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Do Contract Remedies Affect Efficient Renegotiation? An Experiment

ABSTRACT: Rational parties enter into a contract if the agreement is mutually beneficial. However, after the contract is formed, changes to the costs and/or benefits of performance may render the original contract undesirable. In this paper, we carry out an incentivized experiment to study the effect of alternative remedies on the parties' ability to renegotiate their contractual obligations. After entering into a contract, experimental subjects observe symmetrical changes to the original costs and/or benefits, which create a misalignment of their performance vs. breach incentives. Renegotiation of the original contract would allow parties to realign their interests and to capture some additional surplus. Our experimental design allows us to compare the effects of damage and specific performance remedies on the parties' ability to renegotiate. Our results provide novel insights for the choice of contract remedies in the face of possible market shocks.

Keywords: Efficient breach, contract remedies, specific performance, damages

JEL Codes: K12, D86, C9

1. Introduction

Whether a legal remedy is more efficient than the other in fostering an efficient contract breach is ultimately an empirical issue. This paper investigates the micro-determinants of renegotiation under alternative legal remedies for breach of contracts. Specifically, we aim at identifying which legal remedy — specific performance or damages — is more effective in fostering an efficient renegotiation in the wake of an exogenous market shock, to prevent an inefficient breach or an inefficient performance of a contract.

We consider two symmetrical contractual scenarios involving a sale contract. In the first scenario, the contract is subject to a damages remedy: the promisor (seller) has the right to breach,

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and the promisee (buyer) would need to negotiate to prevent the breach and get what she was promised. In the second scenario, the contract is subject to specific performance: the promisee (buyer) has a right to enforce performance and the promisor (seller) would have to negotiate to avoid performance and be allowed to breach. After the contracts are formed, parties face financially symmetrical changes to the costs and/or benefits of the original contract, which create a misalignment of their performance vs. breach incentives. Under both scenarios parties could benefit from the renegotiation of their agreement. The focus of our incentivized experiment is to understand which remedy more easlily allows parties to renegotiate, to avoid an inefficient breach or an inefficient performance in the face of an exogenous market shock.

This document is structured as follows. In Section 1.1, we introduce our research question, providing a brief survey of the legal instruments available to enforce contractual promises. The goal of our experiment is to identify the determinants of contract renegotiation in the face of breach opportunities, casting our experimental hypothesis against the theoretical backdrop of Coase's (1960) irrelevance of remedies proposition. In Section 1.2, we place our contribution in the context of the existing literature. In Section 2, we present our experiment. We utilize a modified "Contract-Breach Game" à la Bigoni et al. (2017) to elicit micro-level behaviours and to enable the causal identification of the effects of contract remedies, which would otherwise be difficult to observe or estimate with survey/observational data at the market level. The experiment tests how different breach remedies affect the parties' (1) willingness to renegotiate the contract, (2) ability to bring renegotiation to a successful completion, and (3) splitting of the renegotiation surplus. In Section 3, we discuss our results. Specifically, we show whether people's reactions differ under alternative breach remedies and which remedy can more effectively foster optimal renegotiation. In Section 4, we conclude discussing the implications of our results for the design of legal frameworks that support optimal contract execution and renegotiation.

1.1 Research Question

When parties enters into a contract they expect their conterparts to do as they promised. Yet, contractual promises are not always fulfilled. What should be the legal remedy for the breach of their agreement? One point is clear in all contemporary legal systems: the disappointed promisee (breachee) should not take the law into her own hands and force the breaching promisor (breachor) to fulfill his promise. The breachee must bring her claims and seek relief in court. Apart from this

common foundation, modern legal systems vary in the types of solutions provided when a contractual promise is breached.

Broadly speaking, the promissee's rights can be alternatively protected by a "strong" remedy (where the promisee can force the breaching promisor to fulfil the contractual obligation) or by a "weak" remedy (where the promisor can avoid performance paying damages to his promisee). In the legal terminology, strong remedies are called "specific performance" remedies, whereas weak remedies fall under the general category of "damages." Law and econonomics scholars (Posner, 1977, Cooter and Ulen, 1997, Edlin, 1998) describe the main characteristics of these two categories of remedies as follows:

1. Specific performance: in the event of a breach, the breachee can force the breachor to fulfil the contractual obligation and carry out the performance as stated in the contract, *unless* both parties reach an agreement to resolve the contract with the payment of a sum mutually agreed upon. Under specific performance, the promisor can avoid the performance of the original contract *only with* the consent of the promisee and renegotiation of the original contract. By using Calabresi and Melamed's (1972) terminology, this form of relief corresponds to a "property rule."
2. Damages: a promisor is entitled to breach the contract without the consent of his promisee. In the event of a breach, the breachor must pay an amount of damages to his breachee. Damages may be agreed upon by the parties at the time of the contract (liquidated damages) or liquidated by the court to compensate the promisee for the foregone performance benefit (compensatory damages). Under a damages remedy, a promisee who wants to obtain the promised contractual performance, rather than damages, would have to renegotiate the contract to reverse the promisor's decision to breach. By using Calabresi and Melamed's (1972) terminology, this "weak" remedy corresponds to a "liability rule."

Contemporary legal systems diverge greatly in their use of contract remedies. In the interest of simplicity, we will provide a stylized mapping of the three main legal approaches, classifying them as (i) strong-remedy solutions; (ii) mixed-remedy systems; and (iii) weak-remedy systems.

(i) *Strong-Remedy Systems.* At one end of the spectrum, German law (and other German-based legal system) adopt strong remedies, virtually across the entire spectrum of contractual obligations. Under German law, the legal dogma is that a contract grants the promisee a right to

obtain performance, not a right to obtain damages in lieu of performance. Section 241 of the German Civil Code (BGB) makes this point very clear stating that a contract gives the creditor a "right to demand performance from the debtor." With a few exceptions, German courts apply this provision, granting specific performance relief for the enforcement of contractual obligations (Treitel, 1988; Zweigert & Kotz, 1998, p. 472-3).

(ii) *Mixed-Remedy Systems.* French law (and other French-based legal systems) follow a mixed approach with a dual use of strong and weak remedies. The guiding principle "*nemo ad facere compelle potest*" ("nobody can be forced to do [something]") serves as the aspirational criterion in the application of specific performance remedies. Article 1184, par. 2 of the French Civil Code allows the breachee to obtain specific relief, "when the original performance is still possible" (hence excluding its use in case of impossibility), but Article 1142 restricts the adoption of specific performance remedies when their use would infringe upon the individual freedom or autonomy of the promisor (Zweigert & Kotz, 1998, p. 475-9). In applying these prinviples, French-based civil law jurisdictions have come to distinguish between "obligations to give" (e.g., delivery of an existing good or transfer of title to land) and "obligations to do" (e.g., production of a not-yet-existing good or performance of a service), granting specific performance for the enforcement of obligations to give, and damages for the obligations to do (Treitel, 1988).[5]

(iii) *Weak-Remedy Systems.* The Anglo-American common law system stands at the other end of the spectrum, utilizing damages as the default remedy for the entire spectrum of contract obligations, with some equitable exceptions (Faransworth, 1970; Hillman, 2019).[6] It should be noted, at this point, that U.S. courts quantify damages (the money compensation to be paid in case of breach) in a variety of ways. The most common measure is that of "expectation damages" – an amount of money equivalent to the value that the injured promisee was expecting to receive from

[5] The 1980 Vienna Convention on Contracts for the International Sale of Good, the 2016 Unidroit Principles for International Commercial Contracts, and the 2020 Principles of European Contract Law adopt solutions reflecting the dual French approach (Zweigert & Kotz, 1998, p. 484-5; Lando and Beale, 2020). In 1970 a legislative reform brought also Israeli law closer to its European counterparts. Prior to 1970 Israel followed the common law rule, utilizing damages as the standard remedy for breach of contract (specific performance was an equitable remedy exceptionally used for the sale of real property and unique goods). In 1970, the enactment of the Contracts (Remedies for Breach of Contract) Law changed Israeli law which now adopts the civil law rule, granting specific performance relief for breach of contracts, subject to certain exceptions (Anidjar, 2020).

[6] Legal historians have traced the peculiar trajectories of the evolution of contract remedies. In the early common law contract enforcement relied almost exclusively on specific performance but later progressed to an almost exclusive reliance on damages (Durfee, 1935 and Dawson, 1959). Civil law system evolved in the opposite direction, from an almost exclusive reliance on money damages under classical Roman law to the inclusion of specific performance remedies in modern codifications (Dawson, 1959, Zweigert & Kotz, 1998).

the contract. Another measure of damages for breach of contract is "reliance damages" – an amount of money that restores the injured promisee's level of well-being before entering the contract. This measure is generally lower than expectation damages because the injured promisee does not recover the value she was expecting to gain from the contract.[7] A third measure of damages for breach of contract is "liquidated damages" – the amount of damages that the parties agreed upon at the time of the contract.[8]

Given the variety of breach remedies employed by modern legal systems, one might question whether the conduct of contracting parties is genuinely influenced by the specific legal remedy that governs their contract. Our experimental study wishes to investigate this question. We look at the effects of damages vs. specific performance on the resolution of situations that may arise after a contract is formed. Specifically, we want to investigate if the remedy that legal systems utilize when promisors do not keep their promises affects the parties' willingness and ability to renegotiate a contract in the wake of a market shock, to allow for a breach (when a specific performance remedy is used) or to obtain an efficient performance (when a damages remedy is used). Understanding how parties react to alternative legal remedies is a critical factor to consider in the design of contracts.

The theoretical backdrop of our experiment is given by Coase's (1960) theorem, which has served as a starting point for several important contributions to the law and economics of remedies, and which will serve as the natural foundation for the formulation of the rational choice hypothesis. When applied to breach of contract situations, the Coase theorem basically states that, in the absence of transaction costs, the choice of legal remedies is irrelevant to overall welfare: if an exogenous shock changes the parties' respective costs and benefits under the original agreement, parties will bargain and reach an efficient agreement – with a resulting efficient breach or performance, as it may be – regardless of the legal remedy being used. In our incentivized experiment, we will test Coase's irrelevance proposition.

Some behavioral inuitions run against Coase's irrelevance proposition. We believe that even when transaction costs are not an impediment to the parties' renegotiation, legal remedies will affect the contracting parties' willingness and ability to renegotiate a contract in the face of

[7] This measure of damages generally includes the restitution of the price (if any price had been paid already), plus any additional contract-specific expenditures that the promisee made in reliance of the contractual promise.
[8] For a good – and pleasantly readable – introduction to U.S. contract law, see Hillman (2019). Chapter 5 provides a comprehensive treatment of damages remedies.

exogenous shocks. We further conjecture that remedies will affect the division of the renegotiation surplus between the parties. There are several interrelated reasons for our conjectures.

1.2 Literature Review

Breach remedies play a crucial role in domestic contract law, especially in situations when writing complete contracts is not feasible, due, for example, to information asymmetry and uncertainty about possible changes in the contractual circumstances (Rogerson 1992). Among other purposes, legal remedies to contract breach serve to protect parties that make contract-specific investments, to mitigate hold-up problems, and to foster efficient renegotiation of contractual terms (see, Williamson, 1985; Rogerson, 1992; Nöldeke and Schmidt, 1995; Coase 2006).

On the choice of remedies for breach of contract, legal scholars have taken quite diverse positions. As recently pointed out by Parisi et al., (2024), both the consequentialist (economic) and the deontological (moralist) viewpoints consider the failure to perform on a promise excusable in at least some subset of cases, but their perspectives do not always converge on the when contract breaches should be permitted with the payment of damages and when specific performance remedies should instead be made available to the non-breaching promisee (Birmingham, 1969; Barton, 1972; Warkol 1998). At one end of the spectrum, the standard economic analysis contends that if the promisor gains more than the promisee loses from a breach, then allowing non-performance with payment of damages (i.e., giving parties a right to breach) is socially desirable: allowing a breach would increase joint welfare compared to performance (Posner, 1999 and 2009; Shavell, 2006a and 2009). At the other end of the spectrum, deontological philosophers of contract law take the moral duty to keep one's promises as a foundational principle of contracts, which should not be brushed aside based on cost-benefit analyses (Sidhu, 2006; Mather, 1999; Fried, 1981; Shiffrin, 2009). Some law and economics scholars have similarly argued in favor of specific performance remedies observing, among other things that the judicial liquidation of damages may be socially costly (Kronman, 1978; Schwartz, 1979; Depoorter and Tontrup, 2012).[9] As shown by

[9] Scholars in contract law and economics argued that a damages remedy is an efficient default remedy for contract breach, since it induces breach only if the cost of performance for the promisor outweighs the value of performance for the promisee (Birmingham, 1969; Barton, 1972). Some other scholars argued in favour of specific performance as the most efficient default remedy, since it embraces the moral obligation that promises should be kept (Depoorter and

Baron and Wilkinson-Ryan (2009) and Bigoni et al. (2017), the laypersons' views about the excusableness of non-performance are surprisingly nuanced, embracing the consequentialist (economic) reasoning in some cases and the deontological (moralist) view in other cases.[10]

In an earlier experimental study, Depoorter and Tontrup (2012) took a first step in investigating the effect of specific performance remedies, comparing promisees' breach decisions in the presence of a specific performance remedy and in the absence of any default breach remedy. Their findings show that participants were more willing to obstruct an efficient breach under specific performance. Depoorter and Tontrup's experimental setting did not allow parties to renegotiate and only considered breach opportunities driven by more lucrative outside offers. Bigoni et al. (2017) extended the inquire, allowing parties' renegotiation, to study whether the promisor's motive for the breach – avoidance of a loss vs pursuit of more lucrative offers – affects the parties' willingness and ability to renegote. In that experiment, parties always carry out renegotiation under a default remedy of specific performance.

Differently from the earlier contributions in this literature, in this experiment we let the default contract remedy vary, to analyze whether individuals' incentives to breach or to renegotiate differ when varying the default legal remedy. The experiment attempts to replicate conditions where changes in the original conditions lead parties to reconsider their original contractual commitment. These include changes in the original costs, and the rise of new opportunities, changing the opportunity cost of the parties' original contractual engagement. We shall refer to these latter factors as the "outside options" faced by the contracting parties. Our analysis delivers novel findings regarding parties' renegotiation behavior in the shadow of alternative legal remedies. The results will provide valuable information to transactional lawyers for the optimal design of contracts and to lawmakers and judges entrusted with the policy choice of breach remedies driven by exogenous market shocks.

2. Experimental Design.

Tontrup, 2012), and because damages may impose unnecessary costs (Kronman, 1978; Schwartz, 1979). However, no evidence has been presented to see how the views of ordinary contracting parties aligns with these opposing claims.

[10] The survey-based studies and economic experiments conducted by Baron and Wilkinson-Ryan (2009) and Bigoni et al. (2017) have shown that ordinary people have greater tolerance for contract breaches when the promisor seeks to avoid unanticipated losses (i.e., loss-avoiding breaches) but are less willing to excuse performance when the promisor breaches to pursue a profit (i.e., gain-seeking breaches).

The experiment comprises two parts. In part 1, we consider a modified version of the "Contract-Breach Game" introduced by Bigoni et al. (2017), where a market shock *may* occur after the parties agreed to sign a binding contract. After learning about the occurrence of a shock, parties can decide to renegotiate the contractual terms under alternative breach remedies. The key, novel aspect of our design is the comparison between two *breach remedies*, which allows us to compare a damages remedy (*Damage* treatment) *versus* a specific performance remedy (*Specific Performance* treatment). This modified "Contract-Breach Game" à la Bigoni et al. (2017) allows us to study how frequently an efficient agreement *to breach* is reached under specific performance, and how frequently an efficient agreement *to perform* the contract is reached under damages. Furthermore, this game allows us to analyze whether the compensation paid by the promisor to the promisee differ between alternative breach remedies, and between alternative reasons to breach. In part 2, all participants take part in a Dictator Game.

In part 1, participants are randomly assigned the role of buyer (B) or seller (S) and matched in pairs. Production costs (C) are initially set to 40 and the ex-ante value of the good (B) for the buyer is set to 60, hence leading to a total surplus (π_{Total}) of 20. Unlike in Bigoni et al. (2017), the parties need to agree to perform a contract and bargain on the price, P, which is initially exogenously set to 50. After the contract is signed, a shock may occur and modify the initial parameters (i.e., production costs and the outside options can change). In lieu of the modified conditions, performing the contract in case of specific performance or breaching the contract in case of specific damages would lead an aggregate loss of surplus. In both cases a contract renegotiation would be efficient. In the following, we describe all the stages of the game in detail (see Table 1 for an overview).

Table 1: Overview of the stage game

Stage	**Specific Performance**	**Damages**
Stage 0 **Initial parameters**	Cost of production for seller: C = 40 Value from transaction for buyer: V= 60	
Stage 1 **Shock**	C' = 60 V' = 60 Outside option for S: O_S = 80	C' = 60 V' = 80
Stage 2 **Enter renegotiation**	***B* can enforce performance** and the contract is performed or move to stage 4. **Performance is inefficient.**	***S* can breach** and the contract is **not** performed or move to stage 4. **Breach is inefficient.**
In case of no renegotiation	The contract is performed: π_S = 50−60 = −10 π_B = 60 − 50 = 10 π_{Total} = 0	Damages (D = 60) are paid: π_S = 50−60 = −10 π_B = 60−50 = 10 π_{Total} = 0
Stage 3 **Renegotiation phase**	S and B renegotiate to allow a breach (buyer is compensated with a transfer t) π_S = 80 − 60 − t π_B = t π_{Total} = 20 10 ≤ t ≤ 30	S and B renegotiate to fulfil the contract at a new price $P' > P$ π_S = P' − 60 π_B = 80 − P' π_{Total} = 20 50 ≤ P' ≤ 70

Once randomly matched in pairs, buyers and sellers go through the following steps.

Stage 0: The buyer and the seller are informed about the production costs and the benefits from the transaction.

Stage 1: An exogenous shock may happen with probability 60% and lead to an increase in production costs, $C' = 60$, in both treatments. At the same time, in the Specific Performance treatment, the seller has an opportunity to sell the good to a different buyer for a price of 80, while in the Damages treatment, the value of the good for the buyer increases to 80.

Stage 2: The parties must decide if they want to renegotiate the contract or not. Given the increased production costs, the seller has an interest in breaching the contract. Renegotiation starts if both parties decide to enter the renegotiation stage.

- In Specific Performance, the seller cannot unilaterally breach the contract as the buyer can ask to perform the contract. The seller chooses whether to fulfil his existing obligation or to cancel the contract, offering a compensation *t* to the buyer. If the contract is fulfilled, the period is over, the seller suffers a loss, while the earnings of the buyer are unchanged, and the total surplus is equal to zero.
- In Damages remedy, the seller can unilaterally decide to breach the contract by paying damages ($D = V$) and the period is over. As for the previous treatment, the seller suffers a loss, while earnings for the buyer remain unchanged compared to stage 0 and the total surplus is zero. Alternatively, the parties can renegotiate to try to agree on a new price *P'* at which the contract is performed.

Stage 3: If the parties decide to renegotiate, they have 60 seconds to reach an agreement on the new price (Damages) or the compensation of the buyer (Specific performance). Renegotiation occurs under the following two remedies.

- Under a remedy of specific performance, the seller can offer any positive integer *t* between 10 and 30 to compensate the buyer for the cancellation of the contract. The buyer can either accept the offer or propose a higher transfer *t* (always between 10 and 30), and the seller can accept this proposal. Offers and proposals can be revised at any time, during the 60-second renegotiation stage. If an offer or proposal is accepted, the contract is resolved, and the parties'

payoffs are determined according to the agreed terms. If by the end of the renegotiation stage no agreement is reached, the original contract is enforced through specific performance.

- Under a remedy of damages, the buyer can offer any price *P'* between 50 and 70 to convince the seller to carry out the performance instead of breaching the contract. The seller can either accept the offer or propose a higher (between 50 and 70) price. Offers and proposals can be revised at any time, during the 60-second renegotiation stage. If an offer or proposal is accepted, the contract is resolved, and the parties' payoffs are determined according to the agreed terms. If by the end of the renegotiation no agreement is reached, the original contract is resolved, and the seller must compensate the buyer for the full benefit the former would have received from completion of the contract.

The game is repeated for 25 periods and roles are fixed throughout the experiment. At the beginning of each period, new pairs of buyers and sellers are randomly formed, within matching groups of 6 participants (3 buyers and 3 sellers), and identities remain anonymous throughout the experiment. This allows us to cancel out any reputational concerns, while preserving the one-shot nature of the Contract-Breach Game. At the end of each round, the parties are informed about the outcome of the renegotiation phase, their own earnings, and the earnings of their counterpart. Subjects can always see their cumulative earnings (including their initial endowment) on the screen. After the Contract-Breach Game, subjects are asked to play a dictator game in which they have to split 20 tokens between themselves and another, anonymous player, to control for their inequality aversion, and then to answer survey questions on individual characteristics (gender, education level, field of study, etc.).

The instructions for both treatments, dictator game and questionnaire are provided in the Appendix. Subjects will be recruited via ORSEE, and all the sessions will be run in English at the BLESS lab. The study was approved by the ethical committee of the University of Bologna (Protocol N. 0156345). At the time we are submitting this pre-analysis plan, we have run one session to test the instructions and the software. Since the session ran smoothly and we have not checked the data yet, we will include this data in the main analysis.

Outcomes of interest and testable hypotheses. We have three main outcomes of interest, and three main null hypotheses.

- Share of pairs who do not enter the renegotiation phase: not renegotiating the contract is always inefficient from a social point of view.
  HP1: Different remedies do not affect the parties' ability to enter an efficient renegotiation of the contract.
- Share of pairs who are unable to reach an agreement during the renegotiation.
  HP2: Different remedies do not affect the probability that an agreement is reached, conditional on entering renegotiation.
- Division of the surplus after the shock.
  HP3: For all those pairs who reached an agreement, the division of the aggregate surplus does not vary depending on the remedy in place.

3. Empirical approach

We plan to conduct 6 session per treatment, with 24 subjects per session, for a total of 24 matching groups per treatment. We consider the matching group as our independent unit of observation.

We will test each of our three main hypotheses by means of a two-prong approach. The first approach is more conservative, and it is based on non-parametric two-tailed Wilcoxon Mann-Whitney tests on the difference of the distribution of the outcomes of interest, between treatments. The unit of observation here is the average outcome per matching group, across all rounds, thus we have 48 observations in total. This allows us to detect an effect of 0.85 of a s.d. with $\alpha = 0.05$ and $(1 - \beta) = 0.8$. Based on the data collected by Bigoni et al. (2017), this corresponds to a difference of 3 p.p. in the share of pairs who enter renegotiation when an exogenous shock takes place (*HP1*), a difference of 5 p.p. in the rate of success of renegotiation (*HP2*), and a difference of 0.9 units (out of 20) in the surplus allocated to the Seller in the renegotiation stage, when renegotiation is successful.[11]

The second approach relies on the panel structure of our dataset and allows us to control for the learning dynamics across periods. For each of the three outcomes mentioned in Section 2, we will run a linear regression based on the following equations:

[11] The power calculation was performed using G*Power3 (Faul et al., 2007; 2009).

$$Y_{i,t} = \beta_0 + \beta_1 D_i + \beta_2 t + \eta_i + \epsilon_{i,t} \quad (1)$$

$$Y_{i,t} = \beta_0 + \beta_1 D_i + \beta_2 t + \beta_3 D_i t + \eta_i + \epsilon_{i,t} \quad (2)$$

Where $Y_{i,t}$ is the outcome of interest, in matching group i and period t, D_i is a dummy variable taking value 1 if matching group is assigned to the *Damages* treatment and 0 if it is assigned to the *Specific Performance* treatment, and η_i is the matching-group specific error component. Since we only focus on the periods in which a shock takes place, with this specification we will have an unbalanced panel with 48 individuals and approximately 15 periods. Based on the simulations obtained via the Stata pc_simulate package (Burlig et al., 2020), this allows us to detect a variation of 4 p.p. in the share of pairs who enter renegotiation when an exogenous shock takes place (*HP1*), a difference of 6 p.p. in the rate of success of renegotiation (*HP2*), and a difference of 0.9 units (out of 20) in the surplus allocated to the Seller in the renegotiation stage, when renegotiation is successful, with $\alpha = 0.05$ and $(1 - \beta) = 0.8$.

3.1 Heterogeneity analysis

Other-regarding preferences have shown to play an important role in barganing; for instance, in the context of the Contract-Breach Game, Bigoni et al. (2017) showed that inequality-averse subjects accept low offers more often in cases of loss-avoiding breaches than gain-seeking breaches. In light of this evidence, we plan to conduct an heterogenity analyes leveraging data from the Dictator Game played in part 2 of the experiment.

We will classify subjects into Inequality tolerant and Inequlity averse based on a median split of the allocation choice in the Dictator Game. For each matching group, we will construct the dummy variable *Altruistic Buyers* (B_i) taking value 1 if the majority of the buyers in the group are Inequality averse. Similarly, for each matching group, we will construct the dummy variable *Altruistic Group* (G_i) taking value 1 if the majority of the buyers and sellers in the group are Inequality averse. We will run a linear regression based on the following equation:

$$Y_{i,t} = \beta_0 + \beta_1 D_i + \beta_2 B_i + \beta_3 D_i B_i + \beta_4 t + \eta_i + \epsilon_{i,t} \quad (3)$$

Where $Y_{i,t}$ is each of the three outcomes of interest described in Section 2, in matching group i and period t, D_i is a dummy variable taking value 1 if matching group is assigned to the *Damages*

treatment and 0 if it is assigned to the *Specific Performance* treatment, and η_i is the matching-group specific error component. We will repeat the same analysis in equation (3) for G_i.

We are also planning to exploit the periods in which there was no initial shock to check if other-regarding preferences might have played a role. In these periods, one should expect no renegotiation, but an Inequality averse buyer could be prompted to use these periods to reduce the unbalance between buyers' and sellers' earnings one might expect from the bargaining phase. Offering to enter the renegotiation stage even in periods without a shock might lead to the opportunity to offer a more favorable price to the seller.

3.2 Dynamics of the bargaining process

Our software keeps track of numerous details about the continuous time bargaining stage, including all offers and counteroffers made over the 60 seconds. We will leverage this information for an exploratory analysis of the dynamics of the bargaining process. Among other things, we will consider the following variables: who made the first offer, the amount of the first offer, the number of offers and counteroffers, the distance between offers and counteroffers, etc. While we do not have any sharp ex-ante hypothesis, we think it is worth looking for any possible regularities in this direction, as they might help us better understand the dynamics and inform future experiments.

4. Concluding Remarks

In principle, contract law is meant to incentivize socially desirable agreements. However, when market shock occurs, alternative breach remedies may be conducive to different outcomes, i.e., either an "efficient breach" or a renegotiation of the contract to avoid an "inefficient performance."

Our experimental investigation into the effects of contract remedies on renegotiation dynamics can contribute to a nuanced understanding of contractual efficiency in the wake of market shocks. We conjecture that the type of legal remedy—specific performance versus damages—has substantial implications on both the willingness of parties to renegotiate and the outcomes of such renegotiations. These insights can prove valuable for the design of legal frameworks that support optimal contract execution and renegotiation, aligning with economic efficiency and fairness in contractual engagements.

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Statement

We hereby confirm that all research will be conducted in compliance with the IRB protocols of the institution receiving the grant. The project has received IRB approval on May 29, 2024, from the Ethics Committee of the University of Bologna (prot. N. 0156345).