

Contracting when Enforcement is Weak:

Evidence from an Audit Study

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November 2020

Abstract:

How are contracts structured in the presence of relationship-specific investments when legal enforcement is weak? Using a new audit methodology, we show that simple financial contracts in combination with social norms and reputation concerns can sustain relationship-specific transactions. Wholesalers in the market for pens in India use upfront payments rather than increased risk premia to mitigate risks arising from relationship-specific investments. Upfront payments for printed pens cover only 40% of the production costs, highlighting the importance of upfront payments as a screening device. Ex-post, renegotiation is more likely for printed pens, but in a substantial fraction of cases renegotiation fails.

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1. Introduction

The importance of legal institutions and contract enforcement in facilitating financial transactions among firms has received significant attention among economists in the last two decades (La Porta et al., 1997, 1998; Djankov et al., 2008). However, the rapid growth of many developing economies, despite weak legal institutions, has drawn attention to the question of how transacting parties set up contracts in the absence of well-functioning formal institutions. A similar challenge arises for many firms in developed countries if the cost of going to court is prohibitively large relative to the transaction at stake, e.g., in the case of small businesses or even for large transactions if the complexity of the deal makes it difficult for courts to enforce them.

The literature on incomplete contracting has pointed out that lack of contract enforcement has the most severe consequences in situations where parties have to make relationship-specific investments (Klein, Crawford, and Alchian, 1978; Williamson, 1983; Hart and Moore, 1988). The risk of ex-post renegotiation or contract breach often limits the type of transactions that can be supported ex-ante. Despite the importance of these questions, there has been relatively little empirical work trying to analyze how contracts are structured in real world situations to facilitate relationship-specific investments in situations where legal enforcement is weak. Usually, the difficulty lies in obtaining detailed data on contractual structures and their outcomes. In addition, the only contracts that can be normally observed are those that have been successfully closed, but these might be subject to omitted variable biases.

We use a novel audit study methodology where we engage in actual purchase transactions, which allows us to randomly vary the dimensions of the contract that are of interest and thus eliminate concerns about omitted variable problems and endogenous

matching of contract partners. Our results suggest that even in markets where legal enforcement is weak, simple contracts that rely on upfront payments in combination with reputation and social norms can sustain business transactions that require relationship-specific investments. The upfront payments work as a screening mechanism and thus play an important role in addressing the asymmetric information problem pertaining to customer types that will renege on a contract.

The specific context in which we conduct our study is the wholesale market for pens in Chennai, a large city in Southern India. The wholesale market for pens has all the features of an incomplete contracting environment, since there is very limited recourse to the court system nor contract enforcement via extra legal means if a party does not honor the agreed upon terms.¹ For the purpose of our study, we send trained auditors who mimic average shoppers into the market to negotiate and execute real transactions for bulk pen purchases. To exogenously vary the level of relationship-specific investments wholesalers are required to make, we randomly assign two different types of pens to be ordered.² Half of the orders are for generic pens (“plain pens”), which are easy to resell in the market. The other half are orders for customized pens (“printed pens”) where the wholesaler is asked to print a specific logo on the pens. Printed pens require a greater relationship-specific investment from the wholesaler, since once the pens are procured and printed, their outside value is essentially zero. Therefore, the wholesaler faces the risk that once the printing is done, the shopper might not pick up the goods (breach risk). A related risk is that the

¹ But as discussed later, similar contracting outcomes can be found in many other financial contexts such as trade credit provision, subprime auto lending etc.

² We randomly assign 46 auditors to pose as small businessmen (“shoppers” hereafter) and visit 107 wholesale stores for a total of 494 visits. The shopper negotiates a bulk order of pens with a wholesaler. The average order size is around 600 pens, which is the modal order size of buyers in the market. This order size also constitutes around 5% of wholesalers’ weekly revenue and thus represents a sizeable transaction amount.

shopper might return but try to renegotiate a lower price ex-post after the wholesaler has already printed the pens.

We first analyze how relationship-specific investments affect ex-ante contract structures: Wholesalers use simple contract provisions, in particular upfront payments to mitigate these risks. For printed pens, wholesalers demand a significantly higher fraction of the total payment to be made upfront compared to generic pens (36% versus 11% of the price).³ However, the absolute *level* of the upfront payment that wholesalers demand for printed pens is relatively low. On average, the upfront payment only covers about 40% of the production costs, which exposes wholesalers to a large loss if the shopper tries to renegotiate the contract ex-post or breaches it altogether. At the same time, we find that wholesalers do not charge a higher price (i.e., a risk premium) for the printed pen orders compared to the generic pens.

While these findings are consistent with the incomplete contracting models, they point to an interesting equilibrium. Wholesalers can operate with low levels of upfront payments and no premium in the price for relationship-specific transactions because the upfront payments serve as a screening device to select out shoppers that have a high likelihood of contract breach. If a shopper knows ex-ante that she has a high probability of not wanting to go through with the deal in the next period, making an upfront payment is costly (Williamson, 1983; Thakor and Udell, 1987; Einav et al., 2012).⁴ Therefore, wholesalers have to set the upfront payment high enough to discourage these shoppers from

³ In fact, if wholesalers could commit to behave opportunistically, e.g., always deliver on time or not to produce poor quality goods, the distortions could be solved if shoppers paid the full price upfront. While we believe that opportunistic behavior by the wholesalers is less likely, since they want to preserve the reputation of their business, it is not unheard of. We do not usually see 100% upfront payment, which suggests that shoppers perceive a two-sided contract enforcement problem.

⁴ Also see Appendix II for a simple model that lays out the role of upfront payments for screening.

placing an order in the first place, but they do not need to cover the full cost of production because the remaining shoppers have very low breach probability.

Consistent with the screening model, we also find that there is a wide variation in the upfront payment across shoppers (even within the same wholesaler), but much less variation in prices across shoppers. In addition, shopper fixed effects explain significantly more of the variation in upfront payments for printed pens as compared to plain pens. There is no difference in the explanatory power of shopper fixed effects for prices, which is reasonable, since we do not find that prices are used to screen shoppers. Our results suggest that wholesalers set the upfront payments based on their estimation of the likelihood of individual shoppers engaging in contract breach. We also conducted a survey of the wholesalers after the conclusion of the audit study, which confirms that wholesalers use upfront payment to screen out shoppers with high breach probability.

However, interestingly, once a contract has been agreed upon, wholesalers do not expect shoppers to behave opportunistically or hold them up ex-post. If renegotiation were widely prevalent, one would expect upfront payments to be set high enough to cover the cost of production.⁵ However, both parties spend a significant amount of time bargaining over the ex-ante price, which suggests that they expect that the contracted price will be honored ex-post. Also, in none of our visits did we observe a wholesaler trying to change the price or any other features of the contract ex-post. These results suggest that reputation

⁵ As discussed later, when auditors engage in renegotiation, they are able extract significant reduction in prices ex-post. Also, 60% of the shoppers in the market are repeat clients. Thus the likelihood of repeat transactions can deter these shoppers from behaving opportunistically.

concerns and social norms play an important role in combination with upfront payments in ensuring that contracting parties honor contracts once they have entered into them.⁶

The intuition of these results applies beyond our specific context in the wholesale market in India. Using upfront payments to screen for transaction partners plays an important role in many financial contexts. For example, Einav et al. (2012), using data on subprime lending in the auto sales market, find that down payment requirements play an important role in screening out borrowers who are more likely to default and, in turn, improve the composition of borrowers. Upfront fees are also important in trade credit transactions. Antras and Foley (2011) analyze the financing terms in international transactions and find that higher upfront payment is demanded when the importer is located in a country with weaker legal enforcement and from new importers.

We then turn to analyzing how wholesalers respond if shoppers indeed engage in ex-post contract renegotiation to understand the social norms and reputation concerns that might govern this behavior. After placing an initial order with the wholesaler, we arrange for the shopper to call the wholesaler on the agreed delivery day, announce that he is unable to honor the contract in full, and ask that the contract be renegotiated to a lower price.⁷ As predicted by incomplete contract theory, we find that the specificity of the investment affects renegotiation outcomes (Tirole, 1986; Hart and Moore, 1988; Aghion et al., 1994).⁸ Wholesalers are willing to renegotiate the order at a significantly higher frequency for printed pens. In many cases, the renegotiated price for the printed pens falls below the

⁶ As discussed later, there could be social norms against behaving strategically in business transactions. Shoppers might face the threat of social disapproval or broader reputation costs arising from the violation of these norms.

⁷ Note that we make sure that the pens have already been printed before we renegotiate the contract.

⁸ See also Grout (1984), Grossman and Hart (1986), Hart and Moore (1990), Joskow (1987), Rogerson (1992), Macleod and Malcolmson (1993), and Maskin and Tirole (1999). Lafontaine and Slade (2010) for a survey of the literature.

production cost of the wholesaler. This again suggests that the average prevalence of renegotiation in the marketplace must be low; otherwise, the wholesalers will not be able to break-even. In fact, if the level of upfront payment was high, the percentage discount offered by the wholesaler in the renegotiation is lower. These results suggest that the upfront payment improves the threat point of wholesaler. In 40% of the cases, we also find that wholesalers are unwilling to renegotiate the contract for printed pens at all or they abruptly terminate the renegotiations even though the salvage value for printed pens is essentially zero. One possible explanation is that wholesalers want to maintain their reputation of not being weak in renegotiations in the marketplace.

Finally, we find that in the case of plain pens, if renegotiation fails, a significant subset of wholesalers return the upfront payment even though the shopper is renegeing on the contract. Wholesalers are less likely to return the upfront, as the fraction of upfront payment to total sale price increases. This suggests that wholesalers trade off the immediate profit forgone by returning the upfront payment with the potential reputational gain in the long run. Thus the results from the renegotiations also highlight the importance of reputation concerns from the wholesalers' perspective.

The remainder of the paper proceeds as follows: Section 2 reviews the related literature and details our contributions. Section 3 describes the experimental setup and the randomization approach. Section 4 describes the data. Section 5 discusses the results of the upfront contracting results. Section 6 summarizes the results from the ex-post renegotiation. Finally, Section 7 concludes.

2. Literature Review

Our study is related to a number of different strands of the literature. The results contribute to the literature that examines the importance of alternate mechanisms in sustaining trade in settings where legal and financial institutions are weak (Allen et al., 2005; McMillan, 1997; McMillan and Woodruff, 2002). Allen et al. (2005), using a survey of entrepreneurs in China, find that reputation concerns are important in sustaining trade and contracts. In addition, papers by Putnam (1993), Guiso et al. (2004, 2006) examine the role of social capital in financial development. Our results highlight the importance of social norms and reputation concerns in sustaining simple financial contracts to mitigate contracting risks even when they are not backed by legal enforcement. Crocker and Reynolds (1993) and Banerjee and Duflo (2000) are two earlier papers that examine the role of reputation in contracting.

We also add to the empirical literature on the role of asset specificity for resale values and renegotiation outcomes of assets. Pulvino (1998) shows that asset fire sales are more pronounced for assets that are more firm-specific and have a smaller resale market. Benmelech and Bergman (2008) find that airlines renegotiate their lease obligation downwards when their financial position is poor and the liquidation value of their fleet is low, especially when the type of aircrafts are rare. Our results show that contracting parties ex-ante set contractual terms taking into account the frictions that arise ex-post due to asset specificity. Thus ex-ante screening is used to reduce exposure of wholesalers to shoppers with high likelihood of breach when the cost of such behavior is high, i.e., when asset specificity is high.

Finally, our methodology draws on the existing literature of audit studies and field experiments (see List (2011) and Floyd and List (2016)), even though their context and the questions differ completely from the current study. These audits focus mainly on discrimination due to auditor characteristics such as minority or gender status. For some of the most prevalent studies see Ayres and Siegelman (1995), Newmark et al. (1996), Bertrand and Mullainathan (2004) and List (2004). On the methodological front, we expand the approach of audit studies by engaging in real purchase transactions. A major advantage of our methodology is that it allows one to actually observe traded prices and contractual outcomes. In addition, it provides an empirical strategy to exogenously vary the conditions under which contracting occurs, which in turn helps in identifying the causal impact of different factors.

3. Description of Experimental Set-Up

Our field audit was conducted in Chennai, which is a city in Tamil Nadu, the most Southern state of India. Chennai is the largest city in Tamil Nadu with over 4.5 million inhabitants. For the purpose of the study, we hired auditors to purchase large orders of pens in bulk from wholesalers. These are wholesale traders in pens, not small stationary shops. We chose this industry to conduct our study for a number of different factors: (1) we looked for an industry with a large number of similar-sized establishments in a given location to minimize the ex-ante heterogeneity between firms. Pen wholesalers provided such an opportunity, since there are more than 100 wholesalers in the Chennai area. Moreover, there is a distinct cluster of wholesalers in a particular neighborhood, called Paris Market. In addition, the wholesalers are supplied by a single large distributor at a pre-set price. This helps us obtain a good estimate of the procurement price (cost) of the pens for the

wholesalers. (2) We want to ensure that the product itself is relatively standardized, which facilitates comparisons of deal terms offered by wholesalers. At the same time, we were looking for a product that is easily customizable, which allows us to vary the level of relationship-specific investment that the wholesaler needs to make. The pen industry offers a great opportunity by printing logos on the pens. (3) We want an industry where first-time shoppers could place large orders without a prior history of interactions. The pen industry meets this requirement as there are a good number of first-time shoppers placing large orders. From our pilot interviews, we gathered that 40% of the customers in this market are one-time shoppers.

To implement the audit study, we hired auditors who are entrepreneurs themselves and are thus familiar with the process of bargaining for supplies and services. We verify that the entrepreneurs we hire are not affiliated with the pen industry in order to avoid any familiarity between the wholesalers and the shoppers. Our entrepreneurs come from similar types of businesses, such as grocery store owners, small manufacturers, etc. Once the auditors are hired, they are given training to explain the set-up of the script, the details of the pen industry, and their particular assignment. The auditors, hereafter referred to as “shoppers”, are paid a fixed fee per visit to the wholesaler that is above their hourly market rate and are told that if they deviate from the script, they will be fired.⁹ The shoppers are informed that they are part of a study to understand contract terms in the pen industry. However, shoppers are not told the study’s expected outcome in order to avoid any “demand effects” in their behavior. We also provided shoppers with a specific identity, for example, the type of firm they run, e.g., advertising companies, event management firms,

⁹ We did not have any case where shoppers were found cheating or deliberately deviating from the script.

etc. These occupations give an easy explanation why the shopper is placing a bulk order for pens. Shoppers are given the name of the firm they operate, the name and logo of the client for whom they are placing the bulk order, and a business card with the associated information to credibly signal to the wholesaler that they run a legitimate business.

We divide the pen purchase by the shoppers into two types. In half the cases, the shoppers are assigned to buy plain pens, and in the other half they are assigned to order printed pens. A printed pen has a firm name or message embossed on it. In the case of plain pens, no changes are made to the pen and it is a generic commodity. We also specify that the shoppers order a very common type of pens so that there are no differences in the resale possibilities for the pens. The distinction between the plain and the printed pen is that the printing on the pen cannot be easily removed and thus destroys its marketability (also it takes on average three days for the wholesaler to get the printing done).¹⁰ The resale value of printed pens is essentially zero, as there is no easily available secondary market to retail these pens. Furthermore, wholesalers are not in the business of retailing thousands of second-hand pens and their distribution network is not geared for this.

The shoppers place a bulk order of a pre-specified size which we randomize across shoppers to avoid repetitive orders being placed at a wholesaler. The order size varies from 500-750 pens in increments of 50 pens. This range-of-order size is determined by conducting pilot interviews with wholesalers who confirmed that this is the modal order size in the industry. The order size of 500-750 pens corresponds to around 5% of a

¹⁰ It is common for customers (marketing companies, event management firms, etc.) in the market to place orders for either printed pens or plain pens. Thus placing an order for printed pens does not signal a different possibility of repeat interactions with wholesalers.

wholesaler's weekly revenue. Our aim is to mimic a regular business transaction that is neither too large to draw suspicion nor too small to be negligible to the wholesalers.

We also provide the shoppers with a detailed script that specifies a bargaining rule they are asked to follow during purchases. The visit to each wholesaler can be summarized as follows: at first, the shopper enters the establishment to buy some items from the wholesaler. Generally, these are 20-25 pens of commonly available brands. At the time of making the payment, the shopper introduces himself to the wholesaler. After the introduction, the shopper mentions to the wholesaler that he is interested in placing a bulk order of between 500 and 750 pens and asks about the rate. Once the wholesaler makes the first offer, the shopper makes a counter-offer that is equal to the wholesale procurement price of the pen + 0.10 Rs. The initial counter offer by the shopper is set up in such a way as to convey to the wholesaler that the shopper has looked around in the market and is informed about the prevailing prices. The second and third offers from the shopper are 0.10 Rs. higher than the previous offer. The fourth offer is 0.10 Rs. lower than the previous offer of the wholesaler. The bargaining ends at any point if the wholesaler agrees on the price or refuses to bargain anymore.

Once the wholesaler and shopper agree on the price for printed pens, the shopper inquires about the printing rate (if the shopper is assigned to a treatment with printed pens). Normally wholesalers negotiate the price of the pen (without printing) and then negotiate the printing rate. This is done to take into account the complexity of the printing as that could increase costs (in case the printing requires special techniques). Thus, the overall price of the printed pen is the sum of these two terms. After the price of the pen is negotiated, the shopper inquires about the delivery time. If the delivery time is less than a

week, the shopper agrees or else negotiates for delivery within a week. Finally, the shopper negotiates the mode of payment upon delivery. The shopper first asks for credit at the time of delivery, and then proposes a post-dated check, then check payment, and finally cash payment at delivery. Finally, the shopper tells the wholesaler that he will come in a week to collect delivery, at which time the wholesaler invariably asks for an advance.¹¹ The buyer will then negotiate for the advance payment using the following rule: 10% of the total amount, then 25%, and finally 10% lower than the wholesaler's final offer.¹² It is important to note that we ask shoppers to complete the deal at the lowest price possible, but we do not ask them to terminate the negotiation in case a certain price is not achieved. This means our experiment does not allow movement along the extensive margin, where some deals might not be reached if the wholesaler insists on a high price. The bargaining process for plain pens is very similar to the printed pens on all dimensions except for the delivery time. For the delivery time, the shopper tells the wholesaler that he prefers to take delivery after one week, even if the wholesaler has the stock ready earlier.¹³ The opportunity cost of keeping plain pens in storage is low for wholesalers. However, when a shopper asks for future delivery of plain pens, the wholesaler still faces the risk that the shopper might not come back and pick up the order. Thus, even though the wholesaler can sell the plain pens in the spot market in case the shopper does not return, the wholesalers demand an upfront payment to prevent the shopper from renegeing on the contract. After

¹¹ The structure of the negotiation was based on what is prevalent in the wholesale market for pens.

¹² For the visits where the contract was renegotiated, the buyers were given a maximum limit of 40% for the final advance payment.

¹³ The shopper states that he has many other appointments lined up and it would be difficult to carry the order with him throughout the day so he would prefer to take delivery at a later date.

the order has been filled, the shopper goes back to the wholesaler to take delivery of the pens and pay the outstanding part of the bill.

To monitor that the shoppers do not deviate from the script, and also to check on their performance, we set up a mock wholesale store whose owner acts as our representative and informs us about any discrepancies. Furthermore, in some of the other visits, our field monitors visit wholesalers at the same time as the shopper and witness the bargaining process. The shoppers do not know these field monitors.

For the second set of visits where the contract terms are renegotiated at the end, the renegotiation is carried out over the phone using the following bargaining script¹⁴: on the date when the delivery of pens is to be picked up, the shopper calls up the wholesaler and conveys that there is a problem. The shopper tells the wholesaler that the customer on whose behalf the shopper had placed the order does not want to take delivery anymore and, as a result, the shopper has no immediate use for the pens anymore. The shopper offers the wholesaler that he could accept the delivery of the pens if the wholesaler offers him a discount. We chose this “cover story” since we learned from focus group interviews with market participants that people generally use these types of excuses to trigger renegotiation.¹⁵ First the shopper asks the wholesaler for a 30% discount off the contracted price; if this is not accepted, they go down to a 20% discount, and then a 10% off the contracted price. The final offer is for a 5% discount. The bargaining ends at any point if

¹⁴ One difference in the ex-ante negotiation of the deal to what was described before is that we try to make the upfront contract as homogeneous as possible. We ask shoppers to negotiate to a specific limit for the upfront payment. We also conduct the renegotiation only in the last visit to a wholesaler in order to avoid their suspicion and jeopardize the experiment. Also, all the renegotiations are carried out over a 2-day period to avoid any risk of information spillover in the market.

¹⁵ We find that wholesalers ask to speak to the client or for the shopper to provide evidence that the client is canceling the order. This verifies that wholesalers are not perfectly sure whether the renegotiation is strategic behavior on part of the shopper or whether the shopper genuinely suffered a shock.

the wholesaler agrees on the discount or refuses to bargain any more. If the wholesaler agrees to a discount, the shopper informs the wholesaler that he will come later to collect the delivery at the re-contracted price. Note that the negotiation can be terminated at any point by the wholesaler.

Importantly, an hour after the renegotiation call, the shopper will call up the wholesaler and inform him that the client has reinstated the order and he would pick up delivery at the initial contracted terms. Thus, the final price that is paid in all cases is the one that was negotiated in the initial contract. Data is collected directly after each visit/renegotiation: the shoppers are asked to fill out a detailed exit survey that asks about the outcome of the negotiation.

3.1. Method of Randomization

This randomization involves matching 46 shoppers to 107 wholesalers and determining the characteristics of each visit for a total of 494 individual visits. Each shopper is assigned to visit 11 different wholesalers. Each wholesaler is visited between 3 and 6 times, with the majority of wholesalers being visited 5-6 times. The randomization imposes that half of the visits are those where the shopper ordered plain pens and the remaining are printed pen visits. We also randomly assign variation in the type of printing that the shopper places and the number of pens ordered. This set up is important because it allows us to control for shopper and wholesaler fixed effects.

To implement the treatment arms while maintaining a similar script across visits, the randomization was set up in the following way: each wholesaler and shopper are randomly assigned a profile that fixes their “intrinsic characteristics:” (1) the shopper’s “company type” is assigned from among four categories (event manager, advertising

agency, conference organizer, and marketing company). We picked four types of firms that are very common in India and justify frequent bulk orders of pens on behalf of other companies. Shoppers are given business cards with the name and the “fictional” company that they own. (2) The pen type is assigned from two different pen brands that are of very similar quality and price. (3) The number of pens ordered in one transaction varies between 500 and 750 pens in increments of 50. (4) The number of days at which the shopper requests the bulk order to be ready. Note that, even for plain pens, the shopper asks the delivery to happen at a later date, even if the wholesaler has ready stock. (5) Finally, we assign half of the visits to be printed pen visits and the other half to be plain pen visits. For visits with printed pens, the shoppers are given different logos each time for the wholesaler to print on the pens.

The randomization also restricts the assignment of shoppers based on the location of the wholesaler, which we will refer to as a “location group”. Wholesale establishments located close to one another (so that wholesalers can see who is visiting a neighboring wholesaler) are assigned the same location group number. Shoppers are not assigned to other wholesalers in the same location group. The idea behind this constraint is that it might create awkward interactions for the shoppers if a wholesaler who is previously visited sees the same shopper go to a neighboring wholesaler. However, as discussed before, we make sure that the initial price offered by the shopper during the price negotiation conveys to the wholesaler that the shopper is informed about the prevailing market prices.

In a second step, shoppers and wholesalers are randomly assigned to one another in a constrained manner.¹⁶ The third step in the randomization is to assign whether the visit

¹⁶ The randomization program then checks that the shopper has not been previously assigned to visit a different wholesaler in that same location group (to avoid the same shopper visiting a neighboring

is for a plain or a printed pen. Out of the five visits to a wholesaler, two are randomly selected to be plain pen visits, two are randomly selected to be printed pen visits, and the remaining visit is randomly selected to be either a plain or a printed pen visit. Each shopper ends up with a number of plain visits and a number of printed visits, typically 4-7 visits of each type. Finally, each printed pen visit is randomly assigned a logo to be printed on the pen.

Throughout this randomization, all characteristics are assigned randomly, in either an unconstrained, constrained, or stratified manner. The only aspect of the randomization that is not strictly randomly assigned is the relative timing of the visits, although there is still a great deal of randomly induced variation in this variable. For the most part, visits to different wholesalers by the same shopper are made in a random order, based on the randomly assigned characteristics of the visits. As discussed later, we included the timing and the sequence of the visits to the wholesaler in the regressions and did not find any difference in the results.¹⁷

4. Data Description

In total, we conduct 494 audits to 107 different wholesalers by 46 different auditors, also called “shoppers”. The summary statistics in Panel A of Table 1 show that the average wholesaler is visited 4.6 times with a minimum of 2 and maximum of 6 visits; the modal wholesaler receives 5 separate visits by different shoppers. The modal shopper completes 11 visits with a minimum of 6 and a maximum of 13 visits. We randomly assign the order

wholesaler), and that the wholesaler did not have a previously assigned visit by a shopper of that same ethnicity or company type.

¹⁷ In case a wholesaler stops selling pens or shuts down (even before a single visit was made), the visits that were scheduled to that wholesaler are reassigned to a replacement wholesaler (a new wholesaler), or are randomly allocated among existing wholesalers.

sizes of the purchase to the shoppers; these are evenly distributed from 500 to 750 with the most common lots being 550, 600, and 700. Column 1 shows the average size of an order is approximately 615 pens. The average order size for printed pens is 619 and for plain pens, 616. To ensure that our random assignment is conducted successfully, we also verify that other wholesaler and visit characteristics such as wholesaler location, time of delivery, and ethnic background of the wholesalers and shoppers do not vary significantly between the printed versus plain orders.¹⁸ Panel B of Table 1 shows the statistics for the ex-post renegotiation of orders. After we complete the initial 494 visits, we randomly pick 75 of the wholesalers and add one final visit where we renegotiate the order afterwards. We engage 15 shoppers for this exercise. However, each of these 75 wholesalers only receives one renegotiation visit, since we do not want to place an undue burden on the wholesaler.

In Table 2, we report the average statistics for the different dimensions of the bargaining outcomes. The descriptive statistics in Table 2 map out the negotiation process of the wholesaler visits. From Panel A, we see that the fraction of printed-to-plain pens is roughly balanced, with 240 visits for printed pens and 254 visits for plain pens.¹⁹ The initial price that is offered by the wholesaler, on average, is Rs 5.3 for the printed pens and Rs 4.9 for the plain pens. This difference is not surprising because the printing costs are around Rs 0.4. The final offer after bargaining is Rs 4.9 for the printed pens and Rs 4.5 for the plain pens. Thus on average, the shoppers approximately receive a 10% price reduction after bargaining. Again, the spread between the two groups of pens stays constant, verifying that the difference in price is mainly a reflection of the printing costs. However,

¹⁸ Results are not reported but can be provided by the authors on request.

¹⁹ The difference in the sample size stems from the fact that some wholesalers, where we send shoppers to ask for printed pens, are not able to do the printing and we have to drop these visits.

there is variance around the price, with a minimum initial price offer for printed pens of Rs 4, and a maximum initial price offer of Rs 7.5. Similarly, the final price ranges from Rs 4 to Rs 6.75. The variance for the plain pens is similar (see also graph 1). The median price is very similar to the mean price for both printed and plain pens.²⁰

In the second part of Panel A, we compare the demanded upfront payments by the wholesaler across printed and plain pens. The wholesalers, on average, initially ask for an upfront payment of 59% in the case of printed pens, but ultimately accept an upfront payment rate of 36%. It is interesting to see that very few wholesalers demand a 100% upfront payment. In the case of plain pens, wholesalers, on average, start with an upfront payment demand of 19% and ultimately accept an average upfront payment of 12%.²¹ Wholesalers demand a substantially higher upfront payment for printed pens than for plain ones. These differences in the upfront payment rate between printed and plain pens are statistically significant and make sense intuitively, since the wholesaler ex-ante faces more risk of breach or renegotiation in case of printed pens. Again we see that there is variation around the mean (see also graph 2). An important point to note is that even within the same wholesaler we find wide variation in the upfront payments demanded across visits. We find that there is significant variation in the contract structures offered to different shoppers visiting the same wholesaler.

5. Ex-ante Contract structure and Relationship-specific Investments

²⁰ One of the possible reasons for dispersion in prices is that ex-ante the market is not perfectly competitive since there are some search frictions. And wholesalers tend to vary in their bargaining strategies, even though they sell identical goods. Some wholesalers offer higher price, and smaller volumes while others adopt a strategy of lower prices, and higher volumes. But this heterogeneity in wholesaler strategies does not bias our analysis, since treatments were randomized at the wholesaler level, which allows us to include wholesaler fixed effects in the regressions.

²¹ We find that in 52% of the cases (131 visits), the final upfront payment for generic pens is zero. In the remaining 48% of the cases, wholesalers demand a non-zero upfront payment from the auditor.

To test how the specificity of the investment affects the ex-ante contracting we look at two dimensions: (1) the fraction of upfront payment that is demanded for plain and printed pens, and (2) the price charged. It is important to note that the contract structure (overall price and upfront payment) is the form of contract that was offered by all the wholesalers. Interestingly, none of the wholesalers offered any other contract structure. For example, the wholesaler could have asked for a referral or allowed for a later payment date rather than payment at delivery.

In Table 3, we first test whether there are significant differences in the upfront payment demanded for printed versus plain pens.²² Based on the models of incomplete contracting, if wholesalers expect a higher risk of breach or renegotiation in the case of printed pens, one would expect them to charge a higher upfront payment. In column (1), we use the fraction of upfront payment that is initially demanded by the wholesaler as the dependent variable and regress it on the print dummy. We also control for the size of the order, the location, and the pen brand. The estimated coefficient on the print dummy is 0.39 and strongly significant. To ensure that the results are not driven by characteristics of wholesalers and shoppers, we include shopper and wholesaler fixed effects in columns (2) and (3). We find that the magnitude of the coefficient on the print dummy is virtually unchanged if we include shopper and wholesaler fixed effects. We also find that the print dummy has a very high explanatory power for the upfront payments (adjusted R-squared of 0.31). Thus, a large fraction of the variation in upfront payment is explained by the

²² One could argue that the upfront payment for printed pens is higher to cover the printing costs of the wholesaler. However, we find similar results even if we adjust the upfront payment for printing charges (if we remove printing charges from the final upfront, we get a difference of 0.17 on the print dummy, as opposed to 0.24 with it). Also, based on the survey of the wholesalers (discussed later), this does not seem to be main reason for the upfront.

specificity of the investment. We then repeat these regressions for the *final* fraction of upfront payment that is agreed upon after bargaining between the shopper and the wholesaler (columns (4) to (6)). The coefficient on the print dummy is smaller (0.243), but still economically and statistically significant.

To examine if wholesalers demand a higher price for printed pens to compensate for the risks, we check if there are significant differences in the overall price contracted ex-ante for printed pens versus plain pens.²³ In Table 4, column (1), we regress the initial offer price (the first price offered by the wholesaler to the shopper) on a dummy for printed pens as well as controls for the size of the order, the location, and pen brand. Note that we also include controls for the order in which shoppers visited the wholesalers and find similar results (not reported). We estimate a significant price difference between printed and plain pens. However, the size of the coefficient is 0.4, which is exactly the cost of printing. Thus, once we take into account the cost of printing, we do not find a significant price difference between printed and plain pens. We then repeat this regression including shopper and wholesaler fixed effects in columns (2) and (3).²⁴ The results show that the magnitude of the coefficient on the printed dummy does not change when we include these controls. However, the adjusted R-squared goes up significantly. More importantly, we find that even after controlling for wholesaler and shopper characteristics, the size of the coefficient on the print dummy is very similar.²⁵ In columns (4) to (6), we repeat these regressions for the final price that the wholesaler and the shopper agree upon after

²³ We expect there to be a mechanical difference of about 40 cents due to the cost of printing, which we will adjust for while evaluating the results.

²⁴ See also List (2004) that conducts a field experiment in the sportscard market and highlights the importance of using fixed effects to control for subject specific characteristics.

²⁵ Note, if wholesalers were only concerned about breach risk arising from shoppers placing an order with another wholesaler, the upfront payment needed to prevent this behavior is much lower as, on average, the price differences across wholesalers are low.

negotiation and find similar results. Overall, we find that wholesalers do not charge a price premium for printed pens beyond the cost of the printing even though the upfront payment does not cover the production costs (the upfront payment only covers about 40% of the production costs).²⁶ This suggests that wholesalers do not charge a higher price for printed pens in order to compensate themselves for the risks.

Combined with the finding that the upfront payment demanded for printed pens is lower than the production costs, this suggests that the prevalence of opportunistic behavior must be low. Otherwise, it would be difficult for wholesalers to break-even. A rough, back of the envelope calculation shows that the breach probability has to be lower than 10%.²⁷ The use of low upfront payments by wholesalers for printed pens is consistent with screening models in an incomplete contracting framework (Williamson, 1983), where wholesalers set the upfront payment to screen shoppers who have a high likelihood of contract breach. In this model, wholesalers do not need to demand a higher price on printed pens as the upfront payment helps screen for breach risk in equilibrium (see appendix II for a simple model of screening).

Further support for the screening hypothesis is provided by the fact that shopper fixed effects have much higher power in explaining variation in upfront payments than in prices (Table 3 and Table 4). To further examine the role of upfront payments as a screening device, Table 5 contrasts shopper fixed effects for plain versus printed pens across different contracting dimensions. We find that the increase in adjusted R-squared,

²⁶ The cost of producing the printed pen for the wholesaler is Rs. 4.4, thus the upfront payment covers 42% of the production price, given the sales price of Rs. 4.9. Note that we have a good estimate of the production costs as we know the cost at which the wholesaler procures the pens from the manufacturer and the costs of printing.

²⁷ The breach probability is based on the following back of the envelope calculation. $\text{Cost} = \text{Upfront paid} + (1 - \text{probability of breach}) \times (\text{sale price} - \text{upfront paid})$. For printed pens, we assume a cost of 4.4, upfront equal to 36% of the sales price, and a selling price of 4.9.

when including shopper fixed effects for upfront payments, is much higher for the visits where shoppers contract on printed pens than on plain pens. The adjusted R² is 41% for printed pens versus 29% for plain pens. Even when we look at the initial upfront payments demanded by the wholesaler; we find similar differences. This suggests that shopper fixed effects do not just capture differences in bargaining skills of the shoppers, since the initial upfront payments offer is made by the wholesaler before any bargaining by the shopper. In addition, for prices (both initial and final prices), we find that shopper fixed effects have similar explanatory power across plain and printed pens (the adjusted R² is around 23% in both cases). Graph 3 reports the coefficients of shopper fixed effects for initial upfront payment demanded, and shows that there is wide variation in the size of the estimated shopper fixed effects.

These results suggest that wholesalers try to screen out bad types by setting the level of upfront payment based on their assessment of different shoppers engaging in opportunistic behavior. Wholesalers do not show the same differential behavior on the *pricing* of pens, which supports the idea that prices are not used to screen shoppers. And in addition, the lack of a differential impact of shopper fixed effects on prices (across plain and printed pens) also means that they do not merely reflect differences in shoppers' bargaining ability, since this would also translate to prices.

Finally, while upfront payments for printed pens help in screening against contract breach, the level of the upfront payment is below the production cost of the pens. Thus, it is not high enough to fully mitigate the risk of hold-up that would arise if contracting parties routinely engaged in renegotiation ex-post, suggesting that, on average, the prevalence of renegotiations in the market must be low. In fact, from anecdotal evidence, we see that

wholesalers and shoppers spend a significant amount of time bargaining over the ex-ante price, which suggests that both sides expect they will honor the contract ex-post.²⁸ Given that legal enforcement is very weak in this market, and that our shoppers are first-time clients (our survey suggests that in the real market, 40% of clients are first-time, walk-in shoppers), wholesalers must be relying on their experience that reputation concerns and social norms play an important role in preventing shoppers from exploiting their hold-up power once the pens have been printed. Shopper behavior could be shaped by a social norm against behaving strategically in business transactions.²⁹ Shoppers might face the threat of social disapproval or broader reputation costs arising from the violation of these social norms (Sugden, 1986; Coleman, 1990). Alternatively, violation of norms might trigger private costs, such as the feelings of shame or guilt (Coleman, 1990; Elster, 1989, 1999; Hume [1739], 1978).

5.2. Survey Evidence

To understand how wholesalers view the role of upfront payments, we conduct a survey of the wholesalers that were visited in the audit study three months after the audits had been concluded.³⁰ We ask wholesalers to rate the likelihood of a shopper engaging in price renegotiation or breaching the contract. We pose the question in several different ways by asking wholesalers how often either breach or renegotiation has happened in the

²⁸ Note that ex-post wholesalers have low outside opportunities. Furthermore, given that the valuation of the shopper for the good is unlikely to be very high, since it is not a critical good, it would be difficult to justify the low upfront payment even if ex-post renegotiation was highly prevalent in the market.

²⁹ *Social norms* are customary rules of behavior that coordinate interactions with others (see Young, 2008). Fehr and Schmidt (1999) find evidence that, in laboratory settings, people exploit their bargaining power in competitive markets, but not in bilateral bargaining situations. See also (Güth et al., 1990; Roth, 1995; Camerer and Thaler, 1995; Fehr, Hart, and Zehnder, 2011) for experiments that highlight that fairness considerations play an important role in bilateral bargaining.

³⁰ It is unlikely that the responses of the wholesalers are driven by the single instance of renegotiation that we did.

last hundred transactions they undertook prior to the survey. We also ask them why they take an upfront payment from the clients.

The results summarized in appendix I suggest that one of the main concerns of the wholesalers is breach risk, i.e., the fear that the shopper never comes back to pick up the order and pay the outstanding bill, rather than the probability that the shopper renegotiates the price. When asked about the actual occurrence of contract breach, 30% of wholesalers report a breach probability between 1% and 5% (Question 2). 7% of the wholesalers report a breach probability of higher than 5%. Finally, 63% of the wholesalers report no occurrence of breach. In addition, 95% of the wholesalers report that one of the main reasons for demanding an upfront payment in the first place is to ensure that the shopper returns to collect the order, i.e., does not breach the contract (Question 1).³¹ In contrast, we find that only 5% of the wholesalers are worried about shoppers renegotiating the contract (Question 1). Furthermore, only 9% of the wholesalers report ever experiencing a price renegotiation (Question 3). The survey results also highlight the importance of upfront payment as a screening mechanism. At the same time, wholesalers do not seem worried that shoppers randomly try to negotiate down prices. These results also suggest an interesting distinction regarding shopper behavior. Shoppers seem to be more likely to violate contracting terms by engaging in breach rather than renegotiating contracts ex-post. One might conjecture that reputation concerns and social norms are not as effective in preventing contract breach due to the lack of social context when a client does not return. Another possible explanation for this could be that it is much more taxing to violate a

³¹ Note, they also say that they cannot resell the pens once the printing is done (resale value is zero).

contract face-to-face and potentially incur the wrath of the counterparty than to renege on the contract by not showing up.

6. Ex-post Re-Negotiation

We now turn to examine how specificity of investments affects the renegotiation outcomes ex-post. Examining renegotiation outcomes can help to further understand the prevalence of renegotiations in the market place and also the social norms and reputation concerns that might govern this behavior.

6.1. Descriptive Statistics

Panel A of Table 6 shows that in 45% of the cases the price of the order is renegotiated. In the remaining 55%, the wholesaler either refuses to change the price or refuses to even begin a conversation about the price renegotiation. Not surprisingly, we find that the willingness to renegotiate is much higher for printed as compared to plain pens (0.6 versus 0.32). However, in 14 cases of printed pens, wholesalers are unwilling to provide any reduction at all. One possible interpretation is that wholesalers perceive their threat point to be high.³² Alternatively, wholesalers might be concerned with reputation spillovers in the market if they engaged in renegotiation of the contract. In Panel B, we report whether the wholesalers agree to give back the upfront payments when the renegotiation fails. We see that in 15 out of the 40 plain pen visits, the wholesaler offers to

³² These results are also consistent with asymmetric information regarding threat points. However, in many of the cases, the wholesalers refuse to renegotiate right from the beginning and state that they do not renegotiate contracts.

return the upfront.³³ In fact, in 12 cases, the wholesaler offers to give back the upfront in cash. But this behavior never occurs for printed pen contracts.

Finally, the first two rows of Panel C show the price difference (percentage discount) that is achieved across all renegotiation visits, including those where the renegotiation failed.³⁴ We find that the average discount offered for printed pens is 4% and for plain pens is 1%. In the next two rows of Panel C, we describe the difference in price between printed versus plain pens. On average, printed and plain pens have a mean price of Rs. 4.5 each after renegotiation. However, this masks the actual size of the difference because the printing costs alone are about Rs. 0.4 per pen. Therefore, the price of printed pens after renegotiation is much lower than the plain ones.

6.2. Regression Results

To test the results of renegotiation more rigorously, in column (1) of Table 7, we regress the discount that is given in renegotiation (measured as percentage off of the base price) on the printed pen dummy and shopper fixed effects. We cannot include wholesaler fixed effects in these regressions because we only have one visit to each of the wholesalers. Note that the statistical power in renegotiation sample is lower as there are small number of observations. The coefficient on the printed dummy is economically large (0.03) and statistically significant at the 1% level. In the renegotiation of printed pens, shoppers get a three percentage point higher discount, on average, relative to plain pens. In line with the

³³ Note that we do not consider two cases of failed renegotiation of plain pens in this sample as the upfront paid in these cases is zero.

³⁴ In the case of a failed renegotiation, we code the price change as zero. This is a strong assumption because it presumes that, in the case of failed renegotiation, the shopper will pay the full price for the goods, which of course is not guaranteed.

intuition of renegotiation models, this result confirms that wholesalers are well-aware of the outside option when renegotiating the contract.

In column (2) of Table 7, we also include observable characteristics of the deal, such as the upfront payment that is made at the time of contract negotiation, and the price at which the deal is contracted. The coefficient on Final Upfront percentage is negative and significant. Thus, the percentage discount offered by the wholesalers in the renegotiation is lower if the upfront payment that was paid ex-ante is higher. This suggests that wholesalers are less willing to renegotiate when they have a higher threat point, since the shopper has already paid a large fraction of the money. In contrast, the coefficient on Price contracted (the price that is negotiated upfront) is positive, which suggests that wholesalers are more likely to give a higher percentage discount if the original price left them with a higher profit margin.

In columns (3) and (4) of Table 7, we split the sample into the renegotiations for printed versus plain visits. It is interesting to see that the coefficient on the upfront payment is negative, and significant only in the case of printed pens (-0.195). We also find a significant and positive relation between the percentage discount that the wholesaler agrees to in the renegotiation, and the price that is contracted ex-ante. However, this positive relation only holds for the sample of plain pens, but is not significant in the sample of printed pens. It suggests that the wholesaler understands that his threat point is very low in the case of printed pens, and hence, is willing to renegotiate the price across all printed pen deals, and not only those that start with a high profit margin. The finding that wholesalers offer higher discounts for printed pens, and also that the discount decreases with higher upfront payment, is consistent with incomplete contracting models. However, these

findings also suggest that the prevalence of renegotiations in the marketplace must be low. If shoppers frequently engaged in renegotiations ex-post, wholesalers would have to set the upfront payments higher in order to mitigate hold-up risk.

The last two columns of Table 7 focus on the likelihood that the shopper gets the upfront payment back during the renegotiation. We only focus on the set of plain pen renegotiations, as wholesalers do not return the upfront in the printed pen orders. In columns (5) and (6), we regress a dummy for whether the wholesaler offers to refund the upfront payment on the same deal characteristics we used before. In column (5), we include only cases where the wholesaler does not offer to change the price. In column (6), we repeat this regression for the sample of all plain pen deals including those where the wholesaler accepted a lower price (we code these as a zero, i.e., the shopper does not get the upfront payment back).

We find a strong, negative coefficient on the amount of upfront payment and a somewhat weaker but negative coefficient with the price that is contracted upfront. In column (5), the coefficient on the upfront payment is -4.23 and is significant at the 1% level. The coefficient on negotiated price is -0.56, but only marginally significant. This means that the likelihood that a shopper is offered to take the upfront payment back is decreasing in the fraction that was paid upfront. These results are consistent with the view that wholesalers trade off the benefits from building a reputation for generous behavior against the immediate gains from keeping a (larger) upfront payment.

7. Conclusion

This paper uses a novel audit study methodology to test how contracts are structured if parties have to make relationship-specific investments in settings where legal

enforcement of contracts is limited. We find that, consistent with the models of incomplete contracting, wholesalers demand higher upfront payments for printed pens, which require a higher relationship-specific investment. But the upfront payment only covers 40% of the production costs of the pens, and thus would leave the wholesaler exposed to the risk of opportunistic behavior by shoppers. However, at the same time, wholesalers do not charge higher prices for printed pens.

These results suggest that wholesalers successfully use the upfront payment to screen out shoppers who have a high risk of breaching their contract ex-post, and thus would expose wholesalers to large losses. The fact that the upfront payment can be set well below the production cost of the pens suggests that shoppers do not willfully engage in opportunistic behavior, rather, they honor the contract that was negotiated upfront. Given the lack of formal legal enforcement in this environment, the results suggest that social norms and reputation concerns play an important role in maintaining this equilibrium. Our results suggest that simple financial contracts supported by social norms and reputation can be effective in overcoming contracting frictions in settings where legal enforcement is weak.

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Table 1: This table presents the summary statistics of the visits. Panel A reports the summary statistics of the no of visits to each wholesaler and by each shopper. Average order size per visit is the average no of pens purchased per visit. Panel B presents the summary statistics for visits where the contract was renegotiated ex-post.

Panel A	Obs	Avg no of visits	Median no of visits	Std. Dev	Min no of visits	Max no of visits	Average order size per visit
no of wholesalers	107	4.61	5	1.05	2	6	615
no of shoppers	46	10.73	11	0.90	6	13	617

Panel B (Renegotiation sample)	Obs	Avg no of visits	Median no of visits	Std. Dev	Min no of visits	Max no of visits	Average order size per visit
no of wholesalers	75	1	1	0	1	1	689
no of shoppers	15	5.4	5	1.585	3	9	686

Table 2: This table presents the summary statistics of the price and the upfront payment % demanded during the visits. Initial offer is the initial price per pen (Rs.) offered by the trader. Printed pen refers to pen on which a shopper gets a customized message printed. Final rate is the final contracted rate per pen (including printing costs if any). Initial upfront % is the initial advance payment demanded by the wholesaler as a fraction of total sales price. Final upfront % is the final advance paid as a fraction of total sales price. Panel B presents the summary statistics for visits where the contract was renegotiated ex-post.

Panel A

Price	Obs	Mean	Median	Std. Dev	Min	Max
Initial offer-Printed pen	240	5.33	5.22	0.772	4.0	7.5
Final rate-Printed pen	240	4.93	4.82	0.582	4.0	6.75
Initial offer-Plain pen	254	4.90	4.8	0.665	3.8	6.5
Final rate- Plain pen	254	4.53	4.45	0.465	3.8	6

Upfront payment	Obs	Mean	Median	Std. Dev	Min	Max
Initial upfront %-Printed pen	240	0.588	0.5	0.299	0	1
Final upfront %-Printed pen	240	0.360	0.32	0.223	0	1
Initial upfront %-Plain pen	254	0.192	0	0.286	0	1
Final upfront %-Plain pen	254	0.117	0	0.202	0	1

Panel B (Renegotiation sample)

Price	Obs	Mean	Median	Std. Dev	Min	Max
Initial offer-Printed pen	35	5.15	5.25	0.606	4.0	6.5
Final rate-Printed pen	35	4.83	4.9	0.438	4.0	5.9
Initial offer-Plain pen	40	4.75	4.65	0.627	3.85	6.0
Final rate- Plain pen	40	4.42	4.30	0.410	3.8	5.25

Upfront payment	Obs	Mean	Median	Std. Dev	Min	Max
Initial upfront %-Printed pen	35	0.526	0.5	0.269	0	1
Final upfront %-Printed pen	35	0.232	0.24	0.087	0.08	0.41
Initial upfront %-Plain pen	40	0.230	0.15	0.284	0	1
Final upfront %-Plain pen	40	0.091	0.06	0.068	0	0.27

Table 3: Regressions of Initial upfront offered and Final upfront contracted

This table reports the results of OLS regressions. The dependent variables are Initial upfront % offered, Final upfront % contracted. Print is a dummy variable that takes the value of one if customized printing was done on the pen. Quantity is the log of the size of order. Brand is a dummy for the type of pen (we have 2 brands of pens that we purchase). Location is a dummy variable that takes the value of one for wholesalers that are not located in the main street. Shopper fixed effects refer to fixed effects for each individual shopper. Wholesaler fixed effects refer to fixed effects for each individual wholesaler. Robust standard errors clustered at wholesaler level are reported in parentheses. The symbols ***, **, and * indicate significance levels of 1%, 5%, and 10% respectively.

	Initial upfront % offered			Final upfront % contracted		
	(1)	(2)	(3)	(4)	(5)	(6)
Print	0.396*** (0.028)	0.385*** (0.028)	0.375*** (0.031)	0.246*** (0.019)	0.244*** (0.018)	0.231*** (0.019)
Quantity				-0.037 (0.056)		
Pen brand				0.044** (0.020)		
Location				-0.018 (0.031)		
Constant	0.510 (0.540)	0.197*** (0.020)	0.432*** (0.083)	0.401 (0.376)	0.116*** (0.012)	0.140** (0.067)
Shopper fixed effect	no	yes	Yes	no	yes	yes
Wholesaler fixed effect	no	no	Yes	no	no	yes
N	494	494	494	494	494	494
Adj-R2	0.314	0.418	0.511	0.257	0.392	0.526

Table 4: Regressions of Initial price offered and Final price contracted

This table reports the results of OLS regressions. The dependent variables are Initial price offered per pen, Final contracted rate per pen (including printing costs, if any). Print is a dummy variable that takes the value of one if customized printing was done on the pen. Quantity is the log of the size of order. Brand is a dummy for the type of pen (we have 2 brands of pen that we purchase). Location is a dummy variable that takes the value of one for wholesalers that are not located in the main street. Shopper fixed effects refer to fixed effects for each individual shopper. Wholesaler fixed effects refer to fixed effects for each individual wholesaler. Robust standard errors clustered at wholesaler level are reported in parentheses. The symbols ***, **, and * indicate significance levels of 1%, 5%, and 10% respectively.

	Initial price offered			Final price contracted		
	(1)	(2)	(3)	(4)	(5)	(6)
Print	0.415*** (0.050)	0.414*** (0.054)	0.396*** (0.049)	0.399*** (0.040)	0.405*** (0.048)	0.393*** (0.035)
Quantity	-0.084 (0.190)			-0.255** (0.127)		
Pen brand	-0.143** (0.061)			-0.063 (0.047)		
Location	0.204 (0.181)			0.178 (0.163)		
Constant	5.157*** (1.202)	4.911*** (0.060)	5.192*** (0.207)	5.947*** (0.808)	4.531*** (0.044)	4.471*** (0.095)
Shopper fixed effect	no	yes	yes	no	yes	yes
Wholesaler fixed effect	no	no	yes	no	no	yes
N	494	494	494	494	494	494
Adj-R2	0.095	0.160	0.741	0.144	0.178	0.776

Table 5: The Importance of Shopper Fixed effects in explaining variations in contracting outcomes for Printed and Plain pens

This table reports the adjusted R2 obtained from OLS regressions of various outcome variables (upfront % and price) on Shopper dummies. The regressions are estimated separately for printed pens and plain pens.

	Final upfront % contracted	Initial Upfront % offered	Final price contracted	Initial price offered
Printed pens	0.41	0.36	0.21	0.23
Plain pens	0.29	0.27	0.24	0.25

Graph 3, reports the coefficients of Shopper Fixed effects obtained from OLS regression of initial upfront % offered on Shopper dummies.

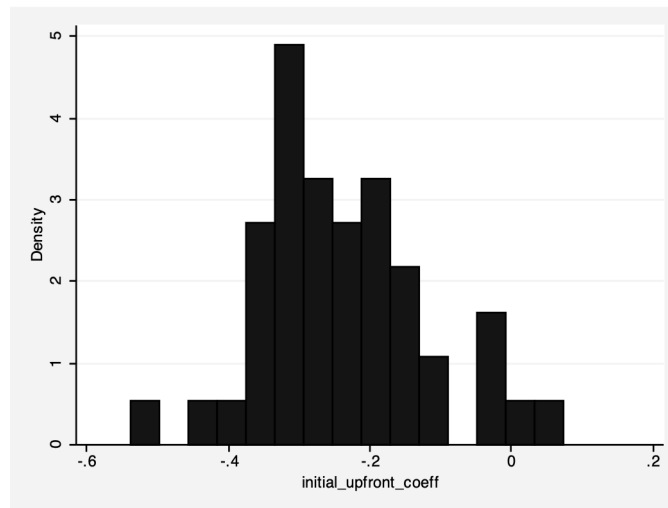


Table 6: This table presents the summary statistics of the visits where the contract was renegotiated ex-post. Panel A decomposes the number of visits where renegotiation succeeded (price was reduced) versus visits where renegotiation failed (the price was not changed) by printed/non-printed. Renegotiation Abruptly terminated refers to visits where the wholesaler abruptly ended the negotiation with the shopper (wholesaler abruptly hung-up the phone). Panel B decomposes the number of visits where renegotiation failed (the price was not changed) by whether the wholesaler agreed/refused to refund the upfront paid. Also, it reports, in case of refund, whether the refund was in cash or in kind (in the form of purchase of other items). Panel C reports the summary statistics of Renegotiation percentage by type of visit (printed/non-printed). Renegotiation percentage is defined as the (final contracted price per pen-price per pen after renegotiation)/ final contracted price per pen (note that final contracted price per pen is the price per pen that was agreed upon before renegotiation). Panel C also presents the price per pen after renegotiation for the sub-sample, where the renegotiation succeeded. Printed pen refers to pens on which a shopper gets a customized message printed.

Panel A

	Obs	Renegotiation Succeeded	Renegotiation Failed	Renegotiation Abruptly terminated	Fraction Renegotiated
Printed pens	35	21	14	8	0.6
Plain pens	40	13	27	7	0.32
Total visits	75	34	41	15	0.45

Panel B

	No of Failed renegotiation visits	Upfront refunded (in case of renegotiation failure)	Refund in cash	Refund in kind
Printed pens	14	0	0	0
Plain pens	25	15	12	3

Panel C

Renegotiation percentage	Obs	Mean	Median	Std. Dev	Min	Max
Printed pens (including printing costs)	35	0.041	0.030	0.048	0.00	0.216
Plain pens	40	0.012	0.000	0.020	0.00	0.061
Price after renegotiation	Obs	Mean	Median	Std. Dev	Min	Max
Printed pens (including printing costs)	21	4.49	4.5	0.383	3.8	5.2
Plain pens	13	4.50	4.5	0.352	4.0	5.1

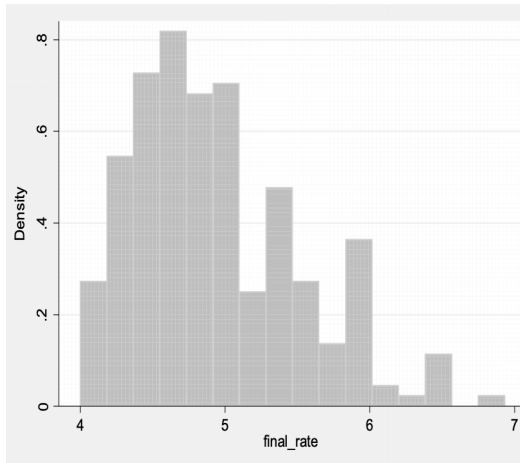
Table 7: Regressions of the magnitude of renegotiation percentage and Likelihood of getting the Upfront paid refunded.

This table reports the results of OLS regressions in columns 1-4. The dependent variable is Renegotiation percentage, where renegotiation percentage is defined as the (final contracted price per pen-price per pen after renegotiation)/ final contracted price per pen (note that final contracted price per pen is the price per pen that was agreed upon before renegotiation). Columns 5-6 report results of a probit (the co-efficient reported are marginal effects). The dependent variable is Upfront refund dummy, which takes the value of one if the wholesaler agrees to refund the Upfront paid, and zero otherwise. Column 5 reports the results for the sample where the price renegotiation failed. Column 6 reports the results for the entire sample. Print is a dummy variable that takes the value of one if customized printing was done on the pen. Final upfront % is the final advance paid as a fraction of total sales price. Price contracted is the final contracted price per pen (including printing costs if any). Quantity is the log of the size of order. Brand is a dummy for the type of pen (we have 2 brands of pens that we purchase). Location is a dummy variable that takes the value of one for wholesalers that are not located in the main street. Shopper fixed effects refer to fixed effects for each individual shopper. Robust standard errors clustered at wholesaler level are reported in parentheses. The symbols ***, **, and * indicate significance levels of 1%, 5%, and 10% respectively.

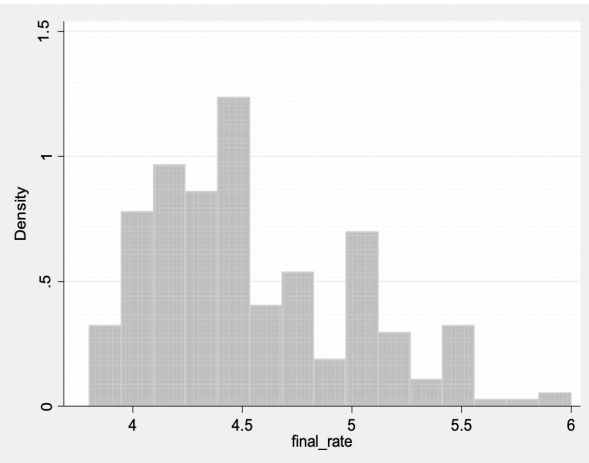
	Renegotiation percentage				Upfront Refund Dummy	
	(1)	(2)	Printed sample (3)	Plain sample (4)	Failed Renegotiation sample (5)	(6)
Print	0.028*** (0.008)	0.029** (0.013)				
Final Upfront %		-0.136** (0.065)	-0.195** (0.079)	-0.052 (0.039)	-4.229*** (1.894)	-3.275** (1.578)
Price contracted		0.021** (0.010)	0.022 (0.018)	0.028*** (0.007)	-0.564* (0.329)	-0.808*** (0.243)
Quantity		-0.032 (0.132)	0.139 (0.154)	0.094* (0.054)	0.709 (2.560)	-0.657 (1.615)
Pen brand		-0.040 (0.063)	-0.001 (0.061)	0.035 (0.022)	0.225 (1.026)	-0.290 (0.590)
Location		-0.002 (0.011)			-0.389 (0.320)	
Constant	0.012*** (0.003)	0.183 (0.863)	-0.935 (1.081)	-0.734** (0.359)		
Shopper Fixed effect	no	Yes	no	no	no	no
N	75	75	35	40	25	37
Adj/Pseudo-R2	0.135	0.207	0.230	0.341	0.330	0.341

Graph 1

Final rate per pen (Printed sample)

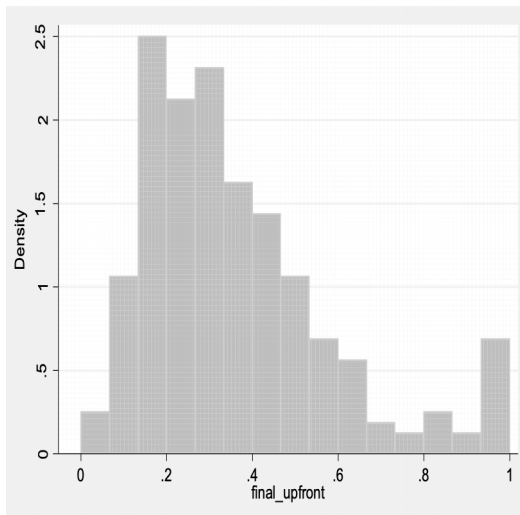


Final rate per pen (Plain sample)

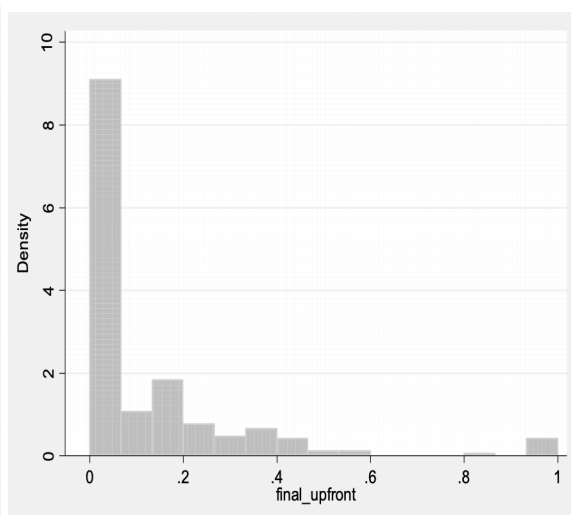


Graph 2

Final Upfront % (Printed sample)



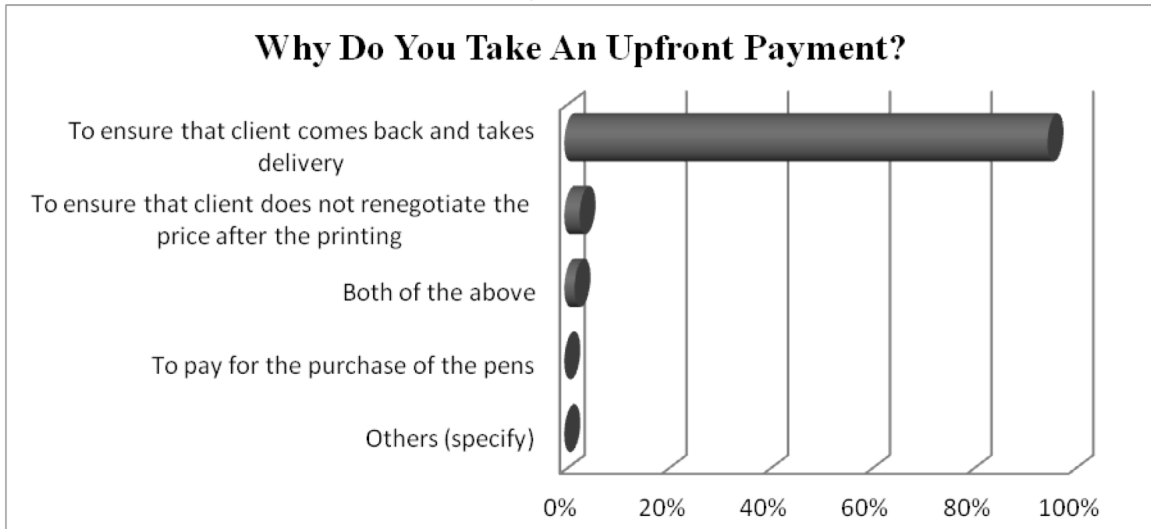
Final Upfront % (Plain sample)



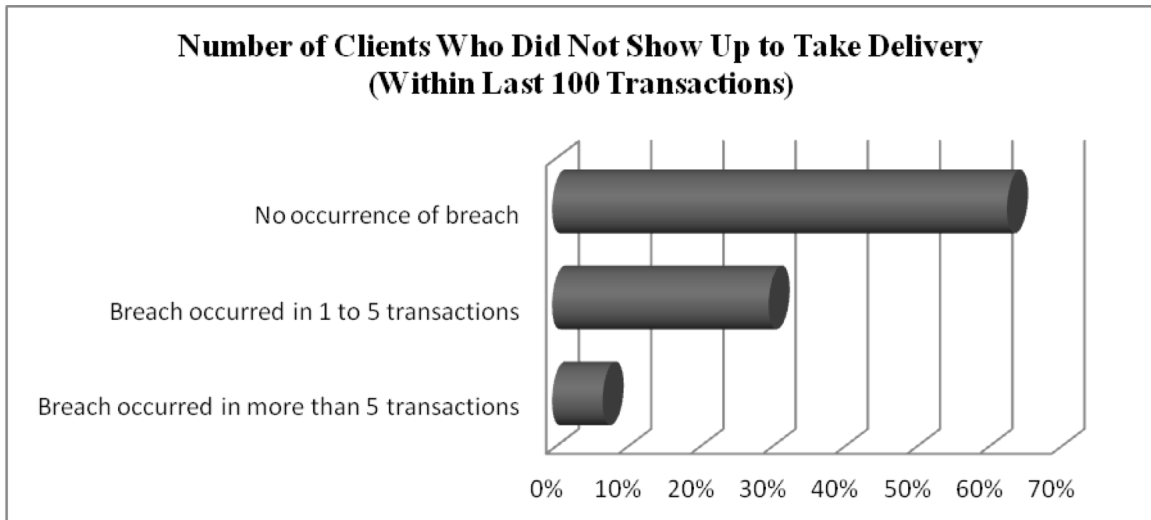
Appendix I: Survey Responses

The percentages reported refer to the fraction of the wholesalers that responded affirmatively. In total, we were able to survey 89 wholesalers.

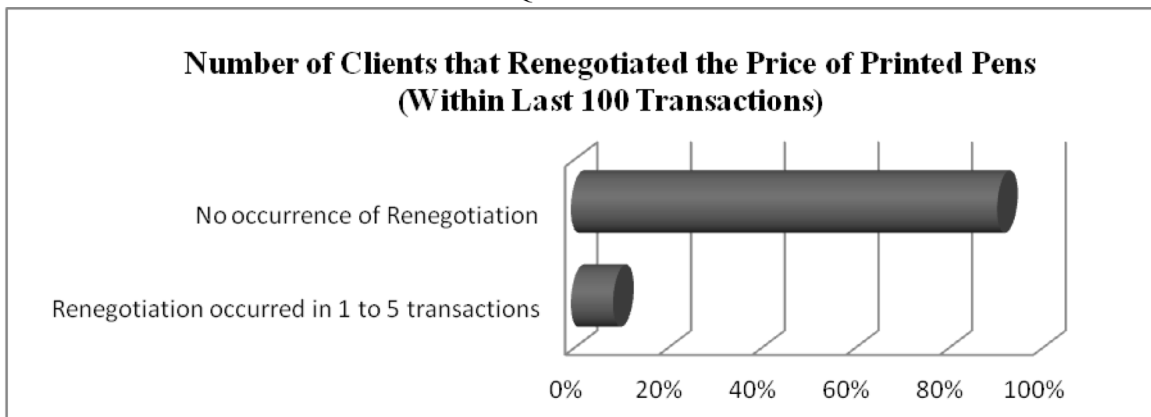
Question 1



Question 2



Question 3



Appendix II: Model of Up-front Screening

In order to fix intuitions on the use of upfront payment as a mechanism to screen for breach risk, we lay out two different simplified models, which is inspired by Williamson (1983). The two settings we consider are the following: (1) uncertainty about change in valuation with symmetric information, and (2) uncertainty about change in valuation with asymmetric information. The two models follow the same timeline where we assume that, in the first period, buyer and seller agree on a contract consisting of a price and a fraction to be paid upfront.

1) Uncertainty about Change in Valuation (symmetric information)

Consider a buyer who wishes to place an order for pens with a wholesaler. The buyer and seller are risk neutral. The cost of producing the pens is assumed to be c_1 . In the first model, we assume that the buyer's valuation may change after the initial contract has been signed. The initial value the buyer places on the pens is denoted by v_1 . We assume that there is uncertainty about valuations in the second period. Both buyer and seller face symmetric uncertainty about the valuation that the buyer will assign to the purchase in the second period. To model the likelihood of contract breach but keep the model very simple, we assume that the valuation in period 2 is either high, in which case $v_2 > c_1$ (this happens with probability $(1 - \rho_1)$), or low, with probability ρ_1 , in which case of $v_2 = 0$. We do not consider the case where v_2 increases (or only decreases slightly so that still $v_2 > c_1$), since these cases are contractually uninteresting. Finally, we assume that the price at which the pens can be resold in period 2 (outside option of the seller) is r_2 . In addition, we assume that $v_2 \geq r_2$.

The division of ex-ante surplus between the buyer and seller is assumed to be determined in a competitive market in which sellers earn zero profit. Since there is no contract

enforceability on either side, the equilibrium second period price, p_2 , has to be self-enforcing. It should be above the price at which the seller can resell the pens in the market, and below the value that the buyer places on them.

$$p_2 \in (r_2; v_2) \tag{1}$$

Thus period 2 price, p_2 , must still satisfy (1). In period 2, the seller with probability ρ_1 gets r_2 (the buyer engages in contract breach), and with probability $(1 - \rho_1)$, the seller is able to get p_2 . Thus now the seller must be compensated for the future loss and we get that upfront price has to be: $p_1 = c_1 - (1 - \rho_1) p_2 - \rho_1 r_2$

Thus $p_1 + p_2 = c_1 + \rho_1(p_2 - r_2)$.³⁵ While the seller still breaks even, the overall price for printed pens is higher to compensate the seller for the loss from buyers who breach. That is, there is a risk premium on printed pens if the ex-post breach occurs with positive probability. In effect, in the case of printed pens, buyers who return to pick up the pens would pay a higher overall price, since the expected loss from the people who breach have to be made up by those who come back. The main prediction of the model therefore is that sellers demand a risk premium on the price of printed pens in addition to demanding an upfront payment.

2) Model with asymmetric information regarding valuation uncertainty (screening model).

We now consider the setting where buyers are better informed about their own likelihood of valuation shocks. That is, we assume that there are two types of buyers. One type of buyer has a high valuation for the good ($v_2 > c_1$) with probability 1 , while the other type of buyer has a high valuation for the good with probability $(1 - \rho_1)$ and a low valuation ($v_2 = 0$) with probability ρ_1 . In addition, we assume that the buyers know their own type. In that case, sellers can screen out buyers with a high risk of breach by demanding an upfront

³⁵ We assume that $p_2 \geq r_2$. For the case of generic pens, we assume that $p_2 = r_2 = c_1$, while for printed pens, we assume that $r_2 = 0$ (the outside option of the seller is zero).

payment to ensure that the cost of entering the contract is higher than the expected benefit from signing the contract but then breaching in period 2.

Specifically, by setting the upfront payment to satisfy $p_1 > (1 - \rho_1)(v_2 - p_2)$, the sellers can screen out buyers who are likely to engage in contract breach.³⁶ In effect, only high-type buyers will enter the contract. The upshot is that sellers do not need to charge a risk premium on the price of printed pens. Thus the main prediction from the model with asymmetric information is that wholesalers use the upfront payment as a screening mechanism, but in contrast to the model with symmetric information, they do not charge a risk premium on printed pens.

³⁶ Note that we assume that $c_1 > (1 - \rho_1)(v_2 - p_2)$, thus the payment made by the buyer to the seller in the second period is positive.