope to achieve out of sample.

The results show that, in general, we are not able to predict behavioral very precisely out of sample: we obtain a significant prediction p-value for each of the four types, but quite a low R^2. While random forest often does better out-of-sample than OLS, the gain in prediction accuracy remains limited – certainly compared to the gigantic improvement that random forest achieves in-sample compared to OLS. Furthermore, replicating the procedure yields results that vary from sample split to sample split, further weakening our confidence that we can accurately predict the type of individual players based on the data we collected. From this we conclude that the survey questions were not able to capture many correlates of behavioral heterogeneity across subjects.

Table A2 also showed that the two subject populations differ in several of the dimensions of heterogeneity that we did capture in the survey. Could these differences account for the behavioral differences between the two subject populations that were observed in the experiment? To investigate this question, we proceed in a similar fashion as before – except that we try to predict differences not in individual behavior but in *average* behavioral between India and US subjects. Put differently, the question we are asking is: suppose we modify the composition of the US sample to match the subject mix in the India sample; will we observe the same behavior as the India sample. If we do, this means that behavioral differences between the two country samples can be attributed to differences in sample composition. If we do not, this means that there exist a systematic difference in behavior between the countries that cannot be accounted for by the survey data. We cannot say for sure what causes this difference in average behavior,

but cultural differences is one possibility that we cannot rule out a priori.

To investigate this question, we repeat the sample splitting exercise, this time using the data from one country to predict the proportion of subjects of different types in the other country. In other words, we train prediction models on the US data to predict the India data, and vice versa. We then tests whether the predicted difference in average behavior between India and the US is statistically significant and has the same sign as the difference observed in the data itself.

For this approach to be convincing, we need to take care of two issues. First, if survey characteristics are unable to predict behavioral differences between countries when we pool data from the two samples, then we should not be surprised if they do not predict them when we allow regression coefficients to vary across the two countries. To take care of this concern, we test that the behavior predicted by the pooled regressions is significantly different between the two country samples. Second, tests based on regression predictions are affected by prediction error and overfitting bias, whether in sample or out of sample. To correct for this, we use randomization inference to simulate the distribution of each test under the null that regressors are independent of the dependent variable and thus have no true predictive power. This is achieved by constructing counterfactual samples in which the dependent variable y_i is permuted across observations so that, say, the permuted $\widetilde{y}_i$ for observation i happens to be y_j with $j \neq i$, while the vector of regressors X_i remains unchanged. Random permutation ensures that, in expectation, $E[X_i\widetilde{y}_i] = 0$ across all replications. For each permuted sample we calculate the various test statistics that we are interested in. We then compare the actual t-test statistic to the histogram of simulated t-statistics under the null to obtain their two-way equivalent p-value.

Results are shown in Table 19. We first note that, as anticipated, average predictions from the pooled model differ significantly across countries except, as in Table 17, for the proportion of conditional cooperators, which is not significantly different across countries. This is hardly surprising given that both survey characteristics X_i and three of the four types y_i do differ across the two samples, enabling the pooled regressions to improve their fit by embedding this correlation in the estimated coefficients. We also observe that the simulated variance of t-test statistics of equality of predictions under the null is much wider than the variance of the t-test applied to the original sample (i.e., higher t-statistics but less significance). This is particularly noticeable for predictions obtained from the random forest model, where extreme overfitting magnifies prediction error. This confirms that prediction error must be taken into account when performing this type of test.

We do, nonetheless, find that, for each of the four behavioral types and for both of the prediction models, predictions based on pooled data differ significantly across countries. This means that, if a particular X_i vector predicts similar behavior in both sampled populations, we should find that predictions based on separate country samples also differ significantly across countries. This is not what we find: for each of the four behavioral types and both predicting

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models, we consistently find no evidence that out-of-sample predictions are capable of reproducing country differences: not only do all estimated t-test statistics have a p-value well above conventional significance levels, they also have the opposite sign in all cases. This means that, at this point, without experimental data from a country, it is not possible to train the model to predict the proportion of types in that population.

These results confirm that the vector of survey characteristics X_i is unable to account for the cross-country differences in our study. It is conceivable that data on other individual characteristics would be able to predict the observed cross-country differences. But at this point in time we do not know what these are. In the meantime, we cannot rule out the possibility that differences in experimental behavior capture cultural differences such as those discussed in Heinrich et al. (2001, 2006, 2010), Guiso et al. (2006), Falk et al. (2018), and Schulz et al. (2018a, 2018b).

7 Conclusion

In this paper we reported the results from an online experiment framed as a one-shot employment contract between an employer and a worker. Subjects assigned the role of employer make an employment offer they select among a restricted set of contracts. Workers choose whether to accept the contract and, if they do, what 'effort' choice to make to determine payoffs. High effort is always efficient. Participants are recruited among individuals registered on Amazon Turk in the US and India.

We find that self-interested Nash play predicts a significant fraction of observed choices and it is associated with higher payoffs for employers. But many observed choices are more easily explained as manifestations of conditional or unconditional cooperation. While there are broad similarities across the two subject populations, we nonetheless find systematic differences: Indian subjects are more likely to play unconditional cooperation than US subjects, resulting in higher effort levels chosen by Indian subject assigned the role of workers. In contrast, US subjects are more likely to follow the self-interested equilibrium strategies typically assumed in game theory. Indian subjects are also more likely to act as conditional cooperators when acting as employer.

We therefore conclude that subjects from the two countries make systematically different choices that can be rationalized as responding differently to material incentives: US subjects assigned the role of workers are more likely to provide high effort when incentivized by bonus or malus contract clauses; Indian subjects are more likely to provide high effort irrespective of compensation. As employers, US subjects are more likely to renege on promised incentives while Indian subjects are more likely to reciprocate high effort with high pay. They also less likely to offer fixed high wage contracts where they expect workers to shirk. As a result, efficiency in production varies significantly across the two populations depending on the institutional framework, that is, the choice of employment contracts available to employers: Indian subjects

assigned the role of worker are more likely to choose high effort across the board, but especially so in fixed wage contracts; US workers, in contrast, are more likely to reject offers and more likely to choose low effort conditional on accepting. Efficiency differences are less stark on average between US and Indian subjects assigned the role of employer. But this partly due to the presence of cross-cutting the worker populations. If we restrict attention to US employers matched to US workers, and vice versa, we find much higher frequency of high effort outcomes among India subjects: 55% compared with 42%, a difference that is highly significant statistically. While Indian subjects are more efficient than US subjects in 5 of the 6 treatments, a large part of the difference is due to much higher effort by Indian workers in the two fixed wage treatments.

Since it is easy to field online surveys internationally but cumbersome to run interactive online experiments across countries, we investigated whether we can predict behavioral types from the experiment using survey questions. The answer is that, within a given subject population, we can use individual characteristics to predict average behavior with some success. We were unable to do so across countries, however. Put differently, there appear to be systematic behavioral differences between our two study countries that cannot be predicted by someone familiar with only one of them. Why this is the case is unclear at this point – e.g., it could reflect cultural differences between the two populations (e.g., Enke 2019) or be driven by unobserved material characteristics – e.g., differences in income not captured by education dummies. These findings do, however, imply that cross-cultural labor exchange may lead to mistaken expectations and miscalculation regarding the effectiveness of various material incentives. It would therefore be useful to collect more experimental evidence on behavioral variation in the response to labor incentives across populations.

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Table 6. Contracts offered by employers, broken down by treatment

Contract offered:	High wage	Low wage	Bonus	Malus	Bonus WD	Malus WD	All
				Treatment name:			
High fixed wage	76.4%			41.7%		36.8%	26.6%
Low fixed wage		84.4%	28.1%		29.7%		22.8%
Bonus for high effort			66.7%				11.3%
Malus for low effort				50.7%			9.2%
Bonus w/ discretion					66.4%		10.5%
Malus w/ discretion						55.7%	9.0%
No contract	23.6%	15.6%	5.2%	7.6%	3.9%	7.5%	10.6%
Number of observations	526	482	519	554	485	494	3060

Note: All percentages calculated from the experimental data.

Table 7. Worker rate of contract acceptance

Contract offered:	High wage	Low wage	Bonus	Malus	Bonus WD	Malus WD
			Treatment name:			
High fixed wage	91.3%			89.2%		90.1%
Low fixed wage		68.1%	78.1%		71.5%	
Bonus for high effort			83.2%			
Malus for low effort				82.2%		
Bonus w/ discretion					74.5%	
Malus w/ discretion						74.9%
Number of observations	402	407	492	512	466	457

Note: All percentages calculated from the experimental data.

Table 8. Worker rate of high effort, conditional on contract offered and treatment

			Treatment name:			
Contract offered:	High wage	Low wage	Bonus	Malus	Bonus WD	Malus WD
High fixed wage	50.4%			52.9%		52.4%
Low fixed wage		47.7%	48.2%		50.5%	
Bonus for high effort			67.0%			
Malus for low effort				76.2%		
Bonus w/ discretion					65.0%	
Malus w/ discretion						52.4%
Number of observations	367	277	402	437	343	370

Note: All percentages calculated from the experimental data.

Table 9. Discretion exercised by employers in Bonus and Malus contracts

Bonus contract with discretion

Worker choice:	Follows contract:		Renege on contract:		N
High effort	Pays high wage	78.8%	Pays low wage	21.2%	156
Low effort	Pays low wage	61.9%	Pays high wage	38.1%	84

Malus contract with discretion

Worker choice:	Follows contract:		Renege on contract:		N
High effort	Pays high wage	68.5%	Pays low wage	31.5%	108
Low effort	Pays low wage	70.4%	Pays high wage	29.6%	98

Note: Percentages calculated from the experimental data.

Table 10. Efficiency by treatment

Effciency level:	High wage	Low wage	Bonus	Malus	BonusWD	MalusWD	All
			Treatment name:				
High effort	35.2%	27.4%	47.8%	51.4%	42.9%	39.3%	40.9%
Low effort	34.6%	30.1%	29.7%	27.4%	27.8%	35.6%	30.8%
No trade	30.2%	42.5%	22.5%	21.1%	29.3%	25.1%	28.2%
Nber of observations	526	482	519	554	485	494	3060

Note: Percentages calculated from the experimental data.

Table 11. Efficiency by contract type

Effciency level:	High wage	Low wage	Bonus contract	Malus contract	Bonus with discretion	Malus with discretion	All contracts
			Contract offered:				
High effort	46.6%	34.3%	55.8%	62.6%	48.4%	39.3%	45.8%
Low effort	43.8%	36.6%	27.5%	19.6%	26.1%	35.6%	34.5%
No trade	9.6%	29.1%	16.8%	17.8%	25.5%	25.1%	19.7%
Nber of observations	815	697	346	281	322	275	2736

Note: Percentages calculated from the experimental data.

Table 12. Regressing behavior on a US dummy

A positive value means a larger value of the dependent variable for US subjects

Dependent variable is:					Treatment name:								
Employer offer:	**High wage**		**Low wage**		**Bonus**		**Malus**		**Bonus WD**		**Malus WD**		**All**	
Make no offer	9.7%	***	-0.2%		0.5%		2.7%		-2.0%		3.2%		2.5%	**
Incentivize	na		na		13.7%	***	14.0%	**	15.1%	***	5.8%		12.2%	***
Workers														
Accept offer	4.5%	**	-12.5%	***	-5.1%		-4.7%		-6.9%		-9.2%	*	-4.7%	**
High effort	-25.5%	***	-33.5%	***	-13.9%	**	13.1%	**	6.9%		-19.4%	**	-17.1%	***
Employer discretion:														
Renege: underpay									21.2%	*	-19.7%	**	-3.2%	
Renege: overpay	na		na		na		na		-32.7%	***	-23.2%	**	-27.4%	***

Note: Each cell shows the coefficient of the US subject dummy when regressed on the dependent variable listed in the first column. Each number comes from a different regression corresponding to a different treatment, except for the last column which includes all treatments. In the 'employer offer' and 'employer discretion' panels, the US dummy=1 if the employer is from the US sample. In the 'workers' panel, the US dummy=1 if the worker is from the US sample. Only relevant observations are included: the 'Incentivize' regressions only include observations in which an offer is made; the 'Accept offer' regressions only include observations where an offer is made; the 'High effort' regressions only include observations when an offer is accepted; the 'Renege: underpay' regression only includes observations in which the worker provided high effort; and the 'Renege: overpay' only includes observations in which the worker provided low effort. * significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level.

Table 13a. Regressing employer behavior on a home country dummy

A positive number means the employer is more likely to do the behavior when matched with a worker from their own country

				Treatment name:					
US employer:	**High wage**	**Low wage**	**Bonus**	**Malus**		**Bonus WD**	**Malus WD**	**All**	
Makes no offer	-3.6%	1.8%	2.6%	7.2%	**	-0.9%	-6.0%	0.2%	
Incentivize			5.9%	2.5%		6.3%	0.7%	4.2%	
Renege: underpay						-4.9%	-2.4%	-3.7%	
Renege: overpay						1.2%	-5.1%	-2.3%	
Indian employer:									
Makes no offer	-2.7%	-0.7%	2.5%	0.5%		0.0%	-0.3%	0.0%	
Incentivize			-6.3%	1.6%		-16.8% **	-13.0% **	-8.4%	**
Renege: underpay						-9.1%	8.8%	5.6%	
Renege: overpay						8.2%	3.5%	9.3%	

Note: The home country dummy equals 1 when the country of the employer matches the country of the worker. Each cell shows the coefficient of the home country dummy when regressed on the dependent variable listed in the first column. Each number comes from a different regression corresponding to a different treatment, except for the last column which includes all treatments. Only relevant observations are included: the 'Incentivize' regressions only include observations in which an offer is made; the 'Renege: underpay' regression only includes observations in which the worker provided high effort; and the 'Renege: overpay' only includes observations in which the worker provided low effort. * significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level.

Table 13b. Regressing worker behavior on a home country dummy

A positive number means the worker is more likely to do the behavior when matched with an employer from their own country

				Treatment name:						
US worker:	**High wage**		**Low wage**	**Bonus**	**Malus**	**Bonus WD**	**Malus WD**	**All**	
Accept offer	1.2%		-8.0%	0.5%	6.1%	8.5%	9.7%	0.6%	
High effort	11.2%	**	-2.6%	12.2%	0.4%	0.9%	4.5%	8.9%	***
Indian worker:									
Accept offer	4.9%		-3.1%	1.7%	8.1%	4.7%	6.6%	2.5%	
High effort	0.7%		-8.4%	-4.1%	13.1%	-10.0%	19.6%	*	-1.1%

Note: The home country dummy equals 1 when the country of the worker matches the country of the employer Each cell shows the coefficient of the home country dummy when regressed on the dependent variable listed in the first column. Each number comes from a different regression corresponding to a different treatment, except for the last column which includes all treatments. Only relevant observations are included: the 'Accept offer' regressions only include observations where an offer is made; and the 'High effort' regressions only include observations when an offer is accepted. * significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level.

Table 14. Efficiency level across the two country samples

	Treatment name:												
	High wage		Low wage		Bonus		Malus		Bonus WD		Malus WD		All	
Indian employer	0.164	*	0.074		-0.198	*	-0.041		-0.131		0.156		0.008	
Indian worker	0.066		0.504	***	0.350	***	0.242	**	0.198	*	0.306	***	0.269	***
Number of observations	526		482		519		554		485		494		3060	

	Contract offered:												
	High wage		Low wage		Bonus contract		Malus contract		Bonus WD		Malus WD		Total	
Indian employer	-0.555		0.006		-0.106		0.092		-0.130		0.017		-0.044	
Indian worker	0.299	***	0.611	***	0.325	**	-0.064		0.077		0.423	***	0.325	***
Number of observations	815		697		346		281		322		275		2736	

Note: The Table reports coefficient estimates of regressions of the efficiency level on Indian employer and worker dummies. The efficiency level is 0 in case of no contract; 1 if a contract is accepted and low effort is provided; and 2 if a contract is accepted and high effort is provided. The top panel splits the observations by treatment; the bottom panel splits the observations by contract offered. The reported coefficients and significance levels in the top panel come from an ordered probit regression with standard errors clustered at the session level. The reported coefficients and significance levels in the bottom panel come from a probit regression with standard errors clustered at the session level. * significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level.

Table 15. Payoffs and proportion of inferred types by country.

	US	India	t-test
Average payoff	20.94	20.63	
Proportion of inferred types:			
Self-interested player	51.2%	41.0%	***
Intrinsically motivated	48.5%	57.9%	***
Conditional cooperator	62.3%	59.9%	
Non-rationalized play	17.5%	13.8%	***

Note: The Table reports sample averages for each country. The average payoff is reported in points. Types are inferred from the behavior of subjects across multiple rounds and treatments. A subject is classified as a particular type if their action does not violate theoretical predictions for that type -- see text for details. etc, behavior may be consistent with more than one type. Depending on treatments The last column reports the significance of a t-test of equality of means between the two countries. * significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level.

Table 16. Payoffs and proportion of inferred types by country

Employer:	Dummy=India		N
Payoff	-0.74		3060
Self-interested player	-8.5%	***	3060
Intrinsically motivated	2.6%		3060
Conditional cooperator	-8.3%	***	3060
Non-rationalized play	-0.7%		3060
Worker:			
Payoff	0.01		3060
Self-interested player	-13.2%	***	2736
Intrinsically motivated	16.4%	***	2736
Conditional cooperator	2.6%		2736
Non-rationalized play	-6.6%	***	2736

Note: Each row is a separate OLS regression of the dependent variable on the left on an India dummy and a set of treatment dummies as controls. Standard errors are clustered at the individual level. * significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level.

Table 17. Variation in payoff by inferred type

	Employer payoff	SE		Worker payoff	SE	
Dummy = India	-0.659	0.465		-0.077	0.091	
Self-interested player	1.934	0.758	**	0.520	0.076	***
Intrinsically motivated	1.743	0.454	***	-1.069	0.185	***
Conditional cooperator	0.135	0.732		-0.221	0.112	**
Non-rationalized play	-7.314	0.607	***	-5.238	0.183	***
Treatment dummies	Yes			Yes		
Number of observations	3060			2736		

Note: Each column is a separate OLS regression. Standard errors are clustered at the individual level. * significant at the 10% level, ** significant at the 5% level, *** significant at the 1% level.

Table 18. Out-of-sample predictions compared to in-sample predictions

| | Out of sample fit (for one random split) | | | | In sample fit | | | |
| | Random forest | | OLS | | Random forest | | OLS | |
Predicted variable:	F-test p-value	R2	F-test p-value	R2	F-test p-value	R2	F-test p-value	R2
Self-interested player	0.0000	0.0300	0.0000	0.0222	0.0000	0.9463	0.0000	0.0792
Intrinsically motivated	0.0000	0.0331	0.0000	0.0251	0.0000	0.9431	0.0000	0.0737
Conditional cooperator	0.0105	0.0067	0.0100	0.0068	0.0000	0.9498	0.0018	0.0482
Non-rationalized play	0.0002	0.0131	0.0310	0.0047	0.0000	0.9351	0.0083	0.0429

Method: The 2-fold procedure for out-of-sample prediction is implemented as follows: (1) randomly divide the full sample into 2 equal halves; one of which is the training sample and the other the testing sample; (2) fit the desired model (i.e., random forest or OLS) to the training sample; (3) obtain out-of-sample predictions on the testing sample for this fitted model; (4) repeat the procedure using instead the testing half to fit the model and predicting out-of-sample on the training sample; (5) combine out-of-sample predictions from the two fitted models to have predictions on the whole sample; (6) regress actual values of the dependent variable on the combined predictions to judge out-of-sample fit (i.e., F-test and R2) for this particular division of the original sample. Implementation: The dependent variables are the same as in Tables 15, 16 and 17, aggregated by subject. The total number of observations 980. Regressors include: age, age squared, male dummy, 4 education level dummies, 4 employment status dummies, answers to 6 incentive questions and answers to attitudes toward worker punishment (see Table A2). All variables except the male dummy are standardized to have mean 0 and unit variance. The number of observations in the full sample is 980.

Table 19. Predicting behavorial differences across countries

Predicted variable:	Actual data		Country difference in in-sample predictions						Country difference in cross-predictions					
Prediction method:			OLS			Random forest			OLS			Random forest		
	t-stat	p-value	R2	t-stat	p-value	R2	t-stat	p-value	R2	t-stat	p-value	R2	t-stat	p-value
Self-interested player	6.407	0.000	0.079	8.421	0.000	0.946	14.687	0.000	0.004	-5.699	0.424	0.009	-6.288	0.504
Intrinsically motivated	-5.413	0.000	0.074	-7.136	0.000	0.946	-11.487	0.012	0.000	9.573	0.186	0.001	13.283	0.140
Conditional cooperator	1.494	0.144	0.048	1.935	0.110	0.952	0.232	0.950	0.002	-1.275	0.856	0.008	-12.806	0.174
Non-rationalized play	3.042	0.004	0.043	4.136	0.000	0.936	11.205	0.012	0.000	-5.578	0.442	0.002	-1.101	0.914

Method: The t-statistic reported in the Actual Data columns is obtained from a simple t-test applied to the individual data from both countries. The procedure for obtaining in-sample predictions is as usual, i.e., OLS or random forest is fitted to the data. The procedure for obtaining out-of-sample predictions is as follows: (1) divide the full sample into the US and India samples; (2) fit the desired model (i.e., OLS or random forest) to the sample from one country; (3) obtain out-of-sample predictions from the fitted model for the other country; (4) combine out-of-sample predictions from the two fitted models to have predictions on the whole sample; (5) regress actual values of the dependent variable on the combined predictions to judge out-of-sample fit (i.e., R2). p-values for all t-tests are calculated using randomization inference as follows: (1) permute values of the dependent variable y_i across observations while keeping the vector of regressors X_i unchanged; (2) obtain counterfactual predictions as described above; (3) obtain t-test statistics as described above; (4) repeat the process 500 times to simulate the distribution of the t-statistics under the null; (5) calculate each p-value as the proportion of replications with a t-statistic larger in absolute value than the estimated t-statistics. Implementation: The dependent variables are the same as in Tables 15, 16 and 17, but aggregated by subject. The total number of observations 980. Regressors include: age, age squared, male dummy, 4 education level dummies, 4 employment status dummies, answers to 6 incentive questions and answers to attitudes toward worker punishment (see Table A2). All variables except the male dummy are standardized to have mean 0 and unit variance.

Appendix Tables

Table A1. Balance

Data from baseline questionnaire	US	India	t-test
Age	37.9	31.1	***
Male	58.1%	73.5%	
Education:			**
Some primary	1.5%	1.1%	
Completed primary	6.1%	6.3%	
Some secondary	17.3%	7.7%	
Completed secondary	42.8%	35.8%	
Post-secondary	32.4%	48.8%	
Employment status:			**
In permanent wage employment	3.5%	11.9%	
In short-term wage employment	68.8%	47.5%	
Self-employed without paid employees	1.3%	21.4%	
Self-employed with paid employees	17.7%	16.1%	
Unemployed/not working	8.8%	3.1%	
During the online experiment			
Role of employer	46.8%	46.0%	
Matched with subject from own country	48.4%	45.0%	

Note: Sample averages of answers to survey questions for the two countries and results from a t-test of equality of means. The total number of observations is 990.

Table A2. Answers to attitudinal survey questions

	Subjects from:		
	US	India	t-test
Is it acceptable to:			
Fire an incompetent worker	8.34	6.53	***
Reduce the wage of an incompetent worker	6.43	6.64	
Pay no bonus to an incompetent worker	8.33	7.12	***
Fire a shirking worker	8.25	6.29	***
Reduce the wage of a shirking worker	6.68	6.49	
Pay no bonus to a shirking worker	8.51	6.87	***
Number of observations	992		
Can workers be trusted?			
Incentivized US worker	7.59	7.36	**
Unincentivized US worker	5.05	5.77	***
Incentivized Indian worker	7.57	7.85	**
Unincentivized Indian worker	5.27	5.92	***
Incentivized South African worker	7.24	7.11	
Unincentivized South African worker	5.32	5.50	
Number of observations	990		

Note: Each variable is the answer to an attitudinal question posed in the baseline survey that all subjects take before the online experiment begins. Each question is based on a Likert scale from 0 to 10 with 0 = Fully unacceptable to 10 = Fully acceptable (first panel) or from 0= Fully disagree to 10= Fully agree (second panel). See Online Appendix for full questionnaire.

Table A3. Contracts offered by employers, broken down by treatment and country

Panel A: US sample

Contract offered:	High wage	Low wage	Bonus	Malus	BonusWD	MalusWD	All
High fixed wage	72.1%			35.5%		33.6%	24.3%
Low fixed wage		84.5%	22.0%		23.4%		20.9%
Bonus for high effort			72.6%				12.1%
Malus for low effort				55.8%			10.4%
Bonus w/ discretion					73.6%		11.7%
Malus w/ discretion						57.3%	8.7%
No contract	27.9%	15.5%	5.4%	8.7%	3.0%	9.1%	11.7%
Number of observations	290	265	277	310	265	253	1660

Panel B: India sample

Contract offered:	High wage	Low wage	Bonus	Malus	BonusWD	MalusWD	All
High fixed wage	81.8%			49.6%		40.2%	29.4%
Low fixed wage		84.3%	35.1%		37.3%		25.0%
Bonus for high effort			59.9%				10.4%
Malus for low effort				44.3%			7.7%
Bonus w/ discretion					57.7%		9.1%
Malus w/ discretion						53.9%	9.3%
No contract	18.2%	15.7%	5.0%	6.1%	5.0%	5.8%	9.2%
Number of observations	236	217	242	244	220	241	1400

Note: All percentages calculated from the experimental data.

Table A4. Worker rate of contract acceptance, by country

Panel A: US sample			Treatment name:			
Contract offered:	**High wage**	**Low wage**	**Bonus**	**Malus**	**BonusWD**	**MalusWD**
High fixed wage	93.7%			90.2%		92.6%
Low fixed wage		62.8%	72.2%		63.2%	
Bonus for high effort			81.0%			
Malus for low effort				80.0%		
Bonus w/ discretion					71.8%	
Malus w/ discretion						71.2%
Number of observations	223	218	267	273	263	258

Panel B: India sample			Treatment name:			
Contract offered:	**High wage**	**Low wage**	**Bonus**	**Malus**	**BonusWD**	**MalusWD**
High fixed wage	88.3%			88.0%		87.4%
Low fixed wage		74.1%	83.8%		78.9%	
Bonus for high effort			86.1%			
Malus for low effort				84.7%		
Bonus w/ discretion					78.7%	
Malus w/ discretion						80.4%
Number of observations	179	189	225	239	203	199

Note: All percentages calculated from the experimental data.

Table A5. Worker rate of high effort, conditional on contract offered and treatment -- by country

Panel A: US sample

Contract offered:	High wage	Low wage	Bonus	Malus	BonusWD	MalusWD
High fixed wage	43.1%			36.0%		38.6%
Low fixed wage		28.5%	32.7%		34.9%	
Bonus for high effort			60.8%			
Malus for low effort				82.5%		
Bonus w/ discretion					67.9%	
Malus w/ discretion						44.0%
Number of observations	209	137	210	231	183	204

Panel B: India sample

Contract offered:	High wage	Low wage	Bonus	Malus	BonusWD	MalusWD
High fixed wage	60.1%			72.6%		68.4%
Low fixed wage		66.4%	61.3%		61.7%	
Bonus for high effort			74.6%			
Malus for low effort				69.4%		
Bonus w/ discretion					61.0%	
Malus w/ discretion						63.3%
Number of observations	158	140	192	206	160	166

Note: All percentages calculated from the experimental data.

Table A6. Discretion exercised by employers in Bonus and Malus contracts, by country

Panel A: US	Bonus contract with discretion				
Worker choice:	**Follows contract:**		**Renege on contract:**		**N**
High effort	Pays high wage	74.7%	Pays low wage	25.3%	99
Low effort	Pays low wage	75.5%	Pays high wage	24.5%	49
	Malus contract with discretion				
Worker choice:	**Follows contract:**		**Renege on contract:**		**N**
High effort	Pays high wage	66.2%	Pays low wage	33.8%	65
Low effort	Pays low wage	71.4%	Pays high wage	28.6%	63
Panel B: India	**Bonus contract with discretion**				
Worker choice:	**Follows contract:**		**Renege on contract:**		**N**
High effort	Pays high wage	86.0%	Pays low wage	14.0%	57
Low effort	Pays low wage	42.9%	Pays high wage	57.1%	35
	Malus contract with discretion				
Worker choice:	**Follows contract:**		**Renege on contract:**		**N**
High effort	Pays high wage	58.5%	Pays low wage	41.5%	53
Low effort	Pays low wage	57.1%	Pays high wage	42.9%	42

Note: Percentages calculated from the experimental data.

Table A7. Efficiency by treatment -- breakdown by population

Panel A: US employers			Treatment name:				
Effciency level:	High wage	Low wage	Bonus	Malus	BonusWD	MalusWD	All
High effort	35.5%	26.8%	52.3%	52.9%	45.3%	36.0%	41.8%
Low effort	28.6%	27.5%	26.7%	25.8%	27.2%	37.2%	28.7%
No trade	35.9%	45.7%	20.9%	21.3%	27.5%	26.9%	29.5%
Nber of observations	290	265	277	310	265	253	1660
Panel B: India employers	High wage	Low wage	Bonus	Malus	BonusWD	MalusWD	All
High effort	34.7%	28.1%	42.6%	49.6%	40.0%	42.7%	39.9%
Low effort	41.9%	33.2%	33.1%	29.5%	28.6%	34.0%	33.4%
No trade	23.3%	38.7%	24.4%	20.9%	31.4%	23.2%	26.7%
Nber of observations	236	217	242	244	220	241	1400
Panel C: US workers	High wage	Low wage	Bonus	Malus	BonusWD	MalusWD	All
High effort	31.0%	15.0%	40.1%	46.2%	40.3%	30.9%	34.3%
Low effort	41.0%	37.7%	34.4%	30.6%	26.7%	43.3%	35.6%
No trade	27.9%	47.3%	25.5%	23.3%	33.0%	25.8%	30.2%
Nber of observations	290	260	282	301	273	275	1681
Panel D: India workers	High wage	Low wage	Bonus	Malus	BonusWD	MalusWD	All
High effort	40.3%	41.9%	57.0%	57.7%	46.2%	49.8%	49.0%
Low effort	26.7%	21.2%	24.1%	23.7%	29.2%	26.0%	25.1%
No trade	33.1%	36.9%	19.0%	18.6%	24.5%	24.2%	25.9%
Nber of observations	236	222	237	253	212	219	1379
Panel E: US employer & worker sample	High wage	Low wage	Bonus	Malus	BonusWD	MalusWD	All
High effort	35.9%	13.6%	43.7%	49.4%	43.8%	32.9%	36.7%
Low effort	32.7%	34.4%	31.1%	27.1%	26.8%	43.6%	32.4%
No trade	31.4%	51.9%	25.2%	23.5%	29.4%	23.6%	30.9%
Nber of observations	156	154	151	166	153	140	920
Panel F: India employer & worker sample	High wage	Low wage	Bonus	Malus	BonusWD	MalusWD	All
High effort	47.1%	38.7%	50.5%	58.7%	45.0%	60.4%	50.1%
Low effort	30.4%	24.3%	27.0%	22.9%	31.0%	22.6%	26.3%
No trade	22.5%	36.9%	22.5%	18.3%	24.0%	17.0%	23.6%
Nber of observations	102	111	111	109	100	106	639

Note: Percentages calculated from the experimental data.
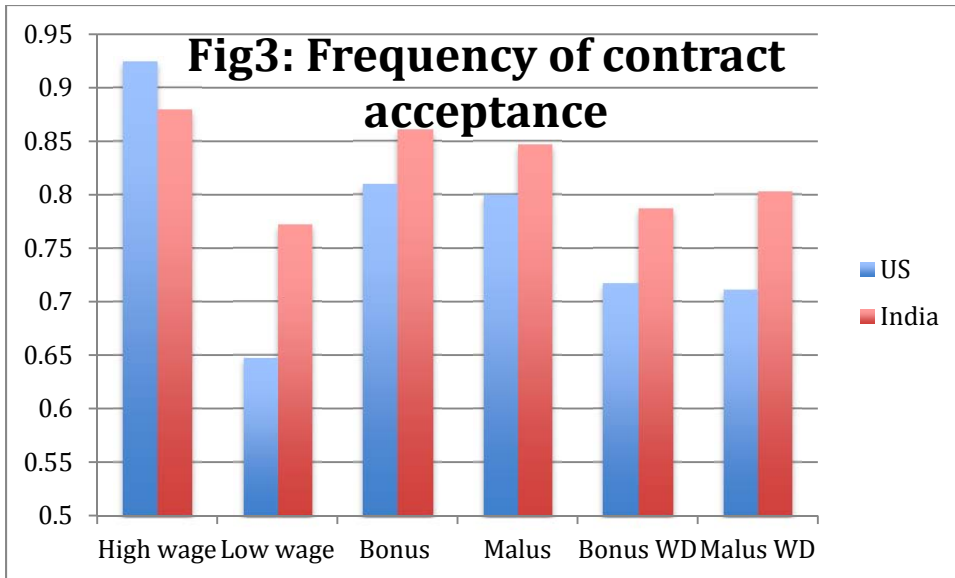
Table A8. Efficiency by contract type, by country

Panel A: US employers	Contract offered:						
Effciency level:	High wage	Low wage	Bonus contract	Malus contract	Bonus with discretion	Malus with discretion	All contracts
High effort	49.0%	34.3%	58.7%	60.7%	50.8%	37.9%	47.4%
Low effort	40.6%	34.9%	24.4%	21.4%	25.1%	38.6%	32.5%
No trade	10.4%	30.8%	16.9%	17.9%	24.1%	23.4%	20.1%
Nber of observations	404	347	201	173	195	145	1465
Panel B: India employers	High wage	Low wage	Bonus contract	Malus contract	Bonus with discretion	Malus with discretion	All contracts
High effort	44.3%	34.3%	51.7%	65.7%	44.9%	40.8%	43.9%
Low effort	47.0%	38.3%	31.7%	16.7%	27.6%	32.3%	36.8%
No trade	8.8%	27.4%	16.6%	17.6%	27.6%	26.9%	19.3%
Nber of observations	411	350	145	108	127	130	1271
Part C: US workers	High wage	Low wage	Bonus contract	Malus contract	Bonus with discretion	Malus with discretion	All contracts
High effort	37.2%	19.8%	49.2%	66.0%	48.7%	31.3%	38.3%
Low effort	55.3%	45.0%	31.8%	14.0%	23.1%	39.9%	39.8%
No trade	7.5%	35.2%	19.0%	20.0%	28.2%	28.8%	21.8%
Nber of observations	441	358	195	150	195	163	1502
Part D: India workers	High wage	Low wage	Bonus contract	Malus contract	Bonus with discretion	Malus with discretion	All contracts
High effort	57.8%	49.6%	64.2%	58.8%	48.0%	50.9%	54.8%
Low effort	30.2%	27.7%	21.9%	26.0%	30.7%	29.5%	28.0%
No trade	12.0%	22.7%	13.9%	15.3%	21.3%	19.6%	17.2%
Nber of observations	374	339	151	131	127	112	1234
Part E: US employers & workers	High wage	Low wage	Bonus contract	Malus contract	Bonus with discretion	Malus with discretion	All contracts
High effort	42.7%	17.9%	53.6%	68.1%	51.3%	34.9%	41.7%
Low effort	50.5%	43.2%	27.7%	14.3%	23.9%	41.0%	36.7%
No trade	6.9%	38.9%	18.8%	17.6%	24.8%	24.1%	21.6%
Nber of observations	218	190	112	91	117	83	811
Part F: India employers & workers	High wage	Low wage	Bonus contract	Malus contract	Bonus with discretion	Malus with discretion	All contracts
High effort	59.0%	45.6%	62.9%	69.4%	44.9%	62.0%	55.2%
Low effort	31.4%	30.2%	24.2%	20.4%	36.7%	22.0%	29.0%
No trade	9.6%	24.2%	12.9%	10.2%	18.4%	16.0%	15.9%
Nber of observations	188	182	62	49	49	50	580

Note: Percentages calculated from the experimental data.

Appendix Figures

Fig1: Frequency of no offer

(US, India)

Fig2: Frequency of incentive contract
conditional on offering

(US, India)
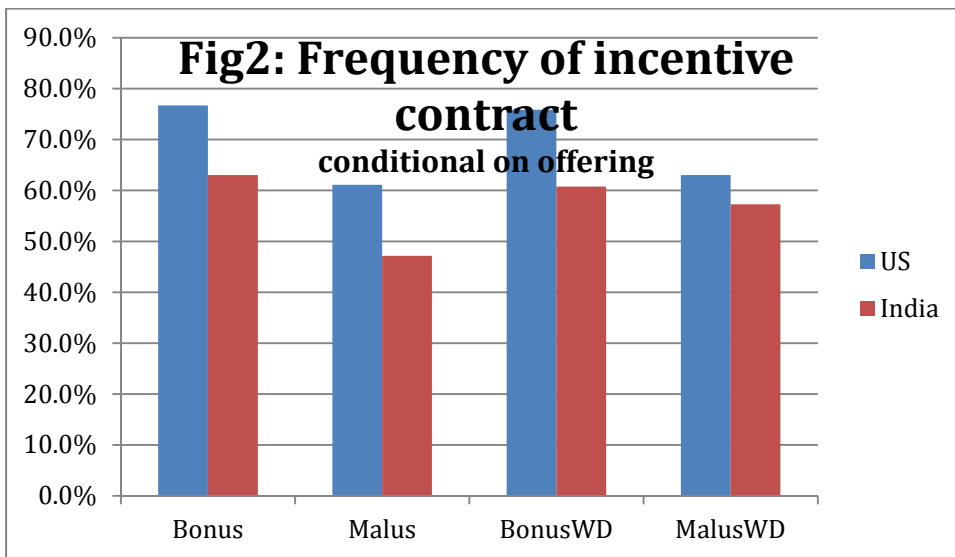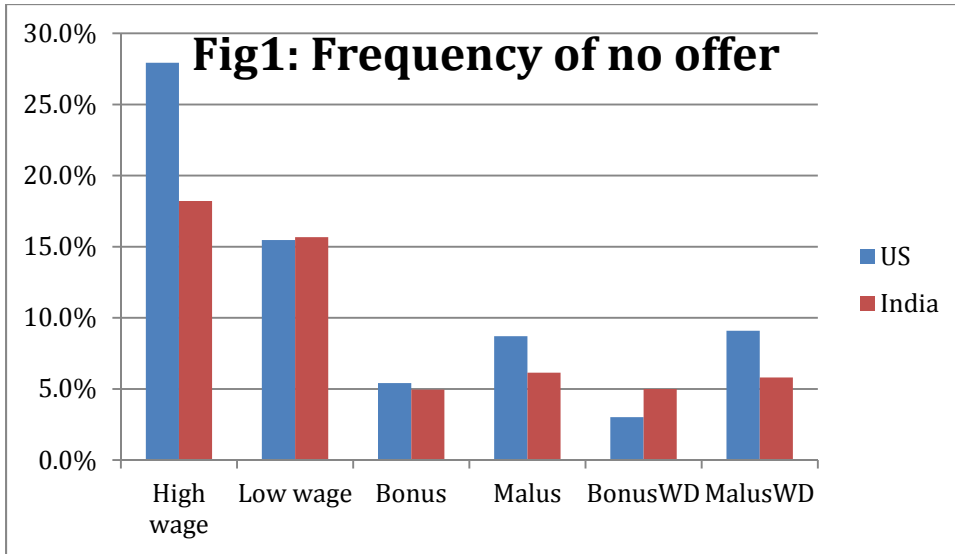
Both Figures are constructed from Table A3.

Fig3: Frequency of contract acceptance

The Figure is constructed from Table A4.

Fig4: Freq. of high effort by contract
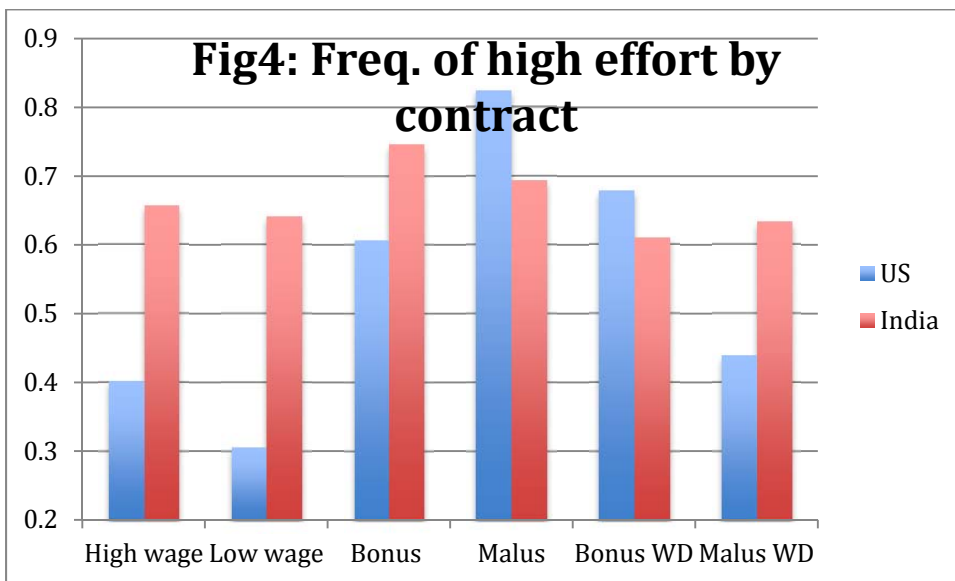
The Figure is constructed from the data in Table A5.
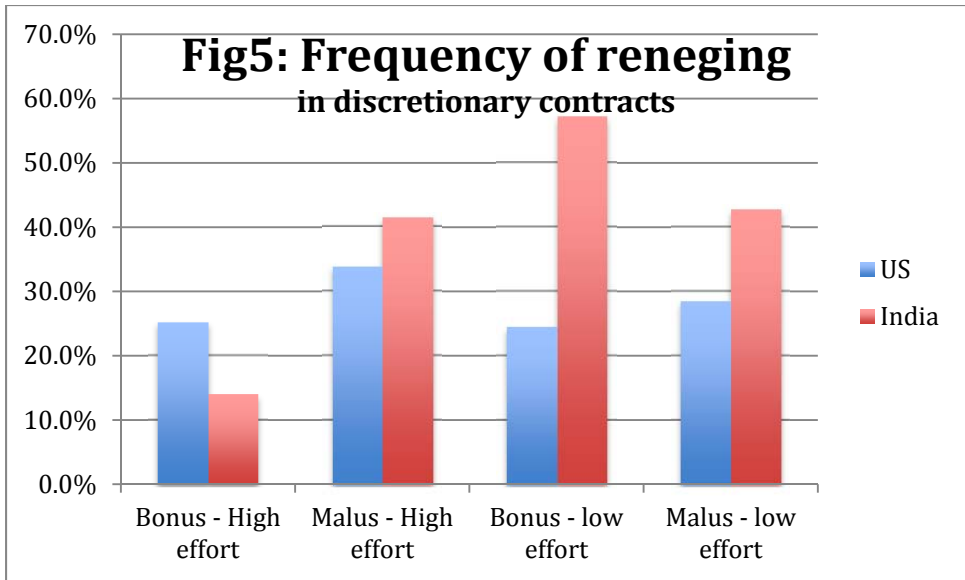
Fig5: Frequency of reneging in discretionary contracts

The Figure is constructed from Table A6.

Fig6: Average efficiency by treatment

The Figure is constructed from Table A5.

Fig7: Average efficiency by contract
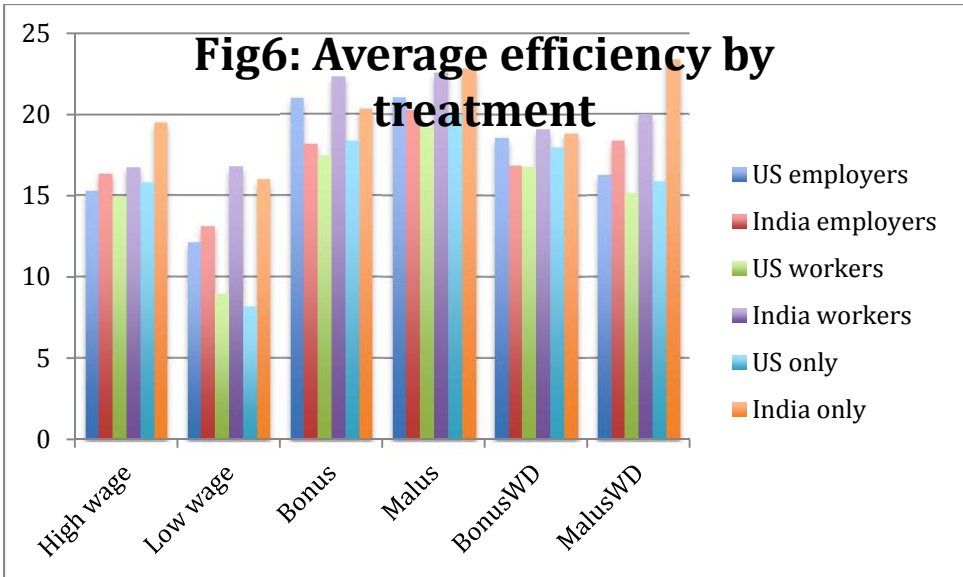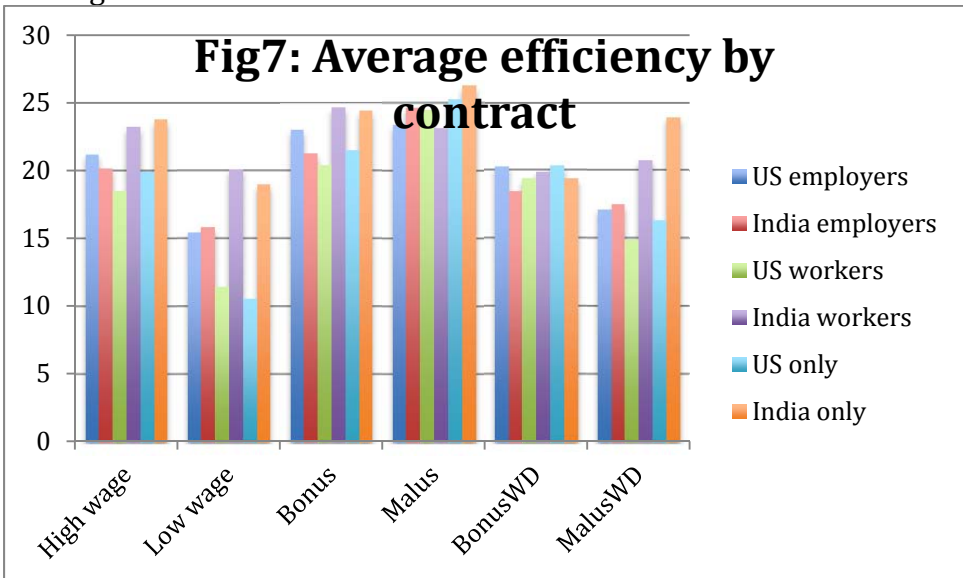
The Figure is constructed using data from Table A8.

Fig8: Proportion of inferred types by country
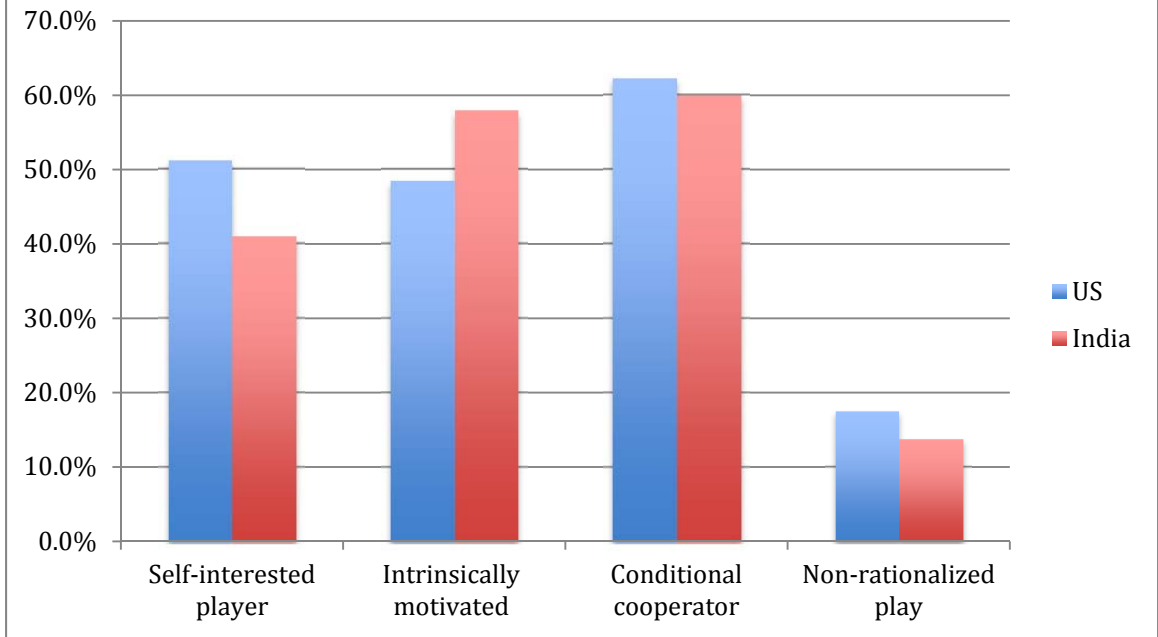
8 Online Appendices

8.1 Informed consent and start-up questionnaire

8.1.1 Welcome

Welcome to this study! Thank you for your interest! This is a study by Stanford University on decision-making. We first ask you a few questions. Later on, qualified participants are invited for an online experiment. In this experiment we present you with a situation and ask you to make choices. In this experiment, your choices and the choices of the other participants will determine how much you earn. This is explained later on.

We ask your consent for both this qualifying survey as well as the online experiment.

A few things you should know:

- This questionnaire takes about 5 minutes. The experiment happens later on as a separate HIT. Separate invitations are sent out for this. The experiment lasts about 20 minutes.

- Your earnings are kept private and are paid through MTurk. By completing this survey you will earn $1. By participating in the experiment, you can earn additional money.

- We will not reveal who you are to other participants.

- We never deceive participants. For example, if we inform you that another participant is making a choice on which you can react, this is indeed the case. We keep our promises made to participants. For example, if we promise a certain payment, participants will indeed receive it.

- The data collected in this session will be used for the research study and might be published, both online or offline. No data that allows people to identify you will ever be published.

- Participation is voluntary and you can withdraw at any time. If anything makes you feel uncomfortable, let us know. Our study has been reviewed and approved by the Stanford University Human Subjects Research and IRB Committee. You can find the details at the bottom of this page.

In case you want to get in touch with us, you can message us through the internal messaging system of MTurk, or through stanfordseedstudy@gmail.com. Click on the Next button to proceed.

8.1.2 Informed consent

The principal researcher in this project is Marcel Fafchamps, Senior Research Fellow at Stanford University. If you agree to participate in this project, the research will be written up as one or more research articles. These articles, as well as other publications resulting from this project, might be published online as well as in print. If you have any questions regarding the research or your participation, you can contact the Protocol Administrator, who will answer your questions. The administrator's phone number is + 1-650-736-1436. Email: jeduarte@stanford.edu. If at

any time you have comments or concerns regarding the conduct of the research, or questions about your rights as a research subject, you should contact the Stanford University Institutional Review Board /IRB. The phone number for the IRB is + 1 650-723-2480. Or, you can write to the Research Compliance Office, Stanford University, 3000 El Camino Real, Five Palo Alto Square, 4th Floor, Palo Alto, CA 94306 or by sending an email to Mr. A. Bailey: afbailey@stanford.edu.

Page Break

Please read the following statement:

'I have read the description of the study and agree to take part in this study. I have had the opportunity to ask questions and have received satisfactory answers to these. I understand that I can withdraw from the study at any time, by indicating this to the researchers. I understand that the project has been reviewed and approved by Stanford University Human Subjects Research and IRB Committee. I understand that the collected data might be used in dissertations and other publications, both on line as well as printed, and that only data that cannot be used to identify me personally will be published. I am aware how to raise a concern and make a complaint.'

Please tick the following box to indicate that you agree with the above statement and to proceed with the survey.

■   I agree (1)

8.1.3   Demographics and employment history

Before starting this study we would like to ask you a couple of questions.

Q6 What is your age in years? _ _ _ _ _ _ _

Q7 What is your gender?

o   Male (1)

o   Female (2)

o   Other (3)

o   Decline to state (4)

Q8 What is the highest level of education you have reached?

o   No education (1)

o   Some Primary (2)

o   Completed Primary (3)

o   Some Secondary (4)

o   Completed Secondary (5)

o   Post-Secondary (6)

If the highest level of education you have reached is Post-Secondary:

Q32 How many years of post-secondary education did you complete? _ _ _ _ _

Q33 What best represents your current employment status?

o   in permanent wage employment (1)

o   in fixed-term/short-term wage employment (2)

o   self-employed without paid employees (3)

o   self-employed with paid employees (4)

o   unemployed/not-working (5)

If your current employment status is not unemployed/not-working:

Q9 What occupational category best describes your employment?

o   Forestry, fishing, hunting or agriculture support (1)

o   Real estate or rental and leasing (2)

o   Mining (3)

o   Professional, scientific or technical services (4)

o   Utilities (5)

o   Management of companies or enterprises (6)

o   Construction (7)

o   Admin, support, waste management or remediation services (8)

o   Manufacturing (9)

o   Educational services (10)

o   Wholesale trade (11)

o   Health care or social assistance (12)

o   Retail trade (13)

o   Arts, entertainment or recreation (14)

o   Transportation or warehousing (15)

o   Accommodation or food services (16)

o   Information (17)

o   Other services (except public administration) (18)

o   Finance or insurance (19)

o   Unclassified establishments (20)

o   Public sector (21)

Q34 For how long have you been working in your current job? (Answer in years) _ _ _ _ _ _ _

If your current employment status is permanent wage employment or fixed-term/short-term wage employment:

Q41 For how long have you been working in wage employment in total (including your current and your past jobs)?

o   Less than 6 months (1)

o   Between 6 months and 1 year (2)

o   Between 1 and 2 years (3)

o   Between 2 and 3 years (4)

o   Between 3 and 5 years (5)

o   Between 5 and 10 years (6)

o   More than 10 years (7)

If your current employment status is self-employed with paid employees

Q35 How many employees does your firm have? _ _ _ _ _ _

If your current employment status is unemployed/not-working

Q36 For how long have you been unemployed?

o   Less than 6 months (1)

o   Between 6 months and 1 year (2)

o   Between 1 and 2 years (3)

o   Between 2 and 3 years (4)

o   Between 3 and 5 years (5)

o   Between 5 and 10 years (6)

o   More than 10 years (7)

If your current employment status is not in permanent wage employment:

Q37 Have you ever been in permanent wage employment in the past?

o   Yes (1)

o   No (2)

If Yes:

Q38 For how long in total have you been in permanent wage employment?

o   Less than 6 months (1)

o   Between 6 months and 1 year (2)

o   Between 1 and 2 years (3)

o   Between 2 and 3 years (4)

o   Between 3 and 5 years (5)

o   Between 5 and 10 years (6)

o   More than 10 years (7)

If your current employment status is self-employed with or without paid employees:

Q39 Have you ever been self-employed in the past?

o   Yes (1)

o   No (2)

If yes:

Q40 For how long have you been self-employed?

o   Less than 6 months (1)

o   Between 6 months and 1 year (2)

o   Between 1 and 2 years (3)

o   Between 2 and 3 years (4)

o   Between 3 and 5 years (5)

o   Between 5 and 10 years (6)

o   More than 10 years (7)

8.1.4   Attitudes

We will present you with 6 situations. Please indicate, on a scale from 0 to 10, whether you think the decision of the employer is fully acceptable (10) or fully unacceptable (0).

Q15 Worker A is hired to perform a task for which he/she claims to be qualified. After a week on the job, it becomes clear that A is unable to perform the task. Worker A is laid off by the employer. On a scale from 0 to 10, where 0 means fully unacceptable and 10 means fully acceptable, is the employer's decision acceptable or unacceptable?   0   1   2   3   4   5   6   7   8   9   10

Q46 Worker A is hired to perform a task for which he/she claims to be qualified. After a week on the job, it becomes clear that A is unable to perform the task. The salary of worker A is reduced by 30% by the employer. On a scale from 0 to 10, where 0 means fully unacceptable and 10 means fully acceptable, is the employer's decision acceptable or unacceptable?   0   1   2   3   4   5   6   7   8   9   10

Q43 Worker A is hired to perform a task for which he/she claims to be qualified. After a week on the job, it becomes clear that A is unable to perform the task. Worker A is denied a 30% bonus that other similar workers receive. On a scale from 0 to 10, where 0 means fully unacceptable and 10 means fully acceptable, is the employer's decision acceptable or unacceptable?   0   1   2   3   4   5   6   7   8   9   10

Q18 Worker A is hired to perform a task for which he/she claims to be qualified. After a month on the job, it becomes clear that A is able to perform the task, but is frequently caught shirking. Worker A is laid off by the employer. On a scale from 0 to 10, where 0 means fully unacceptable and 10 means fully acceptable, is the employer's decision acceptable or unacceptable?   0   1   2   3   4   5   6   7   8   9   10

Q17 Worker A is hired to perform a task for which he/she claims to be qualified. After a month on the job, it becomes clear that A is able to perform the task, but is frequently caught shirking. Worker A is denied a 30% bonus that other similar workers receive. On a scale from 0 to 10, where 0 means fully unacceptable and 10 means fully acceptable, is the employer's decision acceptable or unacceptable?   0   1   2   3   4   5   6   7   8   9   10

Q16 Worker A is hired to perform a task for which he/she claims to be qualified. After a month on the job, it becomes clear that A is able to perform the task, but is frequently caught shirking. The salary of worker A is reduced by 30% by the employer. On a scale from 0 to 10, where 0 means fully unacceptable and 10 means fully acceptable, is the employer's decision acceptable or unacceptable?   0   1   2   3   4   5   6   7   8   9   10

8.1.5 Statements

Q20 We will now present you with 6 statements. Please indicate on a scale from 0 to 10 whether you agree with the statement, where 0 means fully disagree and 10 means fully agree.

Q21 Workers from the United States can be trusted to exert high effort if their earnings and continued employment depend on their performance on the job.

Fully disagree   Disagree   Somewhat disagree   Neither agree nor disagree   Somewhat agree   Agree   Fully agree

Q22 Workers from the United States can be trusted to exert high effort even if their earnings and continued employment do not depend on their performance on the job.

Fully disagree   Disagree   Somewhat disagree   Neither agree nor disagree   Somewhat agree   Agree   Fully agree

Q23 Workers from India can be trusted to exert high effort if their earnings and continued employment depend on their performance on the job.

Fully disagree   Disagree   Somewhat disagree   Neither agree nor disagree   Somewhat agree   Agree   Fully agree

Q24 Workers from India can be trusted to exert high effort even if their earnings and continued employment do not depend on their performance on the job.

Fully disagree   Disagree   Somewhat disagree   Neither agree nor disagree   Somewhat agree   Agree   Fully agree

Q25 Workers from South Africa can be trusted to exert high effort if their earnings and continued employment depend on their performance on the job.

Fully disagree   Disagree   Somewhat disagree   Neither agree nor disagree   Somewhat agree   Agree   Fully agree

Q26 Workers from South Africa can be trusted to exert high effort even if their earnings and continued employment do not depend on their performance on the job.

Fully disagree   Disagree   Somewhat disagree   Neither agree nor disagree   Somewhat agree   Agree   Fully agree

8.1.6 Invitation to the experiment

Interest to participate in an experimental study As part of this study, we are conducting an online experiment. We ask participants in this experiment to make choices in a described situation. By participating in this experiment you can earn extra money. Your choices and the choices of the other participants determine your earnings. The experiment lasts about 20 minutes and the average expected earnings are $3.00-$4.00, which will be paid out through MTurk. The minimum earnings are $2.00. These experiments will happen at set times. If you are invited to this experiment, we will ask you to open the experiment website within 5 minutes of the set time. Invitations will be sent through the MTurk internal messaging system.

Q28 Would you be interested in participating in this experiment?

o   Yes (1)

o   No (2)

If Yes:

Q29 Please indicate your preferred times for participating in this experiment. To increase your chances of being able to participate, please select a minimum of two times you are likely to be available to participate in this experiment. This time is not guaranteed. You might receive an invitation for a session at a different time than posted. All times refer to Indian [US] time (UTC+5:30).
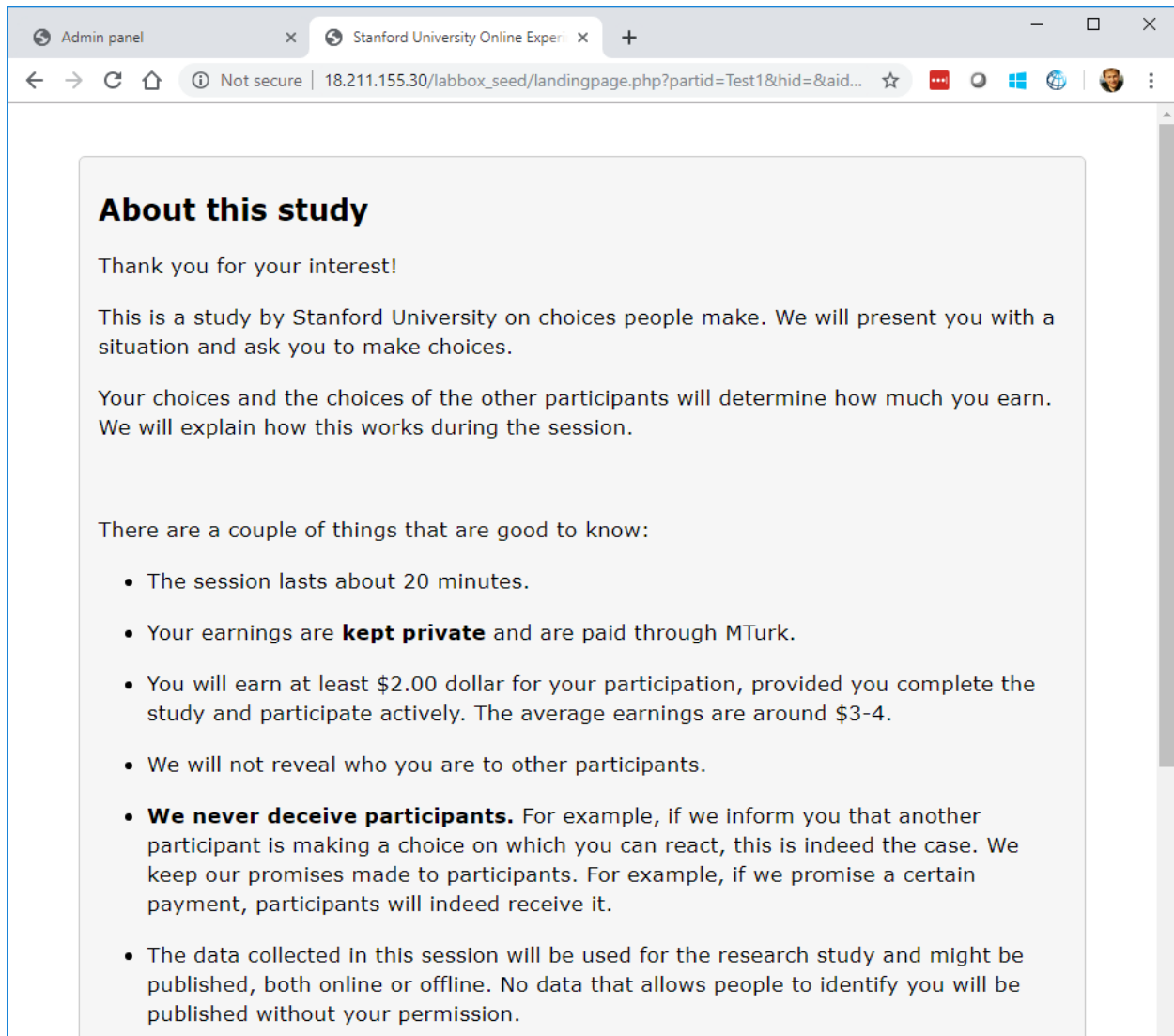
- ■   Saturday Nov 10 8.30 PM Delhi time (132)

- ■   Saturday Nov 10 9.30 PM Delhi time (133)

- ■   Sunday Nov 11 8.30 PM Delhi time (134)

- ■   Sunday Nov 11 9.30 PM Delhi time (135)

Q30 In our invitation, we will specify the time and date of the session. A separate HIT will be made available 5 minutes before the stated time in the invitation. You will need to accept the HIT and open the link within 5 minutes of the stated time. After these 5 minutes you can no longer participate.

Q47 You indicated that none of the times mentioned work for you. What time could work for you instead?   _ _ _ _ _

Thank you for your participation! Your completion code is CARFAX50. Please enter this in the MTurk field. You can now close this window.

Online Appendix: Screen shots for the online interactive game

About this study

Thank you for your interest!

This is a study by Stanford University on choices people make. We will present you with a situation and ask you to make choices.

Your choices and the choices of the other participants will determine how much you earn. We will explain how this works during the session.

There are a couple of things that are good to know:

- The session lasts about 20 minutes.

- Your earnings are **kept private** and are paid through MTurk.

- You will earn at least $2.00 dollar for your participation, provided you complete the study and participate actively. The average earnings are around $3-4.

- We will not reveal who you are to other participants.

- **We never deceive participants.** For example, if we inform you that another participant is making a choice on which you can react, this is indeed the case. We keep our promises made to participants. For example, if we promise a certain payment, participants will indeed receive it.

- The data collected in this session will be used for the research study and might be published, both online or offline. No data that allows people to identify you will be published without your permission.

Welcome. Please press the button to proceed.

Click here to proceed

Good to know

- If you accidentally close the experimental window, you can re-open it by coming back to this page. You can then resume where you have left.

- You can save this page as a bookmark.

- If you have any questions, you can get in touch with us through stanfordseedstudy@gmail.com or through the internal messaging system of MTurk.

Press Join to participate

Join

Instructions

- In this experiment, we will present you with different choices. Your choices and those of other participants determine how much you earn.

- We will assign you the role of either a **worker** or an **employer**. Another participant will be given the other role.

- For the duration of a game, each employer is matched to one worker at random, and each worker is matched to one employer at random. After one game you will be matched with a different worker or employer.

- You will play multiple games, in each of these games you can earn points. At the end, the computer randomly picks two games. For these games we will pay you what you earned.

- 100 points correspond to $3.00.

Next

Instructions

The game consists of five stages:

1. As an employer, you are given 20 points. As a worker you are given 10 points.

2. The employer offers an **employment contract** to the worker, paying a **wage** of 10 or 20 points. Sometimes the wage depends on the effort level.

3. The worker chooses to **accept** or **reject** this offer. If the worker rejects, no wage is paid, but the worker receives 10 points (in addition to the 10 points the worker earned before).

4. If the worker accepted the contract, the worker chooses **high** or **low effort**.

5. The worker gets paid by the employer, but will need to incur the cost of effort. The employer receives a benefit for effort.

   - The worker incurs a cost of 5 points for high effort. Low effort has a cost of 0 points.
   - The employer gets 40 points for high effort and 10 points for low effort.

Back Next

We proceed with a test of your understanding.

If the worker chooses high effort, what is the **benefit** for the employer?

- ○ 0 points
- ○ 5 points
- ○ 10 points
- ○ 20 points
- ○ 40 points

OK

Your answer was correct

The **benefit** for the employer is

- 10 points for low effort,
- 40 points for high effort.

OK

Game 1

Please wait.

We are currently matching you to another player.

Note: We will try to match you to another player as soon as possible, but we have to wait until other partipants are ready. The waiting time should not be more than a couple of minutes.

You are a worker

In the following game you are a worker. You are randomly matched with an employer.

The employer is from the **United States (USA)**.

In this game, you start with **10 points**.

The employer can now offer a contract to you.

OK

You are an employer

In the following game you are an employer. You are randomly matched with a worker.

The worker is from the **United States (USA)**.

For this game, we have given you **20 points** to start with.

In the next screen you can offer a contract to this worker.

OK

What contract do you want to offer to the worker?

Your current balance in this game: 20 points.

Option A A fixed wage of **10 points**

Option B Do not offer a contract.

Accept or reject the contract

The employers offers you a fixed wage of **10 points**.

Do you want to accept or reject this offer?

Accept   You accept the contract.

Reject   You reject the contract.
You will receive 10 points. The employer keeps their 20 points.
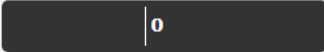
Choose effort

The employers offers you a fixed wage of **10 points**.

Please select your level of effort:

High effort
- Cost to you: 5 points | -5 |
- Benefit to employer: 40 points | 40 |

Low effort
- Cost to you: 0 points | 0 |
- Benefit to employer: 10 points | 10 |

Outcome of this game

You were offered a fixed wage of **10 points**.

You chose **high effort**. The employer paid you a wage of **10 points**.

You earned 15 points:

Your initial endowment:	10 points
The cost of high effort:	-5 points
The wage paid to you:	10 points
Your earnings:	**15 points.**

Your employer earned 50 points:

Their initial endowment:	20 points
The benefit of high effort:	40 points
The wage paid to you:	-10 points
The employer's earnings:	**50 points.**

Continue to next game

Outcome of this game

You offered a fixed wage of **10 points**.

The worker chose **high effort**. You paid a wage of **10 points**.

You earned 50 points in this game:

Your initial endowment:	20 points
The benefit of high effort:	40 points
The wage paid by you:	-10 points
Your earnings:	**50 points.**

The worker earned 15 points in this game:

The worker's initial endowment:	10 points
The cost of high effort:	-5 points
The wage paid by you:	10 points
The worker's earnings:	**15 points.**

Continue to next game

What contract do you want to offer to the worker?

Your current balance in this game: 20 points.

Option A　　　A fixed wage of **10 points**

Option B　A wage of **10 points** with **10 points** extra for high effort. The 10 points for high effort will be awarded automatically.

Option C　　　Do not offer a contract.

Accept or reject the contract

The employers offers you a wage of **10 points**, with **10 points** extra for high effort. The 10 points for high effort will be awarded **automatically**.

Do you want to accept or reject this offer?

Accept   You accept the contract.

Reject   You reject the contract.
You will receive 10 points. The employer keeps their 20 points.

Outcome of this game

You were offered a wage of **10 points**, with **10 points** extra for high effort.

You **rejected** the offer.

Your earnings: **20 points.**

The earnings of your employer: **20 points**

Continue to next game

Outcome of this game

You offered a wage of **10 points**, with **10 points** extra for high effort.

The worker **rejected** the offer.

Your earnings: **20 points**

The earnings of your worker: **20 points**

Continue to next game

What contract do you want to offer to the worker?

Your current balance in this game: 20 points.

Option A   A fixed wage of **10 points**

Option B   A wage of **10 points** with a promise of **10 points** extra for high effort. You can choose not to pay the extra points, even if the worker chooses high effort.

Option C   Do not offer a contract.

Choose effort

The employers offers you a wage of **10 points**, with a promise of **10 points** extra for high effort. The employer has a choice to not award these extra points, even if you choose high effort.

Please select your level of effort:

High effort
- Cost to you: 5 points   -5
- Benefit to employer: 40 points   40

Low effort
- Cost to you: 0 points   0
- Benefit to employer: 10 points   10

You offered a wage of **10 points**, with a promise **10 points** extra for high effort.

The worker chose **high effort**.

You can chooose to pay 10 points extra. Do you want to do this?

Yes   You pay 10 points extra. The total wage is 20 points.

No   You do not pay 10 points extra. The total wage is 10 points.

Outcome of this game

You did not offer a contract.

Your earnings: **20 points**

The earnings of your worker: **20 points**

Continue to next game

The experiment is finished

Your total earnings are: **3.20 USD**.

As described in the instructions, a computer randomly selected two games:

- Game 4 (you were a worker), earnings: **20 points**
- Game 5 (you were an employer), earnings: **20 points**

In total you earned **40 points**. This corresponds to 1.20 USD. In addition to this you receive a fixed payment of 2.00 USD.

We will transfer this to you within a couple of days. Please note that the bonus payment might arrive later than the fixed payment and might be listed as a separate transaction.

Your completion code is **ix6ysi0_5D6810E264828_4000**
Please return to MTurk and enter your code.

The experiment is finished

Your total earnings are: **3.20 USD**.

As described in the instructions, a computer randomly selected two games:

- Game 4 (you were an employer), earnings: **20 points**
- Game 8 (you were a worker), earnings: **20 points**

In total you earned **40 points**. This corresponds to 1.20 USD. In addition to this you receive a fixed payment of 2.00 USD.

We will transfer this to you within a couple of days. Please note that the bonus payment might arrive later than the fixed payment and might be listed as a separate transaction.

Your completion code is **ip6b1da_5D6810EA896D8_4000**
Please return to MTurk and enter your code.