

Retaliation, Remedies, and Contracts

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Contracts commit individuals to a future course of action and create feelings of entitlement on the parties. In a contractual gap, parties' duties and rights are not univocal, and while promisors will often feel entitled to breach, promisees will feel entitled to receive the promised performance. This divergence leads to disputes, aggrievement, and retaliatory behavior whenever one of the parties feels shortchanged. Remedies for breach are then apt not only to induce performance by promisors, but also to minimize promisees' aggrievement, reduce retaliation, and thereby keep the peace in society. This article reports results from an experiment that investigates under what circumstances promisees retaliate to breach and to what extent expectation damages fulfill the function of crowding out retaliatory behavior. It reveals how norms of fairness play a fundamental role in shaping parties' reactions to breach, as promisees did not punish any violation of a prior agreement. They rather punished breach when the promisor profited from it, and the outcome was an unfair distribution of the gains from trade. Neither loss of expectancy nor the inefficiency of the result induced retaliation. Expectation damages successfully crowded out retaliation by disappointed promisees, and thereby avoided high welfare losses from decentralized forms of punishment of perceived wrongs. (JEL: K12, C91)

We are thankful to Jeffrey Rachlinski, Ann-Sophie Vandenberg, and all participants in the different seminars and conferences in which this article was presented. Funding for the experiment was provided by the Rotterdam Institute of Law and Economics at the Erasmus School of Law (Erasmus University Rotterdam).

American Law and Economics Review
doi:10.1093/aler/ahz006

Advance Access publication on August 12, 2019

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1. Introduction

An award of damages for breach of contract fulfills different economic functions. Most importantly, damages impose a price on breach, and are hence apt to deter breaches of contract. Another purpose in the giving of those damages, although one that has not been considered in traditional economic models, is to substitute private for public redress. Individuals tend to retaliate against acts they perceive to be wrong and immoral, and breach of contract, in violating the norm of keeping promises or of *pacta sunt servanda*, can be perceived as a wrong in need of redress. In the absence of a legal remedy, the aggrieved party will do her best to redress her own wrong, with all of the resulting harm it creates to the welfare of society.

In fact, different legal scholars have argued that one of the main functions of remedies for breach is to keep the peace in society (Holmes, 1881, p. 37; Weber, 1922, p. 421; Corbin, 1951, p. 30; Calamari and Perillo, 2009, p. 6). An award of expectation damages compensates the victim and is thus apt to crowd out the human tendency to punish those who break contractual promises, preventing a waste of resources and thereby contributing to the maximization of social welfare. Compensation is therefore fundamental in the law of contracts not only because it induces socially efficient levels of performance by promisors, but also because it minimizes socially costly forms of private redress by promisees. Since compensation is a monetary transfer, and consists only in redistribution of money from the promisor in breach to the promisee, it does not cause the same deadweight loss that decentralized forms of punishment, which impose losses for the person punishing as well as for its the victim, create.

Retaliation is pervasive and pernicious in areas such as crime, family, and employment. It is responsible for ~20% of homicides in the United States (Schumann and Ross, 2010) and worldwide (McCullough et al., 2013), 61% of school shootings (Vossekuil et al., 2002), and constitutes a common response against personal offense and discrimination in the workplace (Aquino et al., 2001). Moreover, retaliation is not restricted to acts of revenge and personal vendettas, being instead common also in contractual and business relationships. There are, in fact, uncountable manners through which disappointed promisees can retaliate even in modern legal systems that, in general, prohibit the use of violence. These can still always

harm the breacher's reputation in the market (Charny, 1990) and withhold future cooperation with that party (Bernstein, 1992). They may further, as mentioned by Hart and Moore (2008, pp. 9–10), “shade on performance” by cutting quality, “working to rule,” delaying payment, giving a bad reference, or quibbling about details of performance.¹

This article presents results from an economic experiment that investigates, firstly, under what circumstances promisees tend to retaliate against the promisor in the breach in contractual gaps. Whenever a contingency that is not part of the contract materializes, a contractual dispute arises in which each party will feel entitled to the best outcome permitted by the contract for herself and, in case she does not receive it, be tempted to retaliate (Hart and Moore, 2008). The question that emerges is what factors determine this behavioral reaction. In Hart and Moore's model, for instance, parties' aggrievement is caused by the monetary loss they endure because of breach, with the prediction that disappointed promisees will retaliate whenever they do not receive the promised performance.

Promises, however, create a bond between the parties in which norms of fairness and of joint surplus maximization might mediate that effect. Promisees might consider that if breach is committed to avoid an unfair or inefficient outcome, then it is justified, and will not feel aggrieved or retaliate. On the other hand, if the promisor breaches to achieve higher profits only for herself, or in a situation in which breach is socially inefficient, then promisees might perceive the breach as inappropriate and feel entitled to the promised performance, finally retaliating if they do not receive it.

The implemented experiment investigates this type of behavior in incomplete contracts that are, in a first treatment, not enforceable, and hence when disappointed promisees cannot claim damages. It does so in different types of contingencies that disentangle the inefficiency and the unfairness of the breach, and compares promisees' reaction in the two main paradigms considered in the economic analysis of law: the loss and gain paradigms (Eisenberg, 2005, 2006), or unfortunate and fortunate contingencies (Cooter and Ulen, 2012).

1. As resumed by Richard Posner (1980, p. 73 note 4), since “retaliation may sometimes operate as a constraint on market activity, even economists who take a narrow view of the proper scope of economics might include retaliation within that scope.”

It further investigates the function of damages to crowd out retaliation by victims of breach in a second treatment in which the agreement is enforceable and the promisee can recover expectation damages from the promisor in breach. Expectation damages put the victim in the position she would have been in had the promisor performed, thereby minimizing the victim's level of aggrivement and potentially crowding out retaliation. In substituting private for public redress, compensatory remedies are apt to avoid the deadweight loss from decentralized punishment of breaches that are, under expectation damages, predicted to be committed in equilibrium.²

This article makes three main contributions. Firstly, it contributes to the empirical literature that studies the effects of promises on individual behavior, but instead of focusing on the effect of promises on the behavior of the promisor (Charness and Dufwenberg, 2006, 2010; Vanberg, 2008; Ederer and Stremitzer, 2017), this article studies the effect of promises on the behavior of those who receive the promise. It provides evidence that victims tend to retaliate more often in the presence of promissory commitment than in its absence, and that this type of behavior is responsible, in single interactions, for the deadweight loss predicted by Hart and Moore's model (2008). In other words, it reveals that for the same payoffs, and hence for the same amount of inequality or inefficiency in the outcome, rates of retaliation are roughly twice as high when the person received a promise than in its absence.

Secondly, this article sheds light on the circumstances under which disappointed promisees tend to retaliate against the promisor in breach. Promisees did not punish breach of promise in and of itself, indiscriminately and independently of its consequences, for in the contingencies in which the breach was efficient and fair, there was no punishment of breach. Retaliation was widespread when the promisor profited from the breach, and virtually in-existent when the promisor avoided high losses through breach. This result indicates that punishment of breach is driven mostly by the unfairness of the

2. The fact that expectations damages induce promisors to perform does not prevent all breaches from being committed. In fact, expectation damages induce promisors to perform if, and only if, performance is, in the realized contingency, socially efficient. Therefore, even if legal redress is costless, and courts can measure damages perfectly, efficient breaches of contract are expected to be routinely committed.

outcome, and not by the violation of the moral norm of keeping promises or by the loss of expectancy endured by the victim.

Thirdly, this article reveals that, at least with respect to the human tendency to retaliate to perceived wrong in breach of contract, monetary compensation indeed provides an adequate substitute for the promised performance. An award of expectation damages substantially reduced observed rates of retaliation. There seems to be no need for legal remedies to force the promisor to make good on her word, and to keep promises even when circumstances change. In legal theory, this article adds that monetary remedies provide adequate satisfaction for disappointed promisees, and that the relative freedom to break contracts that goes along with the widespread freedom to make them is justified as long as the promisee can recover expectation damages.

The next section presents the individual contractual behavior examined in the experiment and the related literature. The third section explains the design of the experiment, describes the implemented trade game, the content of each treatment, the hypotheses under investigation, and the details of the procedure. The fourth section reports the obtained results and the statistical analysis, and the last section concludes.

2. Parties' Behavior under Investigation and Related Literature

Contracts commit individuals to a future course of action, and thereby provide a reference point for parties' *ex post* feelings of entitlement (Hart and Moore, 2008). If circumstances do not change, then the promisee will certainly feel entitled to receive the promised performance while the promisor will not feel entitled to breach. By the same token, if the contract is complete and specifies that the contingency releases the promisor from the obligation to perform, then the promisor will certainly feel entitled to breach while the promisee will not feel entitled to receive the promised performance. In both cases, the parties' obligations are clear and univocal. They are remunerated for the risk of nonperformance in the specified contingencies in the contracted price, and the parties' feelings of entitlement do not diverge.

If the contract is incomplete, and hence silent about the parties' obligations, then their feelings of entitlement will often diverge. Each party will feel entitled, in a self-serving manner, to the best outcome permitted by the

contract for herself, and a contractual dispute in which the promisor feels entitled to breach, and the promisee feels entitled to receive the promised performance emerges. The last piece in the model is a behavioral outcome: any party that does not receive what she feels entitled to receive will feel aggrieved and thereby tempted to retaliate against the other one (Hart and Moore, 2008).

Fehr et al. (2011) provide evidence that rigid contracts that specify a single fixed price perform better than flexible contracts that allow for a range of prices, as sellers tend to cut on quality when buyers offer a lower price than the one sellers feel entitled to, and the contract, in being flexible, leaves scope for broad disagreement. In a subsequent experiment, Fehr et al. (2015) show that while informal agreements can mitigate that effect, they do not resolve the problem of misaligned reference points. Contractual rigidity might reduce disagreement and aggrievement, but these persist and lead to retaliation, conflict, and social losses.

Decentralized sanctioning of wrongdoing has been studied in the context of organizations (Feldman and Lobel, 2008, 2009) and of online transactions, where negative feedback provided by consumers leads firms to change their standard form contracts (Taylor, 2011–12). Haran et al. (2016) show how willingness to sanction transgressions depends on whether the transgressor is an individual or a corporation, and that preferences for formal over social enforcement is more pronounced when the target of the enforcement is an individual. Experiments from Wilkinson-Ryan and Baron (2009) and Wilkinson-Ryan and Hoffman (2010) reveal that individuals assign more blame and would impose higher damages on promisors that breach to profit than on those that do so to avoid losses. Hoffman and Wilkinson-Ryan (2013), moreover, study promisees' self-protective behavior in the form of precaution-taking and show that respondents are more likely to protect their own interests before the making of the contract than afterwards.

The question that remains is when, and under what circumstances parties retaliate when they do not receive the promised performance. Hart and Moore's model (2008) assumes that parties will feel aggrieved because of the monetary loss they suffer when the other party does not perform, and define the party's aggrievement as equal to the maximum gross payoff that the party could have achieved, taken over all contractually feasible outcomes, minus the gross payoff from the actual contractual outcome.

In a contract in which partial performance is not possible, and in which the promisor in breach does not retain any upfront payment in case of breach, the promisee's level of aggrievement is simply given by her loss of expectancy.

However, other factors might determine the parties' level of aggrievement. Among them, the inefficiency and the inequality of the outcome are expected to play a fundamental role in promissory relationships. There is substantial evidence that individuals consider those factors when punishing others, and that inequality, in particular, induces punishing behavior (Güth et al., 1982; Fehr and Gächter, 2000, 2002; Henrich et al., 2001, 2006). These factors, however, are neither specific nor unique to contractual relationships, as they affect individual behavior independent of the promissory bond that ties parties to a contract. They are present in spot exchanges, and in situations in which promises are absent and hence do not shape the norms that guide parties' behavior.

In effect, by entering into a contract, parties are no longer strangers to each other, but rather partners in a common enterprise (Fried, 1981) and in a relationship marked by norms of collaboration (Markovits, 2004). In a contingency that was not part of the contract, parties' decisions are not guided by their initial intent, but by their feelings of entitlement created by the promises they made and received, and subject to their own subjective perception of what each of them ought to do under the realized circumstances. Their own perception of the applicable norms of fairness and of joint surplus maximization, interpreted and invoked in a self-serving manner, will guide their behavior in the absence of clear and univocal contractual obligations. These rules might constrain parties' behavior, including their temptation to retaliate, for one party might consider it justifiable for the other to breach under certain contingencies, as she might take the interests of the other party into consideration differently from how she would in the absence of a promissory bond.

The implemented experiment investigates how far the loss of promised gains (loss of expectancy), as well as the inequality and the inefficiency of the outcome of breach determine retaliation in a very strict test. It studies the factors leading to retaliation to breach of an agreement consisting in an exchange of promises, and controls for the effect that inefficiency and inequality would have on parties' behavior in the absence of promises. In other words, it investigates whether promisees retaliate more

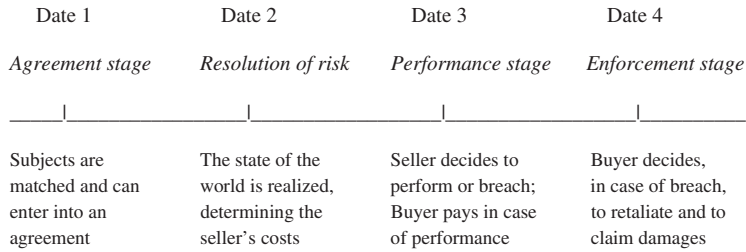


Figure 1. Timeline of events

often to a breach of promise than to a mere refusal to trade, and under what circumstances, while keeping parties' payoffs constant across both situations.

Secondly, the experiment investigates the effect of legal redress, in the form of expectation damages, upon the victim's tendency to retaliate to breach.³ The legal remedy provides disappointed promisees with the precise monetary equivalent of the promised performance, and the victim is thereby put in the same position she would have been in had the promisor performed. In Hart and Moore's model (2008), this corresponds to zeroing the victim's level of aggrievement, who then receives the equivalent of the best outcome permitted by the contract for herself, and to which she could feel entitled to, therefore being apt to eliminate aggrievement and, consequently, retaliation.

3. The Empirical Study

Subjects played a trade game that resembles the interaction between a seller and a buyer, and in which sellers took the role of promisors and buyers that of promisees. The seller could produce and deliver a good to the buyer, who in return paid the promised price. The trade game consisted of four different phases, or "dates," as depicted in figure 1. At Date 1, the parties could enter into an agreement to trade (except in the control treatment). At Date 2, the state of the world was realized, and both parties were informed

3. Stone and Stremtizer (2017, mimeo) provide evidence for the effect of damages to crowd out another type of inefficient behavior, namely to reduce overinvestment by promisees that arise in the absence of the legal remedy.

about it. At Date 3, the seller decided to perform or to breach. At Date 4, and only in case of breach by the seller, the buyer could retaliate and concomitantly claim damages for breach (in the treatment with damages).

While the agreement was, in the first treatment, a non-enforceable exchange of promises to trade, it additionally allowed the buyer to recover the equivalent of expectation damages from the seller in breach in the second treatment. After the realization of the state of the world, at Date 2, both parties observed the realized state, and the buyer observed the decision of the seller at Date 3. Consequently, the seller was well aware of the consequences of her decision upon her own earnings and upon the earnings of the buyer, as well as of the efficiency and fairness of the result of her decision. The seller knew that the buyer also observed the realized state and her decision to perform or breach, and that the buyer could thus take the motives and consequences of breach into consideration before deciding to claim damages and to retaliate (in the treatments including those actions).⁴

The buyer's valuation of the good was given by $V = 30$ and the price of the good was $P = 20$. The buyer's expectancy in the performance of the agreement was hence always equal to 10. The seller's costs of performance, in contrast, depended on her costs of production $c(\theta_n)$ and on her outside price offer $z(\theta_n)$, where θ_n denotes the realized state of the world, with $n = \{0, 1, 2, 3, 4\}$.

Under the status quo θ_0 , the seller's costs of production c_0 were equal to 10, and the seller had no outside option. She earned, just as the buyer, 10 through performance of the agreement. The status quo was maintained in half of the interactions. In the other half, Nature selected one out of four possible contingencies. These included a slight and a high increase in the costs of production, leading to $c(\theta_1) = 25$ and $c(\theta_3) = 35$, respectively, and an outside price offer that was slightly or considerably higher than the price in the original contract, $z(\theta_2) = 25$ and $z(\theta_4) = 35$, respectively. They distinguish socially efficient from socially inefficient breaches, and

4. The buyer could not actively decide to pay or to default on payment, as detailed below, since this would create uncertainty in the seller, who could then decide to breach because of fear of default by the buyer. Since this is not the object of the investigation, there is the need to control such an effect, and therefore payment by the buyer was implemented automatically whenever the seller delivered the good to the buyer, and was automatically not implemented whenever the seller decided not to deliver.

Table 1. Variations in the Seller's Costs of Performance across States

Higher costs of production (fair breach)	Higher outside offer (unfair breach)
State 1 (θ_1) <i>Inefficient breach that is fair</i> (avoids inequality)	State 2 (θ_2) <i>Inefficient breach that is unfair</i> (creates inequality)
State 3 (θ_3) <i>Efficient breach that is fair</i> (avoids inequality)	State 4 (θ_4) <i>Efficient breach that is unfair</i> (creates inequality)

breaches committed to achieve higher profits (the ones that create inequality, or “unfair” breaches) from breaches committed to avoid incurring losses (the ones that avoid inequality, or “fair” breaches), as resumed in Table 1 (and detailed below in Table 2):

The payoffs and consequences of the seller's decision, in each possible contingency, are resumed in Table 2. In the absence of retaliation and damages, the seller's decision to perform or breach completely determined both parties' earnings, which are depicted in the second column.

The seller is predicted to perform, in the absence of damages, only under the status quo (State 0). In all other states, it is optimal for the seller to breach. The third column summarizes the consequences of breach for the seller herself. These are calculated with respect to the gains or losses that the seller would make through performance and reflect the distinction between gain-seeking and loss-avoiding breaches. Although there is no difference for the seller, in economic terms, between breach in States 1 and 2, and between breach in States 3 and 4, the distinction is of relevance for the creation or avoidance of an unequal final distribution between the parties.

The last three columns summarize the consequences of breach that are, under strict individual self-interest, immaterial for the seller's maximization of profits. The fourth column reports the consequences of the seller's decision for the buyer, given by the buyer's loss of expectancy, which is equal to 10 in all contingencies. The fifth column reports the consequences of breach on aggregate social welfare, and the last column shows the consequences of breach for the disadvantageous inequality in the final payoffs experienced by the buyer.

Table 2. Payoffs and Consequences of the Seller's Act (Stars Indicate Equilibrium Behavior)

	Seller's decision and related payoffs (seller, buyer)	Consequences of breach for the seller	Consequences of breach for the buyer	Consequences of breach on social welfare	Consequences of breach on inequality
State 0	*perform* breach	Does not earn 10	Does not earn 10	-20	None
State 1	perform *breach*	Avoids loss of 5	Does not earn 10	-5	Avoids inequality of 15
State 2	perform *breach*	Gains extra 5	Does not earn 10	-5	Creates inequality of 15
State 3	perform *breach*	Avoids loss of 15	Does not earn 10	+5	Avoids inequality of 25
State 4	perform *breach*	Gains extra 15	Does not earn 10	+5	Creates inequality of 25

Strict rational choice models do not predict buyers to retaliate, since costly punishment is a strictly dominated strategy in single and anonymous interactions. It cannot deliver any material gain to the buyer, either present or prospective. The same prediction holds for the buyer's decision to retaliate to breach of promise or contract. The wrong in breaking promises is irrelevant for self-interested behavior that requires no investment in retaliation. Buyers are predicted to behave equally in the absence or presence of promises, never retaliating against the seller's decision.

3.1. Experimental Treatments

In the *control treatment*, subjects played the trade game without previous communication between them, and hence in the absence of any form of commitment. They were randomly matched with another participant in the opposite role at date 1, and took no decision or action at that moment. They subsequently observed the state of the world at date 2, and at date 3 the seller decided to produce the good and deliver it to the first buyer in exchange for payment of the price.

In the *promises treatment*, subjects were matched at date 1 and could additionally enter into an exchange of promises. It stated that "the seller promises to produce the good and trade it with the current buyer, while the buyer promises to pay the price of 20 points to the seller for the good." If the seller and the buyer both promised, then the state of the world was realized at Date 2, and the seller decided to keep or not keep the promise at Date 3. While the promises may be weak, they are apt to create a feeling of entitlement on the promisee, and to affect her tendency to retaliate. Apart from the promises, all the elements of the game were identical to the control treatment.

In the *contract treatment*, subjects were matched at Date 1 and could additionally enter into a contract. The contract consisted in an exchange of promises with the precise same content as in the promises treatment, but also included a clause allowing the buyer to claim damages in case the seller decided "not to deliver the good to the buyer." The amount of damages the buyer was entitled to recover in case of breach was measured by the loss of expectancy, and was hence equal to 10. Apart from this clause and the

possibility of the buyer to claim damages in case of breach, all the elements of the game were identical to the promises treatment.⁵

In all treatments, buyers had the possibility to retaliate whenever the seller breached. Retaliation was implemented in the traditional form of costly punishment, meaning that the buyer could spend 2 points to deduct 10 points from the earnings of the seller.

The function of the control treatment in the experiment is to control for the effect of other factors beyond promissory commitment and damages for breach on the behavior of the parties. For example, the buyer might be tempted to retaliate because of the inequality in the outcome, and independent of the presence of promissory commitment. In this case, statistically equal average rates of retaliation in the control group and in the promises treatment would point to the fact that retaliation to breach of promise is not different from retaliation in the absence of promises. With the control treatment, the estimated difference in behavior across treatments excludes those effects, which are captured inside the control treatment, and can then be attributed solely to the effect of promises or damages for breach.

3.2. Hypotheses

The first question is what factors can lead disappointed buyers to retaliate more often in the presence of promises than in absence thereof. In the design, this corresponds to expected higher rates of retaliation in the promises treatment than in the control treatment, in which the seller, in deciding not to implement the exchange, does not break any promise. Without commitment, the parties do not have feelings of entitlement to the promised performance, and will not feel aggrieved for not receiving the best outcome they could have hoped for.⁶

5. All three treatments equally involve a seller and a buyer of a good, who only in the promises and contract treatments can accurately be denoted promisor and promisee (because they entered into the exchange of promises). In the article, these terms are used interchangeably. In the experiment, in contrast, the parties were always called seller and buyer in all treatments in order to avoid possible demand effects.

6. In the control group, the subjects might have believed that the seller and the buyer were making implicit promises to each other. If this is, in fact, true, then the obtained results described below are only underestimated, as observed rates of retaliation in the control group would capture a share of the manipulation implemented through promises.

In fact, no one would deny that there is a societal convention or moral norm stating that “if one says the words ‘I promise to do X ’ in the appropriate circumstances, one is to do X , unless certain excusing conditions obtain” (Rawls, 1971, p. 344). There is substantial evidence that individuals punish those who violate social and moral norms (Henrich et al., 2006; Guala, 2012), either when they personally suffer from the violation or when they are in a neutral third-party position (Fehr and Fischbacher, 2004; Nelissen and Zeelenberg, 2009). But the norm of promises does not explicitly identify the “excusing conditions” that release the promisor from the moral obligation to perform, and there is evidence that different individuals hold different perceptions of the moral value of breach, often depending on the consequences thereof (Mittlaender, 2019).

There are three possible factors, distinguished by the different contingencies, for the buyer to retaliate to breach. If loss of expectancy causes retaliation, and if the victim’s aggrievement is equal to the difference between what the victim would have earned in the best outcome permitted by the contract, and what she earns by the actual outcome, as predicted by Hart and Moore (2008), then buyers are hypothesized to retaliate more often in all contingencies because they equally lose their expectancy of 10 in all of them. If inefficiency from breach causes retaliation, then buyers are hypothesized to retaliate more often only in those contingencies in which breach is socially inefficient, and hence only in States 1 and 2. If inequality from breach causes retaliation, then buyers are hypothesized to retaliate more often only in States 2 and 4, when the seller creates an unequal outcome through her deliberate decision to breach.

The second question is whether substitutive relief, in the form of an award of expectation damages, reduces retaliation by the buyer, fulfilling the function to substitute private for public redress. Expectation damages, in particular, are apt to minimize aggrievement in awarding the victim of breach the exact same amount he would earn through performance of the contract. In Hart and Moore’s model (2008, p. 8), the buyer’s level of aggrievement is equal to “the maximum gross payoff he could have achieved, taken over all contractual feasible outcomes,” minus his payoff given the actual decision of the seller. Expectation damages provide the buyer with the maximum payoff he could have achieved through the deal,

considering all outcomes permitted by the contract, thus minimizing his level of aggrivement.

Moreover, the payment of those damages can change individuals' perception of the immorality of breach, with a substantial share of them believing that while breach without compensation is immoral, breach followed by full compensation is not (Mittlaender, 2019). Buyers are therefore expected to retaliate against the seller in breach less often in the contract treatment, where they can recover expectation damages, than in the promises treatment, where this possibility is absent.

3.3. Experimental Procedure

The experiment was implemented in the Experimental Laboratory for Sociology and Economics at Utrecht University between April and May 2013, and 160 subjects participated in it. All interactions were anonymous, and participants did not know the identity of the other participants they interacted with. The treatments were programmed in z-Tree (Fischbacher, 2007), and the implementation of the experiment was fully computerized. Subjects were recruited with ORSEE (Greiner, 2015), and average earnings per subject were 12 Euros. Average age was 23, with a majority of female subjects (63%). There was no instance of any anomaly and participants understood the game well, as documented by several types of decisions subjects consistently made, and that are described at the outset of the Section 4.

There were six experimental sessions, and each session included three parts. Each subject participated in only one session. They were randomly allocated to the role of either buyer or seller at the beginning of the session and kept the same role throughout the whole session. In each session, subjects played one treatment with and one without retaliation. Another treatment with retaliation was implemented in Part 3 of each session in order to obtain more observations on the buyer's decision to retaliate, which could only be observed when the seller in fact breached, and such observations were hence expected to be fewer.⁷ Written instructions were the same for all

7. The experimental design does not exclude the possibility that the observations collected in parts 2 and 3 could be affected by learning or other procedural effects. In

subjects. They were distributed at the beginning of each part, and subjects were therefore not aware of the content of the subsequent parts until the latter started.

In each part, participants played a series of eight trade games. They played four games in which the status quo was maintained and one game in which each of the four different contingencies materialized. The order in which the contingencies materialized was pseudo-randomized and unknown to the participants. It was the same in all sessions to facilitate comparisons between them. Sellers received feedback on whether they were punished or not only at the end of the treatment, and each complete session lasted about one hour.

After each game, subjects played the next game with another random subject, and hence only single interactions were implemented throughout the whole experiment. By abstracting from repetition and other factors, and controlling for its effects upon the parties' behavior, the experiment analyzes the relationship between promissory commitment, retaliation, and damages for breach in isolation, developing a *ceteris paribus* analysis. Therefore, prospective gains from cooperation that could be induced by tit-for-tat or grim-trigger strategies, reputational concerns, signaling, and self-selection all cannot explain the parties' behavior in the experiment.

4. Results

Initial aggregate findings, presented in Table 3, strongly suggest that the subjects understood the game well. There were 944 observations of the decision to perform under the status quo in all treatments, and in 943 cases, sellers did choose to implement the exchange, to keep the promise, or to fulfill the contract, as expected. The number of successful agreements is extremely high in all treatments that included them (promises and contract). This was predicted since entering into the exchange of promises or contract was, in expectation, always profitable even for an individual who planned to keep her word under all circumstances. Lastly, there were 178 instances

order to tackle this possibility, controls for the part of the session in which the observation was collected, as well as their interaction with the realized contingency are included in the implemented mixed model with clusters at the subject and session levels.

Table 3. Initial Aggregate Findings

	Control	Promise	Contract
Proportion of decisions to perform in the status quo	1	0.99	1
<i>N</i>	312	290	342
Proportion of decisions to enter into agreement		0.98	0.99
<i>N</i>		1,200	1,392
Proportion of decisions to enforce the contract			0.98
<i>N</i>			178

in which buyers could claim damages following breach by the seller. In 175 of them, buyers actively chose to do so. Whenever there was no reason or argument for deviations from strictly rational behavior, subjects behaved far and away as predicted.

Moreover, expectation damages induced performance by the seller in the contingencies in which performance was socially efficient (States 1 and 2), but not in the contingencies in which breach was socially efficient (States 3 and 4). The rates of breach in the promises treatment were all above 80% in all states, and fell, in the contract treatment, to 28% both in State 1 and in State 2, remaining however virtually constant in States 3 and 4. In fact, in State 3, when breach was efficient and fair, conjoining both reasons for the seller to feel entitled to breach, the rates of breach were at 100% in both promises and contract treatments. Expectation damages therefore had the predicted effect of inducing performance by the promisor when performance was socially efficient, and of inducing breach when breach was socially efficient.

The results concerning the buyer's decision to retaliate, given the seller's refusal to trade, in the absence of a promise to do so (in the control trade) or in its presence (promises and contract treatments), are reported in Figure 2. They reveal that retaliation is a strong behavioral tendency present in all treatments. It is, moreover, higher when the seller had promised, and substantially lower when the buyer was entitled to claim damages for breach.

However, buyers did not punish all breaches equally, and did not retaliate in all instances in which they did not receive what they were promised. Punishment of breach of promise depended on the consequences of the breach, and the design of the experiment allows for that identification.

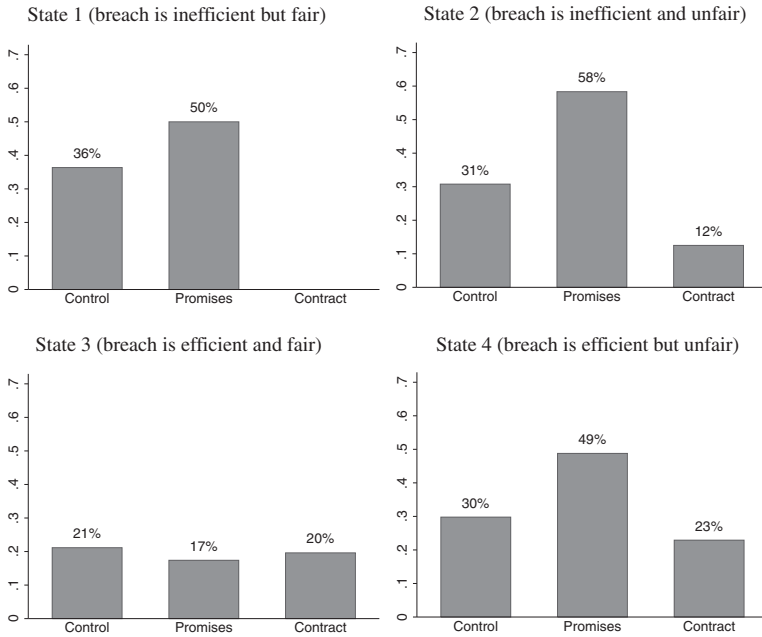


Figure 2. Average proportion of retaliation by treatment and state.

In fact, in State 3, when breach was efficient and fair, buyers did not retaliate more often in the promises treatment than in the control treatment. When breach of promise conjoined both desirable consequences of avoiding inefficiency and avoiding inequality, then it was not punished more often.

In contrast, in States 2 and 4, or those in which breach implemented an unfair result, the rates of retaliation were substantially higher. These breaches join two different negative elements: the wrong of breaking promises and the unfairness of the outcome. Results reveal that retaliation to breach of promise committed to achieve a higher profit from a substitutive transaction is more pervasive than sole retaliation to breach or sole retaliation to unfairness, and is thus consistent with evidence from scenario studies that find that individuals would be less sympathetic with those types of breaches (Wilkinson-Ryan and Baron, 2009; Wilkinson-Ryan and Hoffman, 2010).

Secondly, the observed rates of retaliation to breach of promise were substantially lower when buyers could recover damages. This effect is observed in all states except for State 3, when breach of promise did not induce retaliation in the first place, and is significant, as detailed below, precisely in those states in which breach, in being unfair, induced retaliation in the first place (States 2 and 4).

A small but sizeable minority of buyers still retaliated after receiving expectation damages. There are different possible reasons for this fact, ranging from the presence of individuals willing to punish others who behave in a prosocial manner (antisocial punishment, a behavioral pattern documented across the most different societies in a minority of individuals; see, e.g., [Herrmann et al., 2008](#)) to the potential tendency to punish violations of moral norms even when the victim does not suffer any material loss because of that act. While compensatory remedies undo the material loss suffered by the buyer, it cannot undo the violation of the moral norm of keeping promises, intentionally chosen by the seller, and some individuals might still feel aggrieved by this fact even after being monetarily compensated.

Regression estimates, reported in Table 4, provide estimates for the effect of breach of promise to induce retaliation, and for damages to crowd it out, as well as for the factors that drive that decision. The model is a multilevel mixed model with clustering at the session and subject levels, and in which the baseline is State 3, when the seller's act was efficient and fair. Confidence levels are corrected for three multiple hypotheses between treatments (Bonferroni correction).⁸

Breach of promise, in and of itself, did not lead buyers to retaliate. The fundamental factor driving retaliation is the unfairness of the result of the breach. Buyers retaliated more often against sellers that profited from their wrong. In these cases, sellers could have kept their word, forgone the more profitable outside offer, and still earn what they would have earned under the status quo, realizing the same gains that the buyer would have earned.

8. In the Appendix, regression estimates including all possible interactions of the effects under study with gender and age are presented. While results are very robust with respect to gender, there is some hint that age might interfere with them. Further research might investigate to what extent this is, in fact, the case, as well as its implications for legal redress.

Table 4. Regression Results on Buyer's Decision to Retaliate

Dependent variable: retaliate	Coef. (s.e.)
Inefficiency	0.074 (0.192)
Unfairness	-0.224 (0.151)
Promises	-0.047 (0.147)
Promises and inefficiency	0.091 (0.092)
Promises and unfairness	0.212** (0.087)
Contract	0.017 (0.146)
Contract and inefficiency	-0.252 (0.144)
Contract and unfairness	-0.237** (0.099)
Male	-0.020 (0.070)
Age	0.008 (0.007)
Constant	0.139 (0.305)
Observations	403
Log likelihood	-201.039
Wald χ^2	44.08
Prob > χ^2	0.00009

Notes: Estimates from a mixed effects model with clustering at the subject and session levels. Includes only those instances in which the seller breached. Baseline is State 3, when breach was efficient and fair. Includes controls for the part of each session in which the observation was collected and their interaction with the realized state, in order to control for general and for specific possible ordering effects. Superscripts: *** $p < 0.0033$, ** $p < 0.0166$, * $p < 0.033$ after correcting for three multiple hypotheses in each treatment (Bonferroni correction).

While there is no difference, in economic terms, between breaching to avoid losses of a certain amount and performing while forgoing additional gains of that same amount, norms of fairness shaped the buyers' reference point created by the *ex ante* incomplete agreement.

The experiment did not allow parties to renegotiate, or to make any side payment for the other one after breach was committed. Renegotiation, in fact, might well mitigate retaliation, as the buyer might pardon breach in exchange for a side payment. In the absence of legal remedies, and in

situations in which the agreement is not enforceable, the seller might offer a share of the extra gains from trade with the third party to the original buyer, in an attempt to buy off retaliation. This, however, will also depend on how the *ex ante* agreement shapes the sellers' reference point, the latter of whom might feel entitled to breach and to retain all the profits for herself, what in turn might hamper renegotiation. Moreover, merchants often refuse to renegotiate when the seller has an opportunity to sell for higher-valuing buyers, unless the gains are particularly large (Bernstein, 2001, note 149), and experimental evidence provides evidence for this type of behavior in the lab (Bigoni et al., 2017).

Expectation damages crowded out retaliation by victims of breach, and this effect is restricted to those contingencies in which breach of promise induced retaliation in the first place, namely those in which breach was unfair. When breach was neither inefficient nor unfair, damages did not reduce retaliation, as breach of promise was not punished more often than a mere refusal to trade in that state in the first place. In contrast, whenever breach was unfair, expectation damages had a substantial and significant effect in crowding out retaliation induced by breach. Moreover, the size of the estimates coefficient is very similar, providing a hint for the capacity of the legal remedy to, in effect, minimize aggrievement and retaliation, as predicted by Hart and Moore's model (2008).

5. Discussion and Conclusion

Expectation damages can contribute to social welfare not only by inducing performance if, and only if, performance is socially efficient, but also by crowding out costly forms of decentralized punishment of perceived wrongs that is responsible, in single interactions, for high welfare losses. The function of the legal remedy to crowd out retaliation by disappointed promisees is fundamental for the maximization of social welfare because efficient breaches are predicted (and, for many, desired) to be committed in equilibrium. A system of penalties for breach could well provide optimal incentives for promisors to perform and to breach efficiently, but without compensation, victims might still engage in costly punishment of efficient breaches, with an overall loss of welfare.

In relational contracts, as well as in other types of repeated interactions, retaliation plays its role in inducing performance (or, in general, cooperation) in the absence of legal remedies, thereby avoiding the costs of the use of the legal system, which are often high. Merchants fear the breakdown of successful relationships and adapt contracts to maximize long-term profits, avoiding legal procedures that might interfere with this goal (Macaulay, 1963, 1985; Whitford, 1985). In single interactions, however, future gains from cooperation cannot motivate forgoing retaliation or legal procedures, and disappointed promisees must recur to one of these to redress breach. The role of legal remedies is therefore crucial in such interactions. They induce performance by the promisor, and moreover create the secondary right for the promisee to be compensated by the promisor in breach for an amount that can be anticipated by the parties. They therefore provide a narrower scope for diverging feelings of entitlement, as well-informed parties know their duties and their rights in case of breach.⁹

The major problem of retaliation, as a second-party enforcement mechanism capable of inducing parties to keep their word, is that it is shaped by subjective interpretations of applicable fairness norms, and by the self-serving bias. Promisors will often feel entitled to breach in contingencies that were not part of the contract, and promisees will feel entitled to receive the promised performance. Depending on the parties' convictions, there will often be no scope for renegotiation, as recent experimental evidence provided by Bigoni et al. (2017) reveals: promisees at times refuse even to enter into renegotiations when the promisor breaches to achieve higher gains. If the legal remedy is an award of expectation damages, the promisor will breach and exhaust all possible gains from trade, subjecting herself however to losses from retaliation. If the available remedy is specific performance, then promisees will often enforce the contract inefficiently, after refusing to renegotiate, in a form of retaliation against the promisor in breach, and gains from trade will be forgone.

9. Still, inefficient breaches and retaliation are observed in reality, and lack of information about the legal remedy is a factor for their persistence. Promisors that underestimate damages will often breach inefficiently, and promisees will often retaliate, even in the presence of legal redress, if they believe they are legally entitled to less than expectation damages.

Therefore, it seems advisable for promisors to think twice before breaching to profit from a higher outside offer, either to avoid retaliation, the breakup of a long-term relationship, or an injunction ordering the promisor to perform the contract (if the remedy is specific performance). Lawyers who are asked whether their clients can and should breach a contract, and at what costs, should point out that there are costs beyond those of the applicable legal remedy. Whether it is profitable or not to do so depends on the type of contingency materialized, the short- or long-term duration of the relationship, and on the likelihood of retaliation and successful renegotiation, given the applicable legal remedy. While breaches committed to avoid high losses will most often not lead to retaliation, as the present article reveals, or to the breakup of long-term relations (Bernstein, 2001), or to a refusal to renegotiate (Bigoni et al., 2017), breaches committed to profit will often do that, as norms of fairness have a major role in shaping parties' reactions to breach of contract.

Appendix

Table A1 presents the same regression estimates as in Table 4 as well as additional estimates of the main effects with their interactions with gender and age. While results are very robust with respect to gender, with no gender-specific effect, there is some indication that age might interfere with them. The main results are consistent and, in fact, even stronger for younger subjects, as the estimates of *promises and unfairness* for younger subjects, as well as of *contract and unfairness* for them reveal. Further research might investigate to what extent age is, in effect, a determinant of such effects.

Table A1. Regression Results on Buyer's Decision to Retaliate and Interactions

Dep. Var.: retaliate	Base coef. (s.e.)	Gender coef. (s.e.)	Age coef. (s.e.)
Inefficiency	0.07 (0.19)	0.08 (0.19)	0.20 (0.20)
Unfairness	-0.22 (0.15)	-0.18 (0.15)	-0.22 (0.16)
Promises	-0.05 (0.15)	0.07 (0.16)	-0.04 (0.17)
Promises and inefficiency	0.09 (0.09)	-0.06 (0.12)	0.13 (0.12)
Promises and unfairness	0.21** (0.09)	0.32** (0.11)	0.06 (0.11)
Contract	0.02 (0.15)	-0.18 (0.17)	-0.08 (0.17)
Contract and inefficiency	-0.25 (0.14)	-0.19 (0.19)	-0.27 (0.19)
Contract and unfairness	-0.24** (0.10)	-0.32** (0.13)	-0.07 (0.13)
Inefficiency # Male/Younger half		0.03 (0.15)	-0.18 (0.12)
Unfairness # Male/Younger half		-0.09 (0.14)	-0.02 (0.11)
Promises # Male/Younger half		-0.30 (0.21)	-0.01 (0.18)
Promises and inefficiency # Male/Younger half		0.29 (0.20)	-0.18 (0.18)
Promises and unfairness # Male/Younger half		-0.16 (0.19)	0.43** (0.17)
Contract # Male/Younger half		0.41* (0.18)	0.23 (0.19)
Contract and inefficiency # Male/Younger half		-0.10 (0.28)	0.16 (0.28)
Contract and unfairness # Male/Younger half		0.13 (0.19)	-0.46** (0.19)
Male	-0.02 (0.07)	0.07 (0.16)	-0.03 (0.07)
Age/Younger half	0.01 (0.01)	0.01 (0.01)	-0.21 (0.12)
Constant	0.14 (0.31)	0.04 (0.30)	0.33 (0.27)
Observations	403	403	403
Log likelihood	-201.0	-201.3	-196.6
Wald χ^2	44.08	63.77	75
Prob > χ^2	0.0009	0.0001	0

Notes: Estimates from a mixed effects model with clustering at the subject and session levels. Includes only those instances in which the seller breached. Baseline is State 3, when breach was efficient and fair. Includes controls for the part of each session in which the observation was collected and their interaction with the realized state, in order to control for general and for specific possible ordering effects. Superscripts: *** $p < 0.0033$, ** $p < 0.0166$, * $p < 0.033$ after correcting for three multiple hypotheses in each treatment (Bonferroni correction).

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