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Erich Cromwell
Sebastian J. Goerg
Monika Leszczyńska

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Erich Cromwell
U.S. Equal Employment Opportunity Commission

Sebastian J. Goerg
TU Munich, Max Planck Institute for Research on Collective Goods and IZA

Monika Leszczyńska
New York University School of Law and Max Planck Institute for Research on Collective Goods

ABSTRACT

More than the Money: Payoff-Irrelevant Terms in Relational Contracts*

We investigate how payoff-irrelevant terms can negatively impact relational contracts. In a lab experiment we compare two economically equivalent contracts – a fixed-term renewable and an open-ended at-will contract. Each contract provides partners with full flexibility regarding the length and termination of their interaction. When only one contract type is available, principals and agents in our experiment manage to form long-term profitable relationships irrespective of the contract type. However, when both contracts are available offering a fixed-term instead of an open-ended contract is perceived as unkind and results in lower effort provided by the agents. We show that this observed difference is not a matter of sorting, but a direct response to the contract type. Our results demonstrate that a relational contract might be affected by payoff-irrelevant terms and their perceived kindness.

JEL Classification:	C92, K12
Keywords:	contract design, relational contracts, reciprocity, trust

Corresponding author:
Sebastian Goerg
TU Munich
Schulgasse 22
94315 Straubing
Germany
E-mail: s.goerg@tum.de

1 Introduction

Frequently, economic actors interact in environments in which they have to rely on incomplete contracts (Williamson 1979, Hart 1995). Under these circumstances, reciprocity can be instrumental in the formation of relational contracts that are mutually beneficial (Scott 2006, Fehr et al. 2007). However, an offer that is perceived as unkind might negatively affect this relationship. In this paper, we study whether offering strategically equivalent contracts that differ only with regard to the framing of the contractual details affects reciprocal behavior in relational contracts. In our lab-experiment employer hire employees on a market and offer them either fixed-term renewable or open-ended at-will contracts. Our results show that in isolation the two contract types do not differ - people interact efficiently with each of them. However, when both contract types are available, offering a fixed-term contract is perceived as less kind and triggers negative responses by agents, i.e., significantly lower effort.

Standard economic theory predicts that in the absence of a formal enforcement a principal and an agent will behave opportunistically - they will choose an action which best serves their interest. Researchers investigating behavior in relational contracts (MacNeil 1974) have pointed to alternative informal mechanisms that motivate individuals to sustain a beneficial long-term contractual relationship in the absence of a formal enforcement. According to contract theory, potential future benefits from trade, together with a termination threat of an ongoing relationship, provide sufficient incentives to perform in the absence of third party enforcement (Shapiro and Stiglitz 1984, MacLeod and Malcomson 1989). Additionally, the combination of heterogeneous types of partners (i.e., presence of reciprocal individuals) and the desire to build reputation might induce agents to cooperate and avoid opportunistic actions (Kreps et al. 1982).

Experimental research provides ample evidence showing that individuals indeed do not act

purely selfishly even when no formal enforcement is available (e.g., Fehr et al. 1993, Fehr et al. 1997). In a gift-exchange game, for example, people reciprocate wage offers - the higher wage the more effort they provide despite the lack of any explicit incentive to do so. It has been also shown that the performance is even better in repeated interactions due to the presence of both - reciprocity and reputation concerns (Gächter and Falk 2002). Importantly, individuals recognize that with no formal enforcement it is beneficial to build long-term relationships (Brown et al. 2004).

In the Brown et al. (2004) study, principals were restricted to fixed-term one-period contracts. In contrast, long-term relationships without dismissal barriers are governed either by short fixed-term contracts that are repeatedly renewed or by open-ended at-will contracts that might be terminated anytime.[1] In this article we take a closer look at these two contractual provisions defining the length and termination procedure of a contractual relationship – as fixed-term renewable or open-ended but terminable at-will. What is so special about the two contracts and why do we believe that their impact on agent's behavior might differ? Their common feature is that they do not impose any dismissal barriers. Once a contractual partner decides not to interact with the other side, a fixed-term contract is *not renewed* whereas an open-ended contract is *terminated*. Thus, termination threat does not differ under both contract types; it is only the dismissal action which takes two forms - either as a non-renewal or termination. Although so similar, each contract might trigger different behavioral reactions. We conjecture that, when both contracts are available, offering a fixed-term contract might be perceived as less kind than when an open-ended contract is offered. In particular, a fixed-term contract can be interpreted as a sign that the principal is not sure about cooperative behavior

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[1]For an example from the IT industry see: Weber et al. 2011

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of the agent and the length of their relationship. As a result, offering a fixed-term instead of an open-ended contract might undermine agents motivation to reciprocate wages and to provide high effort levels. Here, we put the two contract types into the test in a laboratory experimental study to find out whether indeed one of them has a detrimental impact on long-term contractual relationships.

Using a between-subject design we measured behavioral reactions to fixed-term renewable contracts compared to open-ended terminable contracts in a repeated gift-exchange game. In two treatments, we presented each contract type – fixed-term or open-ended – as the only available contract. In an additional treatment, we allowed principals to choose between offering agents either a fixed-term or an open-ended contract to test the importance of the endogenous choice between the two available contract types. We found that reciprocity plays an important role in developing cooperation in both a fixed-term and an open-ended contract. In line with previous research agents reacted positively to high wages by providing high effort levels. Interestingly, when both contract types are available we observe substantial differences in contractual behavior. Agents are far less reciprocating in a fixed-term contract when it is chosen by a principal than when it is imposed by the experimental design. Fixed-term contracts are also barely used to create long-term relationships. Importantly, agents who experienced both types of contracts provide lower effort levels under a fixed-term than under an open-ended contract. This means that the very same agent hired under a fixed-term contract is willing to provide lower effort than when hired under an open-ended contract, indicating that agents' behavior is a response to the contract type and not only a result of very specific agents deciding to work under a particular contract type.

Our research contributes to the experimental and theoretical literature on the optimal choice

of a contract type. In these studies researchers investigated how a choice between an incomplete and complete contract influences agents' behavior. It has been suggested that a contract type (incomplete vs. complete) might be employed to convey information about the profitability of a project that an agent will be entrusted with (Spier 1992). Offering a complete instead of an incomplete contract might be also perceived as a signal of distrust (Herold 2010). Experimental research has demonstrated that choosing an incomplete over a complete contract might induce an agent to provide more effort for a principal (Falk and Kosfeld 2006, Dickinson and Villeval 2008, Fehr et al. 2007, Lazzarini et al. 2004). It has been also shown that if the principal is informed about past behavior of agents, offering a fixed-wage instead of a performance-contingent contract signals social norms and results in an increased agents' effort (Danilov and Sliwka 2017). Differently from this research, here we focus on two contract types that are equal regarding their incompleteness. None of the contracts we examined restricts agent's choices. There is also no formal enforcement or monitoring available. Additionally, a fixed-term contract does not change explicit incentives compared to an open-ended contract. The major distinction between the two studied contracts is the description of the default duration, which results in different perception of their kindness.

The closest to our research is a study by Eriksson and Villeval (2012) on the influence of symbolic rewards on behavior of principals and agents when contracts are incomplete and building long-term relationships is possible. In an experimental setting similar to ours, principals were provided with an option to give a symbolic reward to the hired agent. The authors observed that rewards were used to initiate long-term beneficial relationships. Yet, assigning a reward did not contribute to the increase in profits. Similarly to two contract types in our experiment, a symbolic reward does not change agents' monetary incentives. However, in Eriksson and

Villeval (2012) study sending a reward to an agent was costly to a principal. In contrast, in our experiment a principal did not pay extra money depending on which type of contract – fixed-term or open-ended – was chosen.

Our results offers a further contribution to the emerging empirical literature on the impact of contractual formalities on behavior (Wilkinson-Ryan and Hoffman 2015, Wilkinson-Ryan 2015, Hoffman 2017, Hoffman 2016). These studies look at how and whether the formal elements of a contract such as contract formation (e.g., verbally or in writing) or consideration recitals influence people's willingness to breach a contract. For instance, Wilkinson-Ryan (2015) showed that people declare to be more willing to breach a contract if they receive a better alternative offer when a contract was formed verbally than in writing. Hoffman (2017) revealed that recitals of consideration do not increase people's willingness to stick to their initial commitments. As in our experiment, the types of contracts examined in these studies do not change explicit incentives of the contractual parties. Yet, people's reactions were studied in isolation - only one contract type was presented to participants at once. Our results demonstrate that the perception of a contract and its impact on behavior might change depending on whether a contract is externally imposed or chosen by a contractual party. This indicates that to understand how contracts influence contractual relationships it is important to study them simultaneously with other contract options and not only in isolation.

2 Experimental Design and Procedures

2.1 Design

We experimentally implement a repeated gift-exchange game which is similar to the one used by Brown et al. (2004) to study the endogenous emergence of relational contracts. At the beginning of the experiment, participants were randomly assigned to a group and a role with an identification number (ID) that was known to other group members. Each group consisted of two principals and three agents. Participants were also informed that the experiment lasts 15 periods and that group matching, roles, and ID numbers remain constant over all periods.

Each period had three stages: an offer stage, an effort stage, and a feedback stage. In the offer stage, principals made contract offers to agents by sending two types of offers: private and public. An offer specified a desired effort ($\tilde{e} \in \{1, 2, 3, ...10\}$) and a wage ($w \in \{1, 2, 3, ...100\}$). Private offers included the ID number of the agent to whom the offer was directed and were visible only to the principal who sent it and to the specified agent. They were introduced so that principals could renew a contract with a preferred agent. In contrast, public offers were displayed to all available agents. Principals made as many offers as desired and agents could accept any available offer. However, it was possible to enter into only one contract in a given period. Thus, as soon as an agent accepted an offer and a contract was formed, she was no longer available on a market. Similarly, a principal whose offer was accepted could not send further offers and his existing offers were deleted. The offer stage ended once both principals in a group formed a contract or 150 seconds elapsed. A principal who hired no agent in a given period made no profit, whereas an agent who accepted no offer received an outside option.

In the effort stage, agents who entered into a contract made an effort choice. Agents were not

Table 1: Cost of Effort

Effort, e	1	2	3	4	5	6	7	8	9	10
Cost, $c(e)$	0	1	2	4	6	8	10	12	15	18

bound by the desired effort ($\tilde{e}$) specified in the offer. This was implemented in order to reflect the contractual incompleteness – agents could freely choose their effort level ($e \in \{1, 2, 3, ...10\}$) at a cost $C(e)$ displayed in Table 1. Principals, however, were bound by the accepted wage offer. Regardless of the agent's choice, the wage was subtracted from the endowment of the principal and paid to the agent.

In the feedback stage, participants were informed about their payoffs. The payoffs of principals were given as:

$$\pi_P = \begin{cases} 10e - w & \text{if a contract is formed} \\ \\ 0 & \text{if no contract is formed} \end{cases}$$

and the payoffs of agents were calculated as follows:

$$\pi_A = \begin{cases} w - C(e) & \text{if a contract is formed} \\ \\ 5 & \text{if no contract is formed} \end{cases}$$

Since the payoff rule was common knowledge, each principal could calculate the payoff of his agent and each agent could calculate the payoff of his principal. In each period, the history of previous transactions was displayed on the screen (own payoffs and ID number of a contractual partner in a given period, total payoffs).

2.2 Treatments

To investigate the influence of the contract type on the behavior of contractual partners, we implemented three treatments: *FixedTerm, OpenEnd* and *Mixed.*

In the *FixedTerm* treatment, each contract was formed for one period and each period begun with the offer stage. Principals, who wished to continue a relationship with a given agent, could do so using a private offer. If an agent accepted such an offer, the contractual relationship continued.[2]

In the *OpenEnd* treatment, each contract was formed for all remaining periods. However, in each period during the feedback stage, agents and principals could decide whether to terminate a contract or continue to the next period. If a contract was terminated by at least one of the partners, both started the next period with the offer stage. If both agreed to continue, they begun the next period directly with the effort stage. The wage, the desired effort level, and the contractual partner remained the same as in the previous period.

In the *Mixed* treatment, principals could choose between a fixed-term and an open-ended contract. In this treatment, offers included the contract type offered. If a fixed-term contract was formed, the transaction was governed by the rules of the *FixedTerm* treatment. Thus, the subsequent period started with the offer stage for both partners. Principals could decide to continue a relationship with the same agent by making a private offer. If an open-ended contract was formed, the transaction was governed by the rules of the *OpenEnd* treatment. The contract extended for all remaining periods and could be terminated by either of contractual partners at the end of each period. Irrespective of a contract type formed in the previous

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[2]This treatment closely resembles the ICF condition (incomplete contracts with identification) from Brown et al. (2004). The only differences to Brown et al. (2004) are the size of groups (2 principals instead of 7 and 3 agents instead of 10) and the knowledge of offers – in the current design principals were not informed about offers made by other principals.

periods, a principal who started a period with the offer stage could freely choose to offer either a fixed-term or an open-ended contract. This means that a choice of a contract type in the first period did not determine the contract type for the whole experiment. It also means, that from an incentives point of view there are no differences between the two contract types in the *Mixed* treatment. The treatment was designed to explore whether the endogenous choice of a contract type changes its meaning to contractual partners.

2.3 Procedure

The experimental instructions were framed using labor market language.[3] Principals were called *firms*, agents - *workers* and contracts – *employment contracts*. Upon arrival, participants were randomly assigned to separate cubicles. Instructions were read aloud by the experimenter, and a quiz was conducted to ensure that all subjects were familiar with the rules of the experiment. Prior to the start of the experiment, participants were allowed to ask questions which were answered privately by the experimenter. At the end of the experiment, participants completed a social value orientation test as well as a personality, trust and risk preferences questionnaire.[4]

The experiment was programmed using Z-Tree (Fischbacher 2007) and was conducted at the University of Bonn (Germany). A total of 360 participants were recruited from the BonnEcon-Lab subject pool consisting of students with heterogeneous fields of study.[5] Twenty participants

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[3]A translated copy of the instructions is included in Appendix B.

[4]A 32-items test implemented by Dijk et al. (2002), who adopted a social value orientation test (SVO) developed originally by Liebrand (1984), was used to elicit social preferences of participants. The personality questionnaire included the 10-item measure of the Big Five personality domains as well as four questions on self-assessed trust and risk attitudes using questions from the German Socio-Economic Panel (GSOEP). The trust scale is generated from the following items: (1) In general, you can trust people. (2) Nowadays, you cannot rely on anybody. (3) It is better to be cautious before trusting strangers (Cronbach's $\alpha = 0.69$). Self-assessed risk preferences are measured with a question: How do you see yourself: are you a person who is fully prepared to take risks or do you try to avoid taking risks?

[5]Subjects were recruited via online recruitment tool ORSEE (Greiner 2004) and hroot (Bock et al. 2014). We excluded subjects who had already participated in any gift-exchange experiments.

took part in each of the 24 experimental sessions and interacted with each other in groups of five, resulting in four independent observations per session. In total, we collected 24 independent observations per treatment. No subject participated in more than one session. Table 2 repeats the number of subjects and independent observations per treatment.

Table 2: Number of subjects and independent observations

| Treatment | Number of subjects | | | ind. Obs |
	Firms	Workers	Total	
FixedTerm	48	72	120	24
OpenEnd	48	72	120	24
Mixed	48	72	120	24
Total	144	216	360	72

Each session lasted about 100 minutes. Subjects were initially endowed with 150 points. Each point was worth 4 euro cents. At the end of a session subjects were paid in private the total amount of points earned (including the initial endowment), converted into Euros. The average payment was 18.8€ in the main part of the experiment.

3   Behavioral Predictions

Under the standard assumptions of self-interest, full rationality, and common knowledge a hired agent in our experiment would exert the lowest possible effort in the very last round. The anticipating principal would offer a wage ($w = 5$) which renders the agent indifferent between accepting an offer or rejecting it and receiving an outside option of 5. In equilibrium, the agent would accept the offer and choose the costless minimum effort level ($e = 1$). Given the known number of periods backwards induction would ensure the same behavior for all periods, starting with the very first interaction, resulting in a sub-game perfect equilibrium. The contract type in *Mixed* is only cheap talk regarding the contract duration and does not alter the incentives.

Thus, according to the standard predictions, behavior should not be responsive to the contract consisting of the offered wage and contract duration.

However, based on previous studies investigating gift-exchange we expect different outcomes. The gift-exchange literature usually reports a positive relationship between offered wages and effort levels, which is explained by the presence of reciprocal agents. We further anticipate that not only wage but also other contractual details, such as contract duration, might affect behavior of reciprocal agents. In the following we use the model by Falk and Fischbacher (2006) to derive our behavioral predictions and explain the underlying intuition.[6] For a single period t of our game the agent's utility function incorporating reciprocity can be written as:

$$U_A(e_t, w_t, d_t) = \pi_A(e_t, w_t) + \rho_A \varphi_P(w_t, d_t) \sigma_A(e_t). \tag{1}$$

The first part, π_A, is the agent's monetary payoff and it depends on the offered wage w_t and the costly effort level e_t. An agent's reciprocal inclination is captured by $\rho_A \geq 0$. If an agent has no reciprocal inclination ($\rho_A = 0$) the utility function reduces to the one of the rational, self-centered agent of standard theory. If the agent has reciprocal inclinations ($\rho_A > 0$) she cares about the perceived kindness φ_P of the contract offered by the principal. In other gift-exchange experiments the contract entails only the offered wage w_t, in our setting it also includes the contract duration $d_t \in \{\text{FixedTerm, OpenEnd}\}$. The agents response to the experienced kindness is then captured by the reciprocation term σ_A. It captures the resulting change in the principal's payoffs from reciprocal effort decisions. Reciprocity could result in rewarding effort decision with increased payoffs for the principal, or punishing effort decision with decreased

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[6]Other models of reciprocity (e.g., Rabin 1993; Charness and Rabin 2002; Dufwenberg and Kirchsteiger 2004), could be modified accordingly.

payoffs.

Falk and Fischbacher ([2006](#)) demonstrate that an equilibrium based on this theory of reciprocity would predict wages and efforts in gift-exchange games to exceed the lowest possible level, as well as a positive wage-effort relationship. To apply their model to our setting, we only need to incorporate the contract duration into the kindness term φ_P. As everything else remains unchanged we will focus only on the kindness term.

$$\varphi_P(w_t, d_t) = \vartheta_P^w(w_t)\Delta_P(w_t) + \vartheta_P^c\kappa(d_t) \tag{2}$$

The first part of the kindness term follows Falk and Fischbacher ([2006](#)) and describes the perceived kindness of an offered wage. The outcome term Δ_P determines wether the wage offered by the principal is perceived as kind ($\Delta_P > 0$) or unkind ($\Delta_P < 0$). The outcome term is calculated as the difference between an agent's expected payoff given the wage and a reference standard, for example equitable payoffs. The intention factor for wages ϑ_P^w takes the principal's choice set into account. If the principal chose the wage intentionally it becomes $\vartheta_P^w = 1$ and if the principal has no alternative it becomes $\vartheta_P^w = \epsilon$. The individual parameter ϵ, with $0 \leq \epsilon \leq 1$, represents the agent's pure outcome concern. If $\epsilon = 0$ the agent cares only about intentionally generated outcomes Δ_P. For $\epsilon > 0$ the agent has a concern for equitable outcomes and an aversion against inequality even if not intentionally generated.[7]

The second part of the kindness term incorporates the concern for the contract duration. Since in our game the contract duration, in contrast to the wage level, does not directly change monetary outcomes we do not incorporate an outcome concern and the agent cares only if the

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[7]This setup is compatible with the findings by Charness ([2004](#)) who finds a stronger wage-effort relationship if the principal sets the wage and not a third party or a random mechanism. Yet, a positive wage-effort relationship is found even if wages are not set by the principal.

contract is intentionally chosen. Thus, the intention factor for the contracts is either $\vartheta_P^c = 1$ if the principal choses the contract duration (*Mixed* treatment) or $\vartheta_P^c = 0$ if the principal has no influence on the contract duration (*FixedTerm* and *OpenEnd* treatment). The evaluation of the contract duration is given by $\kappa(d_t)$ and it captures the agent's perception of the fixed-term contract. We assume that $\kappa(d_t) \leq 0$ if the principal choses the fixed-term contract and $\kappa(d_t) = 0$ if the principal choses the open-ended contract. We implicitly assume that an open-ended contract in *Mixed* treatment (*Mixed(OE)*) is perceived as neutral, assuming no differences between *Mixed(OE)*, *FixedTerm* and *OpenEnd* treatments.[8] The reason is that choosing *Mixed(OE)* is costless and even unkind principals or principals without any pro-social inclinations could choose *Mixed(OE)*. Thus, choosing *Mixed(OE)* is not a kind act, but it is also not an unkind act. However, actively choosing a fixed-term contract (*Mixed(FT)*) is perceived as unkind.

To confirm our assumption that a *Mixed(FT)* contract is perceived as less kind than a *Mixed(OE)* contract we conducted a short questionnaire study asking 96 subjects for their evaluations of different contract types. Kindness evaluations of fixed-term and open-ended contract did not differ significantly if only one contract type was presented ($p = 0.6981$, two-sided Wilcoxon rank-sum test). However, if both contracts were presented subjects considered the fixed-term contract as significantly less kind than the open-ended contract ($p < 0.0001$, two-sided signed rank test). Appendices A and C provide more details on the questionnaire and its results.

Based on the Falk and Fischbacher (2006) model and our addition we derive three behavioral predictions. The first prediction follows directly from the original Falk and Fischbacher (2006)

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[8]In the following we will denote fixed-term contracts in *Mixed* treatment as *Mixed(FT)* and open-ended contracts as *Mixed(OE)*.

model and is in line with the empirical evidence provided by the gift-exchange literature.

Behavioral Hypothesis 1: *We expect a positive wage-effort relationship. Higher wages will lead to higher effort.*

The second one follows from the incorporation of the contract duration in the kindness evaluation.

Behavioral Hypothesis 2: *If both contracts are available, we expect for a given wage level lower effort in fixed-term contracts than in open-ended contracts. We also expect lower effort in fixed-term contracts when both contracts are available than in treatments when a principal does not choose the contract duration.*

The third prediction gives the rational response of the principals to prediction 2.

Behavioral Hypothesis 3: *Since offering an open-ended contract is associated with no additional cost, we would expect all principals to offer open-ended contracts if they can.*

4   Results

In the following we will present the results of our experiment. We will first take a look at wages accepted by agents before turning to the agent's effort. Next, we will shed some light on why principals choose open-ended over fixed-term contracts in *Mixed* treatment. Thereafter, we will demonstrate that the observed differences in effort provided by agents in *Mixed* treatment are not a result of sorting of agents into two contract types, but rather an effect of payoff-irrelevant contractual details.
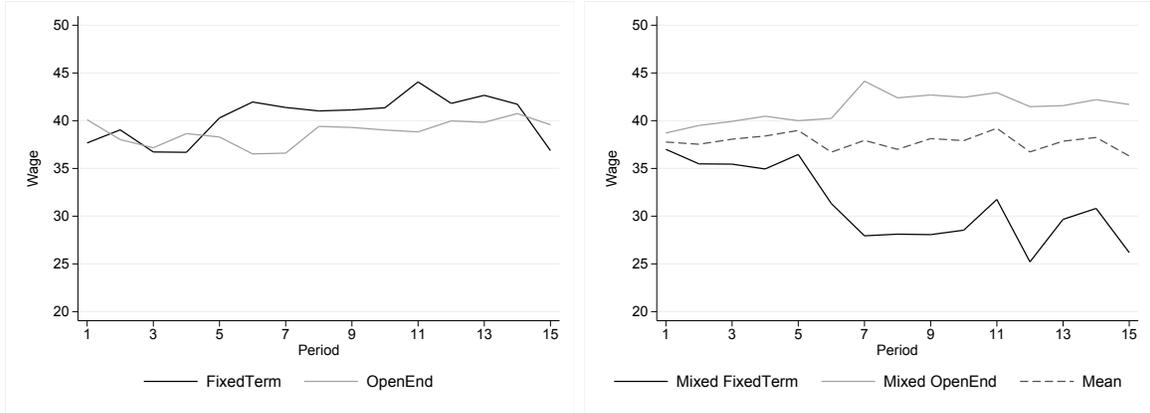
(a) Treatments *FixedTerm* and *OpenEnd*   (b) *Mixed* treatment, separated by contract type

Figure 1: Mean wage over time

4.1 Accepted wage levels

Figure 1 displays the average wage levels accepted by agents per treatment over the course of the experiment. Additionally, Panel (b) shows the averages per contract type in *Mixed* treatment. For all treatments and contract types average wages are significantly higher than the smallest possible wage ($p < 0.001$, two-sided signed-rank test). Comparing the average wages between *FixedTerm*, *OpenEnd*, and *Mixed* treatments reveals no significant differences (all pairwise comparisons with $p > 0.29$, two-sided Wilcoxon rank-sum test).

However, Panel (b) of Figure 1 reveals large differences between the average wages accepted in the different contract types within *Mixed* treatment. Agents who work in *Mixed* treatment under a fixed-term contract receive significantly lower wages than agents working under an open-ended contract ($p < 0.01$, two-sided signed-rank test). Comparing the wages paid to agents in *Mixed(FT)* with the wages paid to agents in *FixedTerm* and *OpenEnd* shows that they are significantly lower ($p < 0.02$, two-sided Wilcoxon rank-sum test). Wages in *Mixed(OE)* do not differ significantly from the wages paid in the other two treatments ($p > 0.38$, two-sided Wilcoxon rank-sum test).

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Table 3: Tobit regression on wage

	(1)	(2)	(3)
OpenEnd	-1.53	-1.52	-5.18**
	(2.51)	(2.51)	(2.28)
Mixed (FT)	-8.83***	-8.75***	-7.15**
	(2.87)	(2.87)	(2.87)
Mixed (OT)	1.14	1.10	-2.13
	(2.51)	(2.51)	(2.29)
Period		0.15	-0.60***
		(0.13)	(0.15)
Last Period		-2.69**	-2.71***
		(1.06)	(1.04)
Length of Relationship			2.01***
			(0.23)
Constant	40.31***	39.30***	39.60***
	(1.83)	(2.05)	(1.97)
Observations	2120	2120	2120

Notes: Three (***), two (**), and one (*) stars indicate statistical significance at the 1%, 5%, and 10% levels respectively. Standard errors, reported in parentheses, have been corrected for clustering at the group level.

Next, we confirm these non-parametric results with additional regression analysis. As the dependent variable wage was restricted to the values from 1 to 100 a Tobit model with upper and lower censoring was implemented to inspect the impact of treatments and contract types on wages accepted by the workers. Standard errors were clustered to correct for dependence at the group level. Table 3 reports the results. We included dummy variables for *OpenEnd* treatment, as well as *Mixed(FT)* and *Mixed(OE)* contracts. *FixedTerm* treatment serves as a reference category. For specifications in Models (1-3), we can confirm, that agents receive significantly lower wages under *Mixed(FT)* contracts than in the *FixedTerm* treatment. In addition, the coefficients for *Mixed(OE)* and *OpenEnd* treatment differ significantly from the coefficient for *Mixed(FT)* in Model (1) and in Model (2) after controlling for Periods and a possible end-game

effect in the last period (all $p < 0.01$, Wald-test).

Since we observed that relationships tend to last longer in *OpenEnd* treatment and under *Mixed(OE)* than in *FixedTerm* treatment and *Mixed(FT)* contracts, in Model (3) we control for the length of relationship (the number of consecutive periods the agent worked for the same principal).[9] In line with the literature (Brown et al. 2004), wages tend to increase with longer relationship duration. However, we also observe that the negative coefficient of *OpenEnd* treatment becomes significant when controlling for the length of relationship. Furthermore, the length of the relationship partly explains the previously reported differences between *Mixed(FT)* and *Mixed(OE)*; the difference between the two coefficients shrinks but remains significant ($p = 0.065$). Based on these analyses we report our first result.

Result 1: Agents in *Mixed(FT)* contracts receive significantly lower wages than subjects in the *Mixed(OE)*, *OpenEnd*, and *FixedTerm* contracts.

4.2   Effort Levels

Figure 2 displays mean effort levels over the course of the experiment. In all treatments the "end game" effect is observed – a typical sharp decline in effort provided in the last period of the experiment. Average effort choices in the *FixedTerm*, *OpenEnd* and *Mixed* treatments show similar positive time trends during periods $1 - 14$. Overall, effort does not differ significantly between the treatments (all pairwise comparisons with $p > 0.2$, two-sided Wilcoxon rank-sum test) and in all three treatments effort is significantly above the minimum effort ($p < 0.001$, two-sided signed-rank test). Yet, Panel (b) in Figure 2 reveals again significant differences within

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[9]The length of relationship does vary by treatments. We find the mean relationship to be 2.8 and 4.6 periods for the *FixedTerm* and *OpenEnd* treatments respectively. Under the *Mixed* treatment, the mean relationship length is 3.5 periods where the *Mixed(FT)* workers average 1.8 periods and the *Mixed(OE)* contract holders average 4.6 periods.
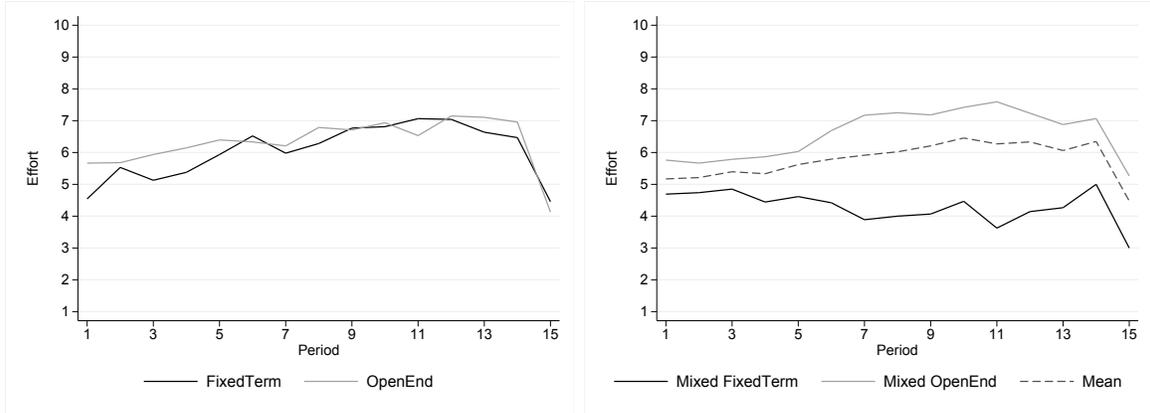
(a) Treatments *FixedTerm* and *OpenEnd*   (b) *Mixed* treatment, separated by contract type

Figure 2: Mean effort over time

the *Mixed* treatment. Agents tend to exert significantly more effort if they are hired under an open-ended contract compared to a fixed-term contract ($p < 0.001$, two-sided signed-rank test). Comparing the average effort under each of the two contract types in *Mixed* treatment with *FixedTerm* and *OpenEnd* treatments shows that effort is significantly lower in *Mixed(FT)* (both $p < 0.001$, two-sided Wilcoxon rank-sum test) but not in *Mixed(OE)* (both $p > 0.48$).

As previously reported, wages in *Mixed(FT)* were significantly lower than in the two other treatments and *Mixed(OE)* contracts. Therefore, lower effort levels in *Mixed(FT)* could just be a direct consequence thereof. We conducted additional regression analysis to identify the influence of wages and to isolate further differences between treatments and contract types. Again, we implement a Tobit model with upper and lower censoring and standard errors clustered at the group level. Table 4 reports the results. In all specifications, the *FixedTerm* treatment is the excluded variable. Model (1) replicates our non-parametric results with significantly lower effort in *Mixed(FT)* ($p < 0.001$) and no significant differences in the other treatments ($p > 0.25$, Wald-test). In Model (2) we control for periods, end-game effect, and the wage level. The model replicates the positive wage-effort relationship as previously reported in the literature: higher

Table 4: Tobit Regression on Effort by Treatment

	(1)	(2)	(3)
OpenEnd	0.35	0.60**	0.17
	(0.54)	(0.29)	(0.26)
Mixed (FT)	-2.28***	-0.79**	-0.72**
	(0.60)	(0.37)	(0.34)
Mixed (OE)	0.72	0.50	0.17
	(0.63)	(0.38)	(0.34)
Period		0.11***	0.04
		(0.02)	(0.02)
Last Period		-3.12***	-3.21***
		(0.40)	(0.41)
Wage		0.16***	0.15***
		(0.01)	(0.01)
Length of relationship			0.22***
			(0.04)
Constant	6.14***	-0.99***	-0.48
	(0.41)	(0.34)	(0.30)
Observations	2120	2120	2120

Notes: Three (***), two (**), and one (*) stars indicate
statistical significance at the 1%, 5%, and 10% levels
respectively. Standard errors, reported in parentheses,
have been corrected for clustering at the group level.

wages lead to significantly higher effort. The inclusion of the wage level accounts for the lower effort level in *Mixed(FT)* and thus changes its coefficient, however effort remains still significantly lower than in *FixedTerm* as well as in *OpenEnd* treatment and *Mixed(OE)* contracts ($p < 0.001$, Wald-test). Model (3) shows that effort increases with the length of relationship (that is in line with previous findings in Brown et al. 2004). Yet, relationship duration does not explain the significantly lower effort in *Mixed(FT)* as its coefficient remains negative and statistically significant. Additionally, we observe that agents tend to be more reciprocal in *OpenEnd* than in *FixedTerm* treatment (Model(2)). However, this effect disappears once we control for

the duration of relationships that were longer in *OpenEnd* than in *FixedTerm* treatment.

Based on these analyses we can conclude our next results. Our second result confirms our first hypothesis:

Result 2: We observe a positive wage-effort relationship; agents increase their effort as wages go up.

However, wages do not fully explain agents' effort and we conclude our third result, which is in line with our second hypothesis:

Result 3: When working under *Mixed(FT)* contracts agents exert significantly lower effort compared to when they work under *Mixed(OE)* contracts. The effort of agents working under *Mixed(FT)* is significantly lower than the effort of agents working in *OpenEnd* and *FixedTerm* treatments. Agents' effort in *Mixed(OE)*, *OpenEnd*, and *FixedTerm* does not differ significantly.

4.3   Behavior in the presence of both contract types

One remaining question is whether the lower effort under *Mixed(FT)* contracts is caused by this contract type being perceived as less kind or whether it is a result of sorting. Principals could sort high reciprocating agents into the *Mixed (OE)* contracts and low reciprocating agents into the *Mixed (FT)* contracts. Therefore, we use this section to take a closer look at the behavior in the *Mixed* treatment. We will start with the principals' decision to offer the *Mixed (FT)* contracts.

Figure 3 shows a time trend in the percentage of transactions under an open-ended or fixed-term contract. Whereas in the initial periods *Mixed(FT)* outnumbered the *Mixed(OE)* transactions by 54% to 44%, the proportion reversed in the later periods (33% *Mixed(FT)* and

63% *Mixed(OE)*).[10] These findings contradict our third hypotheses which implied all contracts to be open-ended.
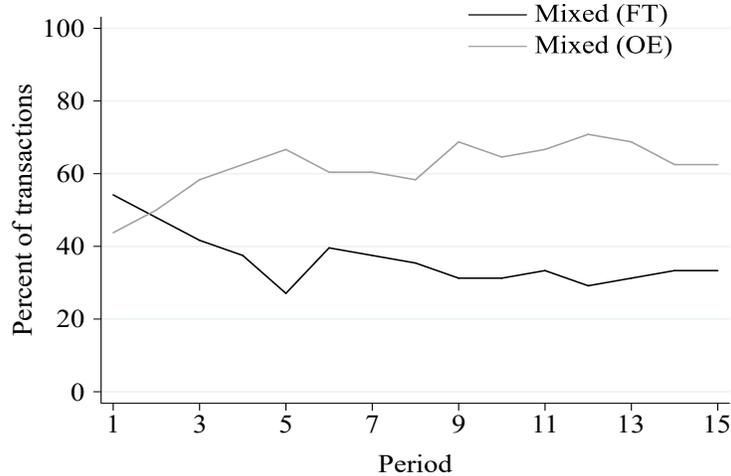

Figure 3: Percentage of transactions governed either by an open-ended or a fixed-term contract in the *Mixed* treatment

Why do principals offer *Mixed(FT)* contracts? Table 5 reports the estimates of Probit regressions estimating the likelihood of a principal offering a *Mixed (FT)* contract. Model (1) reports estimates for the first period and Models (2-4) are random effects estimations for periods 2 to 15.

In the very first period of the experiment principals have no previous experiences to base their decision on. Therefore, in Model(1) we can only use the principals' characteristics as measured by our post-experimental questionnaires to predict the offering of a *Mixed (FT)* contract in the first period.[11] Our results show that distributional preferences measured with the SVO as well as risk preferences do not predict the decision to offer a *Mixed (FT)* contract.

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[10]The percentage is a share of transactions under a given type of contract out of 48 transactions available in the *Mixed* treatment in each period (there were altogether 24 groups with 2 principals in each group). The percentages of contract types do not sum up to 100% in some periods in which one or two principals did not agree to any transaction at all.

[11]See footnote 4 for a detailed information on post-experimental questionnaires.

Table 5: Probit on principals offering Mixed (FT)

	(1)	(2)	(3)	(4)
Trust	-0.39*	-0.68***	-0.53**	-0.33
	(0.23)	(0.25)	(0.23)	(0.24)
Risk	0.08	0.01	-0.04	-0.07
	(0.08)	(0.09)	(0.09)	(0.07)
SVO	-0.01	-0.01**	-0.01	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)
Effort $t-1$			-0.27***	-0.28***
			(0.04)	(0.04)
Mixed (FT) Initial				1.48***
				(0.34)
Constant	-0.27	-0.59	1.15	0.45
	(0.48)	(0.59)	(0.71)	(0.57)
Only First Period	✓	-	-	-
Periods 2-15	-	✓	✓	✓
Observations	47	658	658	658

Notes: Three (***), two (**), and one (*) stars indicate statistical significance at the 1%, 5%, and 10% levels respectively. Standard errors, reported in parentheses, have been corrected for clustering at the group level. Models 1,2, and 3 estimate random effects probits and model 4 a regular probit.

However, trust is significantly correlated with the decision. The *Mixed (FT)* contract is more likely to be offered, the less trusting the principal is. Models (2) and (3) demonstrate that this influence of trust holds for periods 2-15, too. In addition, Models (3) and (4) show that principals are more likely to offer *Mixed (FT)* contracts if workers effort was low in the previous period and that principals tend to stick to their first round contract choice. If the first contract offered was a *Mixed (FT)* contract they are even more likely to offer those contracts in the following periods.[12] Since trust is correlated with the initially offered contract, its coefficient

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[12]Coefficients for period and last period would be insignificant for all reported specifications and are thus

loses its significance once we control for the very first contract offered. Based on this, we conclude our next result:

Result 4:

(a) In contrast to hypothesis 3, principals do not only offer open-ended contracts. Principals are more likely to offer *Mixed (OE)* contracts to agents who exerted higher effort in the past.

(b) Principals are more likely to offer *Mixed (OE)* contracts if they are more trusting.

This result provides some evidence for principals sorting the agents into different contract types, but is this the only determinant of the different effort levels? Some of the principals do not sort at all, but offer only one type of contract. 4 out of 48 principals offer exclusively *FixedTerm* contracts during the whole experiment. Their contracted agents provide 40% lower effort compared to the effort provided by the agents working for all other principals (average effort of 3.16 vs. 5.5, $p = 0.035$, two-sided Wilcoxon rank-sum test). 8 out of 48 principals offer only *OpenEnd* contracts receiving 45% higher effort than all other principals (average effort of 7.16 vs. 4.93, $p = 0.0118$, two-sided Wilcoxon rank-sum test). In a last step we will revisit agent's effort in the *Mixed* treatment and provide additional evidence for our claim that lower effort is not solely driven by sorting, but actually the contract type.

Figure 4 displays the mean effort level for each contract type in different sub-samples. The first comparison is based on agents' effort in their very first contract formed. At this point principals have no information to sort an agent into different contract types. Yet, the difference in effort levels is already significant ($p = 0.0218$, two-sided Wilcoxon rank-sum test). The second comparison in Figure 4 shows the mean effort of agents who worked only under one contract type during the whole experiment. Again the difference in effort levels between the
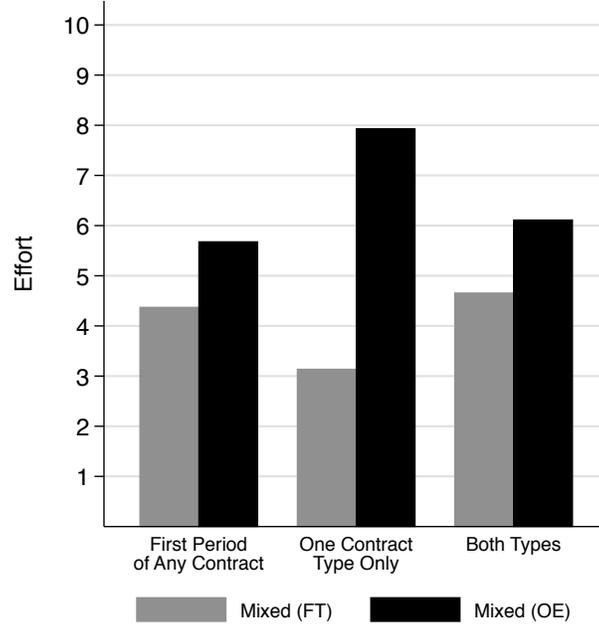
dropped.

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Figure 4: Mean effort provided by agents in the first period of a contract and by agents who experienced either only one or both contract types in *Mixed* treatment over the type of contract - *Mixed(FT)* and *Mixed(OE)*.

two contract types is highly significant ($p < 0.001$, two-sided Wilcoxon rank-sum test). The last comparison in Figure 4 is for agents who worked in each type of contract for at least one period within the experiment. There we can directly test and compare the average effort of the same agent under both types of contracts. In line with all other comparisons we observe significantly higher effort levels provided under the *Mixed (OE)* contracts than under the *Mixed (FT)* contracts (Wilcoxon signed-rank test: $p < 0.01$).

We examine these results further in Table 6 using a Tobit regression on effort with the same sub-samples as in Figure 4. Models (1) and (2) confirm the results of the non-parametric test for the very first contract signed by an agent. The higher effort in *Mixed (OE)* contract remains robust when adding controls for the wage of the contract, distributional preferences as measured by the SVO, and the period the very first contract of the agent is formed.[13] Holding

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[13]Risk preferences and trust attitudes are insignificant and do not alter the results. Therefore, we do not

Table 6: Tobit Regression on Agent's effort in Mixed Treatment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mixed (OE)	1.42*	1.12*	1.58**	1.24**	3.84***	3.63***	0.62**	0.54**
	(0.71)	(0.60)	(0.68)	(0.58)	(0.91)	(0.90)	(0.24)	(0.24)
Wage		0.07***		0.07***	0.16***	0.16***	0.14***	0.13***
		(0.01)		(0.01)	(0.03)	(0.03)	(0.01)	(0.01)
SVO		0.02**		0.02**		0.02		0.03***
		(0.01)		(0.01)		(0.01)		(0.01)
Period		-0.03		-0.04		0.11*		0.02
		(0.18)		(0.16)		(0.06)		(0.03)
Choice			-0.68	-0.49				
			(0.58)	(0.52)				
Constant	4.23***	1.58***	4.48***	1.82***	-2.01	-2.79**	-0.12	-0.42
	(0.48)	(0.57)	(0.57)	(0.56)	(1.31)	(1.37)	(0.39)	(0.50)
Only First Contract	✓	✓	✓	✓	-	-	-	-
Only One Contract Type	-	-	-	-	✓	✓	-	-
Only Both Contract Types	-	-	-	-	-	-	✓	✓
Observations	71	71	71	71	206	206	499	499

Notes: Three (***), two (**), and one (*) stars indicate statistical significance at the 1%, 5%, and 10% levels respectively. Standard errors, reported in parentheses, have been corrected for clustering at the group level.

wage and the other controls constant we find effort levels in the *Mixed (FT)* contracts to be roughly one point lower than in the *Mixed (OE)* contracts.

Importantly, in some groups both firms decided to offer the same type of contract. This created a situation in which a worker faced offers only for one contract type, meaning that he could not self-select into a preferred contract type.[14] This allowed us to further investigate whether higher effort levels observed in *Mixed (OE)* contracts are only a result of specific workers self-selecting into a particular contract type or are indeed a direct response of workers to the contract type offered. Models (3) and (4) show that whether a worker had a choice between

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report them.

[14]27 workers faced only *Mixed (FT)* contracts and 12 workers saw only *Mixed(OE)* contracts when entering into their first agreement.

the contract types does not influence workers' effort and does not affect the main result – the impact of *Mixed (OE)* contracts on effort remains unchanged.

Models (5) and (6) repeat Model (1) and (2) for agents who experienced only one type of contract throughout the whole experiment. For this subgroup the difference in average effort levels is even larger; effort is more than 3.5 units higher under *Mixed (OE)* contracts. Finally, Models (7) and (8) investigate the effort levels of agents who experienced both contract types. The same agents provide significantly higher effort under *Mixed (OE)* than under *Mixed (FT)*.[15]

Models (2), (4) and (8) demonstrate that agents with stronger distributional preferences as measured by the SVO tend to provide higher effort. In addition, we have demonstrated that agents' efforts are significantly higher under a *Mixed (OE)* contract even before they can be sorted. A possibility to self-select into one contract type does not change this result. Furthermore, the same agent provides higher effort levels when working under a *Mixed (OE)* contract compared to a *Mixed (FT)* contract. Thus, we can conclude that the difference in effort levels between the two treatments is not simply a matter of sorting different agents into the two contract types. We can summarize our last result:

Result 5: Result 3 cannot be fully explained by sorting. Instead, and in line with our hypothesis, *Mixed (FT)* contract contributes to lower effort levels that are a direct result of a payoff-irrelevant contractual detail: the signaled contract length.

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[15]The coefficient for *Mixed (OE)* would essentially remain unaltered if agent specific fixed-effects were added to Model (8) ($b = 0.53$, $se = 0.26$, $p = 0.041$).

5 Discussion and conclusions

When forming a contract, both parties are able to define obligations such as payments and performance as well as the specific length of the relationship and termination rules. Although the duration and termination may be flexible, the contract terms determine the precise nature of the relationship. For instance, parties might agree to have a fixed-term contract. At the conclusion of the agreed term, the contract may end permanently or may be renewed. Indeed, the contract could be renewed multiple times, in effect, leading to a longer relationship than initially defined by the original contract. Alternatively, parties can agree to have an open-ended contract. Once they do not want to work with each other anymore, the contract is terminated. In this study we show that this different formulation might matter for inducing trust and reciprocity in a contractual relationship. Specifically, we reveal that even seemingly equivalent contract types, fixed-term and open-ended at will contracts, have a different impact on agents' behavior when contracts are incomplete.

Comparing behavior when only one type of contract is available, we found that participants manage to form long-term beneficial relations under both contracts. When looking at overall behavior of agents, they are less reciprocal when principals has only a fixed-term contract at their disposal than when an open-ended contract is the only available option. Yet, irrespective of a contract type, agents perform very well if they continue to work with the same principal in the following periods. These long-term relationships are, however, less frequent in fixed-term than in open-ended contract. The observed difference in reciprocal behavior of agents is driven by a shorter duration of relationships when fixed-term rather than open-ended contracts are imposed.

Crucially, when agents know that a principal can choose between the two contract types, they

perceive a fixed-term contract as less kind than an open-ended contract. Accordingly, when both contract types are available, fixed-term contracts turn out to be less effective in encouraging high effort levels than open-ended contracts. Fixed-term contracts are rarely used to form long-term beneficial relations. Importantly, agents provide lower effort levels under the fixed-term contract already in their very first contract. This result is not influenced by the fact that some agents could choose between the two contract types and select the one that they prefer. Furthermore, agents who experienced both types of contracts provide less effort under the fixed-term than under the open-ended contract. Principals' choices of open-ended contract seem to be driven by a combination of factors. First, more trusting principals are more likely to choose an open-ended contract from the very beginning of the experiment. Additionally, the higher effort provided by the agent in the preceding period, the more likely it is that a principal will enter an open-ended contract.

Further research could investigate why agents find one type of contract more trustful and kind than the other one. There are a couple of possible explanations. First, an offer of a fixed-term or open-ended contract can be treated as a communication device between principals and agents. It is likely that although an open-ended contract can be terminated anytime by either party, it might be also seen as an implicit promise by the principals to interact with the same agent until the end of a game. Although this promise cannot be formally enforced, it might be seen as a message of trust. Second, agents might attach a different meaning to the fixed-term and open-ended contract which is a result of existing legal practices in a given country. For instance, in European countries a fixed-term contract might be associated with a probationary period or temporary employment and, thus, low job security (OECD 2014). In contrast, an open-ended contract, even with no termination protection, might be related to a long-term

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contractual relation and higher job security (OECD 2014). This experience might be carried over to the laboratory environment and lend a special meaning to the types of contracts offered. Correspondingly, an offer of an open-ended contract will be perceived as kind and a fixed-term as unkind. Both explanations, though plausible, require further research to be verified.

Our results show that in the context of incomplete contracts it is critical to study not only the monetary incentives schemes (wages and bonuses) or monitoring devices, but also the formulation of other contractual terms such as contract duration and termination. While these terms do not have a direct explicit impact on agents' payoffs, the implicit meaning can have profound behavioral consequences. Offering one contract type instead of a different - even when equivalent - contract might communicate trust and be perceived as a kind offer by an agent. The principal's kindness might be reciprocated by an agent with high performance resulting in a profitable long-term relationship.

References

Bock, Olaf, Ingmar Baetge, and Andreas Nicklisch. 2014. "hroot: Hamburg Registration and Organization Online Tool". *European Economic Review* 71:117 –120. ISSN: 0014-2921. doi:`http://dx.doi.org/10.1016/j.euroecorev.2014.07.003`. `//www.sciencedirect.com/science/article/pii/S0014292114001159`.

Brown, Martin, Armin Falk, and Ernst Fehr. 2004. "Relational Contracts and the Nature of Market Interactions". *Econometrica* 72 (3): 747–780. ISSN: 1468-0262. doi:`10.1111/j.1468-0262.2004.00511.x`. `http://dx.doi.org/10.1111/j.1468-0262.2004.00511.x`.

Charness, Gary. 2004. "Attribution and Reciprocity in an Experimental Labor Market". *Journal of Labor Economics* 22 (3): 665–688. ISSN: 0734306X, 15375307. `http://www.jstor.org/stable/10.1086/383111`.

Charness, Gary, and Matthew Rabin. 2002. "Understanding social preferences with simple tests". *The Quarterly Journal of Economics* 117 (3): 817–869.

Danilov, Anastasia, and Dirk Sliwka. 2017. "Can Contracts Signal Social Norms? Experimental Evidence". *Management Science* 63 (2): 459–476. doi:`10.1287/mnsc.2015.2336`. eprint: `https://doi.org/10.1287/mnsc.2015.2336`. `https://doi.org/10.1287/mnsc.2015.2336`.

Dickinson, David, and Marie-Claire Villeval. 2008. "Does monitoring decrease work effort?: The complementarity between agency and crowding-out theories". *Games and Economic Behavior* 63 (1): 56 –76. ISSN: 0899-8256. doi:`http://dx.doi.org/10.1016/j.geb.2007.08.004`. `//www.sciencedirect.com/science/article/pii/S0899825607001364`.

Dijk, Frans van, Joep Sonnemans, and Frans van Winden. 2002. "Social ties in a public good experiment". *Journal of Public Economics* 85 (2): 275 –299. ISSN: 0047-2727. doi:`http://dx.doi.org/10.1016/S0047-2727(01)00090-1`. `//www.sciencedirect.com/science/article/pii/S0047272701000901`.

Dufwenberg, Martin, and Georg Kirchsteiger. 2004. "A theory of sequential reciprocity". *Games and economic behavior* 47 (2): 268–298.

Eriksson, Tor, and Marie Claire Villeval. 2012. "Respect and relational contracts". *Journal of Economic Behavior & Organization* 81 (1): 286 –298. ISSN: 0167-2681. doi:`http://dx.doi.org/10.1016/j.jebo.2011.10.019`. `//www.sciencedirect.com/science/article/pii/S016726811100268X`.

Falk, Armin, and Urs Fischbacher. 2006. "A theory of reciprocity". *Games and Economic Behavior* 54 (2): 293 –315. ISSN: 0899-8256. doi:`http://dx.doi.org/10.1016/j.geb.2005.03.001`. `//www.sciencedirect.com/science/article/pii/S0899825605000254`.

Falk, Armin, and Michael Kosfeld. 2006. "The Hidden Costs of Control". *American Economic Review* 96 (5): 1611–1630. doi:`10.1257/aer.96.5.1611`. `http://www.aeaweb.org/articles?id=10.1257/aer.96.5.1611`.

Fehr, Ernst, Georg Kirchsteiger, and Arno Riedl. 1993. "Does Fairness Prevent Market Clearing? An Experimental Investigation". *The Quarterly Journal of Economics* 108 (2): 437–459. ISSN: 00335533, 15314650. `http://www.jstor.org/stable/2118338`.

Fehr, Ernst, Alexander Klein, and Klaus M Schmidt. 2007. "Fairness and Contract Design". *Econometrica* 75 (1): 121–154. ISSN: 1468-0262. doi:`10.1111/j.1468-0262.2007.00734.x`. `http://dx.doi.org/10.1111/j.1468-0262.2007.00734.x`.

Fehr, Ernst, Simon Gächter, and Georg Kirchsteiger. 1997. "Reciprocity as a Contract Enforcement Device: Experimental Evidence". *Econometrica* 65 (4): 833–860. ISSN: 00129682, 14680262. `http://www.jstor.org/stable/2171941`.

Fischbacher, Urs. 2007. "z-Tree: Zurich toolbox for ready-made economic experiments". *Experimental Economics* 10 (2): 171–178. ISSN: 1573-6938. doi:`10.1007/s10683-006-9159-4`. `http://dx.doi.org/10.1007/s10683-006-9159-4`.

Gächter, Simon, and Armin Falk. 2002. "Reputation and Reciprocity: Consequences for the Labour Relation". *Scandinavian Journal of Economics* 104 (1): 1–26. ISSN: 1467-9442. doi:`10.1111/1467-9442.00269`. `http://dx.doi.org/10.1111/1467-9442.00269`.

Greiner, Ben. 2004. "The Online Recruitment System ORSEE 2.0 - A Guide for the Organization of Experiments in Economics", no. 10 (). `https://ideas.repec.org/p/kls/series/0010.html`.

Hart, Oliver. 1995. "Corporate Governance: Some Theory and Implications". *The Economic Journal* 105 (430): 678–689. ISSN: 00130133, 14680297. `http://www.jstor.org/stable/2235027`.

Herold, Florian. 2010. "Contractual incompleteness as a signal of trust". *Games and Economic Behavior* 68 (1): 180 –191. ISSN: 0899-8256. doi:`http://dx.doi.org/10.1016/j.geb.2009.05.001`. `//www.sciencedirect.com/science/article/pii/S0899825609000992`.

Hoffman, David A. 2016. "From Promise to Form: How Contracting Online Changes Consumers". *New York University Law Review* 91:1595.

Hoffman, Zev J., David A. Eigen. 2017. "Contract Consideration and Behavior". *George Washington Law Review* 85:351.

Kreps, David M, et al. 1982. "Rational cooperation in the finitely repeated prisoners' dilemma". *Journal of Economic Theory* 27 (2): 245 –252. ISSN: 0022-0531. doi:`http://dx.doi.org/10.1016/0022-0531(82)90029-1`. `http://www.sciencedirect.com/science/article/pii/0022053182900291`.

Lazzarini, Sergio G., Gary J. Miller, and Todd R. Zenger. 2004. "Order with Some Law: Complementarity versus Substitution of Formal and Informal Arrangements". *The Journal of Law, Economics, and Organization* 20 (2): 261. doi:`10.1093/jleo/ewh034`. eprint: `/oup/backfile/Content_public/Journal/jleo/20/2/10.1093/jleo/ewh034/2/ewh034.pdf`. `+http://dx.doi.org/10.1093/jleo/ewh034`.

Liebrand, Wim B. G. 1984. "The effect of social motives, communication and group size on behaviour in an N-person multi-stage mixed-motive game". *European Journal of Social Psychology* 14 (3): 239–264. ISSN: 1099-0992. doi:`10.1002/ejsp.2420140302`. `http://dx.doi.org/10.1002/ejsp.2420140302`.

MacLeod, W. Bentley, and James M. Malcomson. 1989. "Implicit Contracts, Incentive Compatibility, and Involuntary Unemployment". *Econometrica* 57 (2): 447–480. ISSN: 00129682, 14680262. `http://www.jstor.org/stable/1912562`.

MacNeil, Ian R. 1974. "The Many Futures of Contracts". *Southern California Law Review* 47:691.

OECD. 2014. "OECD Employment Outlook 2014". doi:`http://dx.doi.org/10.1787/empl_outlook-2014-en`. `/content/book/empl_outlook-2014-en`.

Rabin, Matthew. 1993. "Incorporating fairness into game theory and economics". *The American economic review*: 1281–1302.

Scott, Robert E. 2006. "The law and economics of incomplete contracts". *Annu. Rev. Law Soc. Sci.* 2:279–297.

Shapiro, Carl, and Joseph E. Stiglitz. 1984. "Equilibrium Unemployment as a Worker Discipline Device". *The American Economic Review* 74 (3): 433–444. ISSN: 00028282. `http://www.jstor.org/stable/1804018`.

Spier, Kathryn E. 1992. "Incomplete Contracts and Signalling". *The RAND Journal of Economics* 23 (3): 432–443. ISSN: 07416261. `http://www.jstor.org/stable/2555872`.

Weber, Libby, Kyle J. Mayer, and Jeffrey T. Macher. 2011. "An Analysis of Extendibility and Early Termination Provisions: The Importance of Framing Duration Safeguards". *Academy of Management Journal* 54 (1): 182–202. doi:`10.5465/AMJ.2011.59215083`. eprint: `http://amj.aom.org/content/54/1/182.full.pdf+html`. `http://amj.aom.org/content/54/1/182.abstract`.

Wilkinson-Ryan, Tess. 2015. "Intuitive Formalism in Contract". *University of Pennsylvania Law Review* 163:2109.

Wilkinson-Ryan, Tess, and David A Hoffman. 2015. "The common sense of contract formation". *Stanford Law Review* 67 (6).

Williamson, Oliver E. 1979. "Transaction-Cost Economics: The Governance of Contractual Relations". *The Journal of Law & Economics* 22 (2): 233–261. ISSN: 00222186, 15375285. `http://www.jstor.org/stable/725118`.

Appendix A: Contract Type and Perceived Kindness

In addition to our main experiment, we conducted a questionnaire study to support our intuition on the kindness perception of the two contract types. We surveyed 96 participants in unrelated experiments. Participants were randomly assigned to one of three short scenarios describing a situation in which a worker is offered a contract. In one scenario, a worker was offered a fixed-term contract. In the second scenario, he was offered an open-ended contract. Importantly, in these scenarios participants were given information only about one contract type. The third scenario described both contracts as two available options as in the *Mixed* treatment. This way each scenario resembled the experimental environment implemented in the treatments. Using a five-point Likert scale participants assessed the kindness of a contract and indicated whether they would work hard when offered this type of a contract.[16]

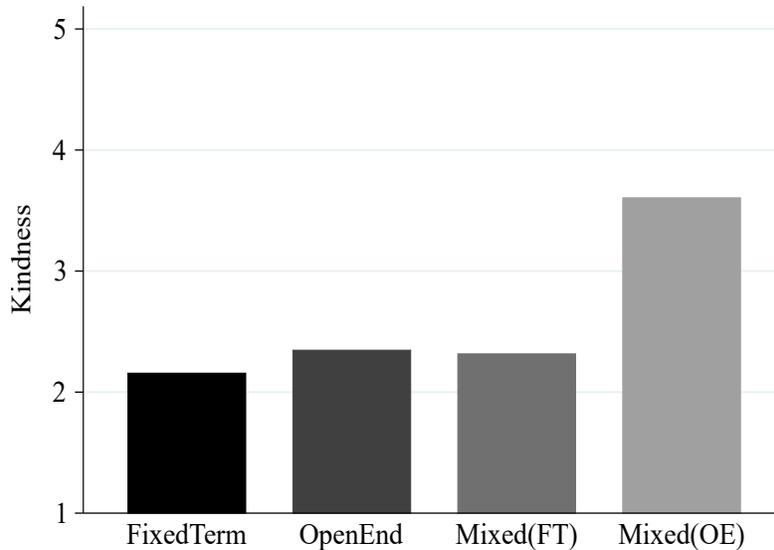Figure 5: Average Kindness Responses by Contract Type

Figure 5 displays the average responses to the questions about the kindness of a given contract.[17] We found that an open-ended contract (Mixed(OE)) was perceived as significantly

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[16]Scenarios and questions are included in Appendix C.

[17]The responses were averaged across two questions - one was asking whether the contract was found kind,

kinder than a fixed-term contract (Mixed(FT)) but only when a principal could choose between the two contract types ($p = 0.0001$, two-sided signed rank test). In contrast, contracts were rated as equally kind when only one contract was the available option (FixedTerm and OpenEnd), $p = 0.6981$, two-sided Wilcoxon rank-sum test.

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the other one asked an opposite question.

Appendix B: Experiment Instructions

The instructions below are a translation from German for the *Mixed* treatment which combines elements of *FixedTerm* and *OpenEnd* treatments.

General instructions for the participants

You are about to take part in an economic experiment. In this experiment you can earn a significant amount of money depending on your decisions and the decisions of other participants, you will interact with. For this reason, it is essential to read the instructions carefully.

The instructions you obtained are for your private use only. Please note that you are not allowed to communicate with other participants during this experiment. Should you have any questions, please ask us for assistance. If you do not comply with the rules we will have to exclude you from the experiment and from all payments.

During the experiment we do not speak of euros but of points. Thus, your total income will be calculated first in points. All the points that you gain during the experiment will be converted into money and paid to you in cash at the end of the experiment.

Today's experiment includes 4 phases:

1. Instructions: You have just received the instructions to the first part of the experiment (in this phase you are at the moment).

2. The experiment:

a. First part

b. Second part: The instructions to the second part of the experiment will be presented to you on the screen as soon as the first part of the experiment is over.

3. Questionnaire

4. Payments

Please note that decisions and payments in the first part of the experiment do not have any impact on decisions and payments in the second part of the experiment.

Instructions to the first part of the experiment

In the first part of the experiment the following conversion rate from points into euros applies:

$$1 \text{ point} = 4 \text{ Eurocents}$$

At the beginning of the first part of the experiment you receive a lump sum of 6 Euros (=150 points).

In this part of the experiment all participants are divided into groups of five. Two different roles are randomly assigned to the participants in each group. There are two participants with a role "firm" and three participants with a role "worker" in each group. Each participant receives a randomly assigned identification number. **To secure your anonymity the identification number you are assigned differs from the number of your cabin.** Your role and your identification number will be displayed on the screen at the beginning of the experiment. The groups, roles as well as the identification numbers do not change during the course of this whole part of the experiment. During the entire first part of the experiment you will interact with the same participants in your group.

The first part of the experiments lasts 15 rounds. Below you will find a detailed description of a round.

Each round includes three stages:

- Stage 1 "Recruitment"

- Stage 2 "Effort choice"

- Stage 3 "Income"

All three stages are presented below.

Stage 1 "Recruitment"

In the recruitment stage each firm may hire only one worker. There are two types of contracts, contract A and contract B. With contract type A an employment agreement is formed for one period. In contract type B an employment agreement lasts for the duration of the remaining periods. However, a contract B might be terminated in every period. An employment offer includes a wage, a desired effort level as well as the type of the contract, either A or B. The following restrictions apply:

1. The wage offer may not be below 1 and higher than 100 points.

$$1 \leq \text{wage offer} \leq 100$$

2. The desired effort level may not be below 1 and higher than 10:

$$1 \leq \text{desired effort level} \leq 100$$

The wage offer is binding. It means that at the end of each round the worker receives the wage accepted and the firm pays the wage.

The desired effort level stated in the offer is not binding. The worker decides freely about the level of his effort choice in stage 2.

In the recruitment stage firms make wage offers and workers decide whether to accept an offer. The description of this process follows.

1. The firm makes an offer.

Two firms can make two types of offers to three workers in their group.

(a) Private offers: Private offer is made only to one worker, who decides whether to accept it. The two other workers and the other firm are not informed about this offer.

(b) Public offers: Public offer is made to all workers in a group, who can decide whether to accept it. The worker, who as first accepts it, forms an employment agreement with the firm. The other firm is not informed about this offer.

To make a private offer the firm indicates the following information:

- wage

- desired effort level

- contract type (either A or B)

- identification number of the worker, the offer is addressed to

Private offers will be displayed on the right side of the screen under the title "private offers".

To make a public offer the firm indicates the following information:

- wage

- desired effort level

- contract type (either A or B)

Public offers will be displayed on the left side of the screen under the title "public offers".

2. The worker accepts an offer

Below is a description of how to accept private and public offers.

(1) Private offers: To accept a private offer the worker has to highlight the private offer displayed on the screen and click on "Accept" to confirm.

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(2) Public offers: Each worker can accept public offers. To accept an offer one has to highlight the offer displayed on the screen and click on "Accept" to confirm.

(3) Further rules

Each firm can submit an unlimited number of private and public offers. Firms and workers may enter only into one employment agreement in each period. That means that as soon as the firm hires the worker all other offers of this firm are deleted and the other workers cannot accept any further offers of this firm.

Firms are not obliged to submit offers and workers are not obliged to accept offers.

The recruitment stage lasts 150 seconds. No further offers may be sent and no further offers may be accepted after this time. The stage is also over as soon as all the firms in a group hire a worker. In this case the recruitment stage may last less than 150 seconds.

Stage 2 "Effort choice"

Only workers who accepted an offer participate in this stage.

Each worker, who accepted an offer, makes an effort choice. An effort choice must fulfill the following criteria:

- An effort choice may not be below 1 and higher than 10:

$$1 \leq \textbf{effort choice} \leq 100$$

The worker pays with points for his effort choice. The relation between effort choice and effort cost will be presented in stage 3 "Income"

Stage 3 "Income"

Income of firms and workers, who formed an employment agreement as well as firms and workers, who did not enter into an employment agreement, is presented below.

1. Income of firms and workers who formed an employment agreement

Income of a worker depends on a wage accepted as well as on his effort choice. It is calculated in the following way:

Worker's income: Wage – costs of effort (dependent on the effort choice)

The costs of effort increase with the effort choice. The costs are displayed in a table below:

Effort choice	1	2	3	4	5	6	7	8	9	10
Effort costs (in points)	0	1	2	4	6	8	10	12	15	18

Worker's income is higher,

- the higher is the wage accepted

- the lower is the effort choice and effort costs thereof.

Income of a firm depends on the wage accepted by the worker as well as on his effort choice. It is calculated in a following way:

Firm's income: 10 x effort choice - wage

Firm's income is higher,

- the higher is the worker's effort choice,

- the lower is the accepted wage.

Income of all workers and firms, who entered into an employment agreement, is calculated according to the rules described above. Each firm can calculate income of a hired worker and each worker can calculate income of a hiring firm.

2. Income of firms and workers who did not form any employment agreement

Income of a worker is 5 points in a round without any agreement. Income of a firm is 0 point in a round without any agreement.

3. Further rules

Please note that firms as well as workers can make losses. The losses will be paid from the initial lump sum (150 points) or income earned in previous rounds.

As soon as the income in a current period is displayed on a screen, firms and workers, who formed a contract B, can decide whether they want to continue the current agreement or terminate it.
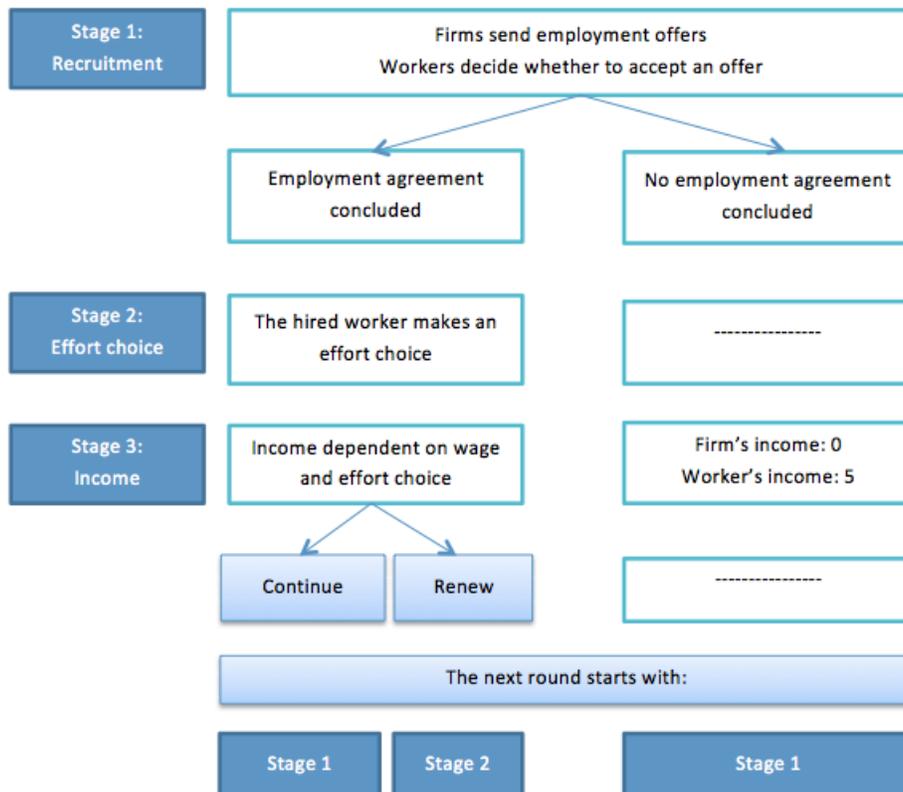
- If you want to continue the current agreement, please click on "Continue"

- If you want to terminate the current agreement, please click on "Terminate".

Only if both parties, the worker and the firm, click on "Continue", the agreement will be continued. In this case the firm and the worker will skip the stage 1 "Recruitment" in the next period and start directly with stage 2 "Effort choice". The contract and its conditions (wage and desired effort level) will remain the same in the next period.

If at least one of the parties, the worker or the firm, clicks on "Terminate", the next period starts with the stage 1 "Recruitment". Firms and workers are not bound and can enter into a new agreement.

As soon as the income in the current period is displayed on a screen, firms and workers, who formed an agreement for duration of one period, can click on "Continue" in order to start the next period.

Outline of a round

Stage 1: Recruitment	Firms send employment offers
	Workers decide whether to accept an offer

Employment agreement concluded	No employment agreement concluded

Stage 2: Effort choice	The hired worker makes an effort choice	----------------

Stage 3: Income	Income dependent on wage and effort choice	Firm's income: 0 Worker's income: 5

Continue	Renew	----------------

The next round starts with:

Stage 1	Stage 2	Stage 1

Appendix C: Survey Questions

The instructions below are a translation from German. Note that subjects will see only one of the possible contexts.

Context One: Fixed-term Contract Only

Please indicate the extent to which you agree with the following statements based on this hypothetical scenario.

You are a worker that can be hired to work by a manager under the terms of the contract below:

- Contract Details:

    - Contract lasts for one day.

    - At the end of the day, the contract is over.

    - A new contract may be formed for the following day.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. This is a nice contract.	○	○	○	○	○
2. This is not a nice contract.	○	○	○	○	○
3. I would work hard if hired with this contract.	○	○	○	○	○

Context Two: Open-ended Contract Only

Please indicate the extent to which you agree with the following statements based on this hypothetical scenario.

You are a worker that can be hired to work by a manager under the terms of the contract below:

- Contract Details:

  - Contract lasts for an unspecifed number of days.

  - At the end of the days, the contract may be continued if both the worker and manager agree to continue.

  - If either the worker or manager choose not to continue the contract, a new contract may be formed for the following day.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. This is a nice contract.	○	○	○	○	○
2. This is not a nice contract.	○	○	○	○	○
3. I would work hard if hired with this contract.	○	○	○	○	○

Context Three: Both Contracts

Please indicate the extent to which you agree with the following statements based on this hypothetical scenario.

You are a worker that can be hired to work by a manager under the terms of either Contract A or Contract B described below:

- Contract A Details:

    - Contract lasts for one day.

    - At the end of the day, the contract is over.

    - A new contract may be formed for the following day.

- Contract B Details:

– Contract lasts for an unspecifed number of days.

– At the end of the days, the contract may be continued if both the worker and manager agree to continue.

– If either the worker or manager choose not to continue the contract, a new contract may be formed for the following day.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Contract A is a nice contract.	○	○	○	○	○
2. Contract A is not a nice contract.	○	○	○	○	○
3. I would work hard if hired with Contract A.	○	○	○	○	○
4. Contract B is a nice contract.	○	○	○	○	○
5. Contract B is not a nice contract.	○	○	○	○	○
6. I would work hard if hired with Contract B.	○	○	○	○	○