

Incomplete Contracts and Renegotiation: Evidence from a Field Audit

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Abstract:

This paper explores how the relationship specificity of an investment affects the contract structure and pricing of a transaction ex-ante and the renegotiation ex-post. In a field experiment in the wholesale market for pens in India, trained auditors who act as entrepreneurs procure large orders of pens from wholesalers. We vary the specificity of the order by either buying generic or custom-printed (relationship specific) lots of pens. In line with incomplete contract theories, we find that printed pens which require a relationship specific investment have significantly higher upfront payment over generic pens. But there is no price difference between printed and generic pens beyond the cost of printing and the level of the upfront payment is too low to cover the procurement costs of the wholesaler. Our results suggest that wholesalers try to protect themselves against contract breach by using the upfront payment as a screening mechanism. In contrast, they seem much less concerned about (strategic) renegotiation of prices ex post. We also find that ex post, when faced with an actual renegotiation, wholesalers on average are more willing to renegotiate an order and accept lower prices in the case of printed pens. Interestingly, in 60% of the deals with generic pens, the wholesaler returns the upfront payment when the renegotiation fails.

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1. Introduction

Incomplete contracting theories have been a central building block for models in economics, finance and law for almost three decades (Klein, Crawford, and Alchian (1978), Williamson (1979, 1983), Grossman and Hart (1986) and Hart and Moore (1988; 1990)). These theories build on the idea that when state contingencies cannot be perfectly observed or contracted upon, transacting parties are left exposed to the risk that terms of trade change ex-post. This in turn can lead to inefficiencies in trade or production, especially if one or both parties have to make relationship specific investments. Despite the widespread use of incomplete contracting theories, few empirical studies have directly examined the extent to which contractual incompleteness affects ex-ante contract structures and their subsequent renegotiation. In this paper, we analyze empirically how transacting parties use contracts to protect against the risks that arise due to contractual incompleteness. Further, we investigate how contracts are renegotiated and the manner in which renegotiation outcomes are affected by ex-ante contract structures.

When a seller has to make a relationship specific investment ex-ante to produce a good, he faces a number of different risks: First there could be a drop in the buyer's valuation for the good ex-post. As a result the buyer might try to renegotiate the price downward. Alternatively, the valuation drop can be so large that the buyer breaches the contract, i.e., sale no longer occurs. The second risk the seller faces is that once the relationship specific investment is undertaken, even absent a drop in the buyer's valuation, the buyer might try to strategically renegotiate the price downward. That is the buyer might try to hold-up the seller to extract additional rents. The literature has highlighted that if market participants are forward looking, transacting parties should therefore structure contracts ex-ante in such a way as to take into account the potential for ex-post frictions.

We conduct a randomized field audit in the Southern Indian city of Chennai that explicitly analyzes the importance of contractual incompleteness when parties have to make relationship specific investments. This market has all the features of an incomplete contract environment: there is no recourse to the court system nor contract enforcement via extra legal means if a party does not honor the agreed upon terms. Using a novel audit study methodology, we send trained auditors to negotiate and execute real purchase agreements in the wholesale market for pens. Our auditors are trained to mimic the average buyer in this market. Thus, our auditors are no different from the standard buyer in this market. In the first step of the experiment, 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.¹

We exogenously vary the level of relationship specific investments the wholesalers must make by randomly varying the type of pens ordered. Half of the orders are for generic pens which are easy to resell in the market (“plain pens”). The other half of pens ordered are customized pens where the wholesaler is asked to print a specific logo on the pens (“printed pens”). Printed pens require a greater relationship specific investment from the wholesaler. Once the pens are procured and printed their outside value is essentially zero if the sale does not go through. Since contracts are very difficult to enforce in this environment, the wholesaler faces

¹ In total across 494 visits we purchase approximately 300,000 pens.

the risk that once the printing is done the shopper might not pick up the goods (breach risk).² Alternatively, the shopper might try to renegotiate a lower price due to a drop in his valuation for the good or in order to strategically extract surplus (hold-up). For the wholesaler it is difficult to differentiate ex-post whether a shopper had a true drop in valuation or whether he is engaging in strategic renegotiation.

We first analyze how the potential for contract breach or renegotiation affect the ex-ante structure of contracts. We find that wholesalers use simple contractual provisions like upfront payments to mitigate some of the risks that arise due to contractual incompleteness. Consistent with models of incomplete contracting, we find that for printed pens, wholesalers demand a significantly higher fraction of the payment upfront than for generic pens (36% versus 11%).³ However, surprisingly, the absolute *level* of the upfront payment that wholesalers demand for printed pens is very low. On average the upfront payment only covers 42% of the cost of procuring the pens from the manufacturer. Thus, in the event of a breach, the wholesaler stands to lose nearly 60% of the cost of production. Further, low upfront payment also leaves wholesalers exposed to the risk of price renegotiation ex-post.

A second important dimension of the contract is the overall price charged for the pen order.⁴ If printed pen orders leave wholesalers more heavily exposed to both breach and renegotiation risk, we would expect them to be compensated by a higher price for printed pens as compared to plain pens. Interestingly, however, we do not find a difference in the price of

² Note that the shopper could also try to procure the good from some other wholesaler for a cheaper price and therefore not take delivery, which would be equivalent to breaching the contract.

³ In fact if wholesalers could commit not 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 The overall price contracted ex-ante is the sum of the price paid upfront and the remainder of the price that is to be paid at delivery.

printed and plain pen orders after adjusting for the cost of printing.⁵ Wholesalers therefore do not try to mitigate the risk of contract breach or renegotiation by charging higher prices for printed pens, even though the upfront payment does not cover the procurement costs.

These findings suggest that wholesalers place little weight on the probability that shoppers will breach the contract or renegotiate it, as wholesalers would otherwise not be able to break even, given the low level of upfront payments.⁶ One possible explanation is that the expected likelihood that shoppers engage in any contract breach or renegotiation is indeed very low. However, this would be very surprising since we find that 40% of the shoppers in this market are one time customers and thus have a strong incentive to behave opportunistically. Another explanation for the fact that wholesalers place little weight on the probability of breach could be that demanding an upfront payment enables wholesalers to screen out shoppers with a low valuation for the good or who know that they might have a low future valuation. As suggested in Williamson (1983), the upfront payment serves as the equivalent of posting a “hostage” that screens out shoppers with low valuations for the good.⁷ But it is important to note that this mechanism still exposes the seller to the risk of strategic renegotiation by shoppers as long as the upfront does not cover the full cost of procurement and the shoppers can hide their true valuation for the good.⁸ Thus the low upfront payment can only be a sustainable outcome in the longer term if wholesalers know that there is little reason to guard against renegotiation, which means they know that shoppers are very unlikely to initiate a price renegotiation.

We corroborate the use of upfront payment as a “hostage” with a survey of the wholesalers which we conducted at the end of the audit study. The survey results show that wholesalers are

⁵ However, we do find a lot of heterogeneity in the prices charged across wholesalers and even shoppers.

⁶ A rough back of the envelope calculation using the amount of upfront charged and the profitability of wholesalers suggests that wholesalers can at maximum withstand a breach in one of every ten transactions they undertake.

⁷ Note that this assumes that buyers are more informed about their valuation for the pens than are wholesalers.

⁸ See Williamson (1983), pg 525, for a discussion on ex-post opportunism.

primarily concerned with breach risk: 95% of the wholesalers say that they are “very concerned about buyers not coming back and honoring the contract.” In contrast only 10% answered that they were “ever worried about price renegotiation.” They also report that the main reason why they demand an upfront payment is to make sure that buyers come back and take delivery (95% of the respondents). The results from the survey are consistent with the hypothesis that wholesalers use upfront payments as a screening mechanism against breach but that the prevalence of contract renegotiation or hold-up is rare. A puzzling implication of these results is that buyers in the market seem to be willing to engage in contract breach if it is not in their interest to honor the order, but they are on average reluctant to renegotiate the contract terms ex-post even though it would be advantageous to do so. Further, it suggests that shoppers are reluctant to renegotiate the contract even if there could be gains from trade. One could conjecture that this behavior either reflects social norms or the unwillingness of buyers in the market to engage in renegotiation.⁹

We next turn to empirically analyzing the ex-post renegotiation of contracts – a key component of incomplete contracting literature. We examine how the ex-ante contract structure as well as the specificity of the required investment affects renegotiation ex-post. We renegotiate the contracts for 75 pen orders where 40 of these orders are for plain pens and 35 are for printed pens. Specifically, after placing the 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. Note that we make sure that the pens have already been printed before we renegotiate the contract.

⁹ Alternatively it could imply that the average shopper wants to maintain a good reputation in the market, however this seems unlikely to be the only explanation as 40% of the buyers are one time costumers. Also, as discussed later, we did not find that buyers experience higher costs in terms of loss of future trading opportunities if they renegotiate contracts. See also Maculay (1963) and Hart and Moore (2008).

We find evidence that the specificity of the investment affects the renegotiation outcome. In the case of printed pens, wholesalers are willing to renegotiate the order at a significantly higher frequency than in the case of plain pens. In addition, the discount that wholesalers agree upon is much higher for printed than plain pens. While, plain pens are never renegotiated below their procurement price, printed pens are renegotiated to below the cost price in 30% of cases. However, we also discover that in 40% of the cases, wholesalers are unwilling to renegotiate the contract for printed pens or abruptly terminate the renegotiations even though the salvage value for printed pens is essentially zero. Thus wholesalers are ready to suffer a loss rather than renegotiate the price. A possible explanation could be that wholesalers are concerned of their reputation in the market if they renegotiate contracts or feel aggrieved due to renegotiation of the contract by the shopper.

Examining the impact of the ex-ante contract structure on the renegotiation, we find that the level of the upfront payment affects the willingness of the wholesaler to renegotiate the deal. In particular, the percentage discount offered by the wholesaler in the renegotiation is lower if the level of upfront payment contracted ex-ante was high. This result is especially significant in the case of printed pens. This suggests that the upfront payment contracted ex-ante affects the bargaining power of wholesalers in the printed pen renegotiations.

Finally, we find that if renegotiation fails a significant subset of wholesalers return the upfront payment even though the shopper is renegeing on the contract. This occurs only in case of plain pen orders where the wholesaler does not have to incur a loss due to renegotiation. In fact, in 15 out of 40 plain pen contracts, the wholesaler agrees to return the upfront payment to the shopper in full. Still, we find that 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.¹⁰

The remainder of the paper proceeds as follows: Section 2 places our paper in the context of the existing literature, 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, and Section 6 summarizes the results from the ex-post renegotiation. Finally Section 7 concludes.

2. Literature Review

Our paper contributes to several strands of the literature on incomplete contracting. Klein, Crawford, and Alchian (1978) and Williamson (1979, 1985) argue that contract incompleteness in the presence of investments in specific assets opens the door to ex-post opportunism.¹¹ They propose vertical integration as a solution to deal with the problem of hold-up.¹² Williamson (1983), Hart and Moore (1988) establish the role of upfront payments as a contractual mechanism to overcome frictions arising due to contractual incompleteness.¹³ Grossman and Hart (1986), and Hart and Moore (1990) develop the property rights theory of the firm where ownership of the asset helps reduce the hold-up problem and increase the incentive of parties to make non-contractible relationship-specific investments. Aghion and Bolton (1992) and Bolton

¹⁰ Of course, one could imagine a more complicated model of social norms or fairness where the level of generosity expected from the wholesaler should be commensurate with the loss on the other side. This story, though, seems much more complicated to motivate.

¹¹ See Gibbons (2005, 2010) for an excellent review of the literature.

¹² Joskow (1985) finds higher incidence of common ownership in the form of vertical integration among electricity generating plants that site next to coal mines. Joskow (1987) finds that ex-ante contracting parties enter into longer contracts when relationship specific investments are more important. See also Whinston (2003) and Lafontaine and Slade (2010).

¹³ See also Grout (1984), Tirole (1986), Rogerson (1992), Macleod and Malcolmson (1993) and Maskin and Tirole (1999).

and Scharfstein (1996) develop a theory of capital structure based on control rights allocation with the main ingredient being incompleteness of financial contracts.

Our paper also contributes to the existing literature that explores the importance of asset liquidation values in contracting. Williamson (1988) and Shleifer and Vishny (1992) highlight the role of asset redeployability in the determination of debt capacity. On the empirical front, Benmelech and Bergman (2008) find that airlines renegotiate their lease obligation downwards when their financial position is poor and their fleet liquidation value is low. Similarly, Acharya et al. (2007) find that creditors of defaulted firms recover less if the industry is in distress and non-defaulting firms in the industry are illiquid. Furthermore, they find the effect to be pronounced if debt is collateralized by specific assets that are not easily redeployable.

A growing empirical literature tests the role of reputation and trust for contract completeness. Crocker and Reynolds (1993) investigate the procurement contracts used by the U.S military and find that higher reputation and complexity lead to drafting a more incomplete contract. Banerjee and Duflo (2000) show that contracts written between firms are associated with the reputation levels of the firms. McMillan and Woodruff (1999) find that inter-firm trade credit is more likely when the delivering firm trusts the client. Kaplan and Stromberg (2002) find that a central feature of venture capital contracts is the allocation of control rights between venture capitalist and entrepreneur suggesting that contracts are inherently incomplete.

Similarly there is a large literature using laboratory experiments to test bargaining. These laboratory experiments highlight that in many bilateral bargaining set-ups a non-negligible fraction of participants do not care solely about their material payoffs, but have fairness considerations (Güth et al., 1990; Roth 1995; Camerer and Thaler 1995; Fehr and Schmidt

(1999). We build on the findings from these controlled laboratory settings by testing bargaining behavior in real contracting situations.

Finally, our methodology draws on the existing literature of audit studies 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) or Bertrand and Mullainathan (2004). We expand the approach of audit studies by engaging in real purchase transactions to test contracting and renegotiation.

3. Description of Experimental Set-Up

3.1. Market Structure and Intervention

The field audit was conducted in Chennai, a city in Tamil Nadu, a state in the South of India. Chennai is the largest city in Tamil Nadu with over 4.5 million inhabitants. For the purpose of the study, we hire auditors to purchase large orders of pens in bulk from wholesalers. We choose a single industry, pen wholesalers, to conduct our transactions. These are wholesale traders in pens, not small stationary shops. The choice of this industry was driven by a number of different factors: (a) we looked for an industry with a large number of similar sized establishments in a given location. 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. The benefit of such an arrangement is that it minimizes the amount of firm-specific shocks. 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.¹⁴ (b) We want to ensure that the type of commodity

¹⁴ The procurement price of pens is Rs 3.8 and the average profit margin of a wholesaler is 15%.

used in our experiment is relatively standardized, which in turn facilitates comparisons of deal terms offered by different wholesalers. At the same time, we want to make sure that the type of good provides opportunities to include customized features which would allow us to vary the potential frictions arising due contractual incompleteness between the shopper and the wholesaler. The pen industry offers a great opportunity since we are able to customize pens by printing customer specific logos on the pens. (c) We want an industry where first time buyers could place large orders without a prior history of interactions. The pen industry meets this requirement as there are a good proportion of first-time buyers placing large orders.¹⁵ Finally, the pen industry provides us with a cost-effective product for entering into bulk deals.

To implement the actual audit study, we hire auditors who are entrepreneurs themselves so that they are 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 experiment, the details of the pen industry, and their particular assignment. The auditors are paid a fixed fee per visit to the wholesaler that is above market rate. They are also told that in case of any discrepancies from the script they would not be invited to do further visits. The auditors are given the information that they are part of a study to understand contract terms in the pen industry. However, auditors (hence forth referred to as shoppers) are not told what the expected outcome of the study is 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. Most of the business profiles that the shoppers are assigned are firms such as advertising companies, event management firms etc., which justifies the reason

¹⁵ From our pilot interviews, we gathered that 40% of the customers in this market are one-time buyers.

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 done to the pen and it is a generic commodity. We also ensure that the shoppers are ordering only the most common types of pens so that there are no differences in the resale possibilities for the plain 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 3 days for the wholesaler to get the printing done).¹⁶ 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 secondhand pens and their distribution network is not geared for this.

The shoppers are asked to place a bulk order of a pre-specified size which we randomize across shoppers. The order size varies between 500-750 pens in increments of 50 pens. This range-of-order size is determined after conducting a number of pilot interviews with wholesalers who confirmed that this is the modal order size in the wholesale industry. The profits from the order size of 500-750 pens correspond to around 5% of a wholesaler's weekly revenue. Our aim

¹⁶ 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.

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 specified a bargaining rule which 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 to 750 pens and inquires 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 as is informed about the prevailing prices. The second and third offer from the shopper is 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. After fixing the printing rate, the shopper inquires about the delivery time. If the delivery time is less than a week, the shopper agrees or else negotiates for delivery in a week. After finalizing the delivery time, the shopper negotiates the mode of payment upon delivery. The shopper first asks for credit at the time of delivery, then proposes a post-dated check, then check payment, and finally cash payment at delivery. After the payment terms are fixed, the shopper asks if he can return the pens in case they are defective. 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.¹⁷ 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.¹⁸ It is important to note that we ask buyers 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 a week even if the wholesaler has the stock ready earlier.¹⁹ To detect if the shopper deviates from the script and also to check on their performance, one of shopper's visits is to a wholesaler who also acts as our representative (the shoppers were never informed about this). Furthermore, in some of the other visits, our representatives visit the wholesaler at the same time as the shopper and witness the bargaining process.

For the visits where the contract terms are renegotiated, the renegotiation is carried out using the following bargaining script: At 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. Note that we make sure the order is ready for delivery before we renegotiate the contract. The shopper tells the wholesaler that the company on whose behalf the shopper has placed the order does not want to take delivery. The shopper also conveys to the wholesaler that he has no immediate use for the pens. Finally the shopper tells the wholesaler that the situation is problematic for both of them, so the best he can offer is to take delivery of the pens if the wholesaler offers him a discount. At

¹⁷ The structure of the negotiation was based on what is prevalent in the wholesale market for pens.

¹⁸ For the visits where the contract was renegotiated, the buyers were given a maximum limit of 40% for the final advance payment.

¹⁹ 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.

first the shopper asks the wholesaler for a 30% discount of the contracted price. The second offer is for 20% discount of the contracted price. The third offer is for 10% discount of the contracted price, and final the offer is for 5% discount of the contracted price. The bargaining ends at any point if the wholesaler agrees on the discount or refuses to bargain any more. If the wholesaler agrees to give a discount, the shopper informs the wholesaler that he will come later to collect the delivery at the re-contracted price. In case the wholesaler refuses to give any discount, the shopper asks the wholesaler if he can get a refund of the advance that he has paid. In case the wholesaler refuses to refund the advance, the negotiation is terminated. Note that the negotiation can also be terminated at any point by the wholesaler.²⁰

Directly after each visit/renegotiation, the shopper is asked to fill out a detailed exit survey that asks about the outcome of the negotiation. The shopper also goes back to the wholesaler to take delivery at the agreed-upon time and pays the outstanding part of the bill.

3.2. Methodology 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. Most importantly, the randomization imposes that half of the visits to each wholesaler are plain pen visits (shopper ordered plain pens) and the remaining are printed pen visits. To test how the specificity of the good interacts with other dimensions of a business transaction, we randomly assign variation in the type of the order that the shopper places and the number of pens ordered. We also keep the script for each shopper as consistent as possible across the 11 visits they make to various wholesalers.

²⁰ An hour after the renegotiation call, the shopper called up the wholesaler and informed him that the client has reinstated the order and he would pick up delivery at the initial contracted terms. Thus the final delivery was collected after making the payment in accordance with the initial contract terms

To achieve these goals of variation in visit characteristics while maintaining a similar script across visits for the shoppers, the randomization was calculated in four main steps: First, each wholesaler and shopper are randomly assigned a profile with their “intrinsic characteristics.” Each shopper’s ethnic group is, of course, the shopper’s actual ethnic group. The other shopper characteristics are assigned randomly to create variation in the type of transactions. The main dimensions of variation are (1) the shopper’s “company type” is assigned from among four categories (event manager, advertising agency, conference organizer and marketing company). The idea is to pick four different types of firms that are very common in India and justify frequent bulk orders on behalf of other companies. It is important to vary these profiles to avoid suspicion in the minds of the wholesalers in case of frequent interactions with people that have very similar profiles. 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. Again, this dimension is included to create variation in the type of orders that our shoppers place. (3) The number of pens ordered, in one bulk order vary between 500 and 750 pens in increments of 50. This dimension also adds to the variation in the type of orders. (4) The number of days for pens to be held is the time that the shoppers request the bulk order to be ready. This dimension is varied to create heterogeneity between shoppers. This dimension is only binding in the case of printed pens, since plain pens are usually available within a day. However, even for plain pens the delivery is collected at a later date even if the wholesaler has ready stock. (5) And finally, we assign about half of the visits to be printed pen visits (shoppers buy printed pens) and the other half to be plain pen visits (shoppers buy plain pens). 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 near 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. One wholesaler and one shopper are selected randomly from among the group of wholesalers and the group of shoppers. 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 neighboring wholesaler), and that the wholesaler did not have a previously assigned visit by a shopper of that same ethnicity or company type. If these conditions are met, then this shopper and wholesaler pair is declared a match and the shopper is assigned to visit that wholesaler. The information about the shopper and wholesaler’s assigned visits is then updated to reflect the new match, and both shopper and wholesaler are returned to their respective common pools to be available for future random matches. Once a wholesaler receives five visits it is removed from the pool of available wholesalers, while shoppers with 11 visits are removed from the pool of shoppers. The result of this randomization is that the 46 shoppers are each assigned to visit 11 wholesalers, and each wholesaler has a range of shopper types assigned to visit it.

The third step in the randomization is to assign whether the visit 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 visit. By assigning each visit to be either a printed or plain visit, based on a random stratification at the level of the wholesalers, 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.

A fourth step involves adjusting a few parameters randomly to avoid potential detection by wholesalers. Since the shoppers are randomly assigned one pen type, one number of pens to be ordered, and one number of days for pick-up, by chance a few wholesalers have multiple shoppers with similar profiles. It is determined that having three or four shoppers request the same type of pen or the same number of days before the pick-up of the pens will not arouse suspicion. However, having three or four shoppers request the same number of pens could arouse suspicion. Accordingly, for the wholesalers at which three or four shoppers are set to ask for the same number of pens, we randomly select one or two shoppers to request 650 pens for their visits to this wholesaler only.

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. One additional step to the randomization is that some of the initial wholesalers we select for the study stop selling pens or shut down (even before a single visit was made to the

wholesaler). Any visit that is originally scheduled to a wholesaler no longer selling pens or no longer in business is replaced by a visit to an existing or a new wholesaler. Ideally each “bad” wholesaler will be replaced by one new wholesaler and all remaining visits that are scheduled for the “bad” wholesaler will go to the new replacement wholesaler. In practice, there are not enough new wholesalers to take the place of the “bad” wholesalers. With X new wholesalers available, we randomly select X of the “bad” wholesalers to be replaced by a randomly selected new wholesaler. For the remaining “bad” wholesalers, for each visit, an existing wholesaler is randomly selected to have the visit go to that wholesaler, meaning this replacement wholesaler will then have 6 visits in total.

4. Data Description

In total we conduct 494 audit visits 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 buyers. The modal shopper completes 11 visits with a minimum of 6 and a maximum of 13 visits. We randomly assign the order sizes of the purchase to the shoppers; these are evenly distributed between 500-750 with the most common lots being 550, 600, and 700. Panel 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, 616.²¹ To ensure that our random assignment is conducted successfully, we also verify that other wholesaler and visit characteristics such as wholesaler location, time to delivery and ethnic background of the wholesalers and shoppers do not vary significantly between the printed versus plain orders. 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

²¹ Results are not reported but can be provided by the authors on request.

renegotiate the order afterwards. We engage 15 shoppers for this exercise. However, each of these 75 wholesalers only receives 1 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 two most important dimensions of the contract are the price of the pens and the fraction of upfront payment that has to be made at the time of placing the order. In the case of printed pens there is an additional dimension, which is the cost of the printing. 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. 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. 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 since 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. So on average, the buyers receive about 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. But there is wide 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).

In the second part of Panel A we now 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%. 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. But again we see that there is wide variation around the mean (see also graph 2).²² An important point to note is that even within the same wholesaler we find wide variation in the upfront payment demanded across visits. Thus, each wholesaler does not demand the same upfront payment across shoppers based on whether the order is printed or plain. In effect, there is significant variation in the contract structures offered to different shoppers visiting the same wholesaler.

5. Ex-ante Negotiation and Relationship Specific Investments

In a first step, we examine whether there are differences in the contractual structures that are negotiated upfront between printed and plain pen purchases. If indeed printed pens require a bigger relationship specific investment as we argue above, wholesalers should expect a higher possibility of breach or renegotiation and thus undertake steps to alleviate these risks. Ideally an upfront payment of 100% would eliminate any risk arising from the shopper due to contractual incompleteness. However, this does not appear to be optimal since the shopper is also exposed to some risks arising due to contractual incompleteness. If the shopper pays the full amount upfront, the wholesaler could in turn not deliver the goods on time or produce poor quality goods.

²² Table 2, Panel B reports the summary statistics for the renegotiation sample.

However, it is safe to assume the risk faced by the shopper is lower as the wholesaler has a higher reputation risk.

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 average 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. Based on the models of incomplete contracting, if wholesalers expect a higher risk of breach or renegotiation in 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 pen brand. The estimated coefficient on the print dummy is 0.39 and strongly significant. To make sure 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 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 highly significant. In column (7), we regress the difference in the initial upfront demanded and the final upfront contracted on the print dummy. We find that there is a marginally significant negative coefficient. This suggests that wholesalers are more likely to be bargained down on the upfront payment in the case of plain pens, but are less willing to be bargained down to a smaller upfront payment in the case of printed pens.

The finding that the upfront payment is higher for printed pens is consistent with the models of incomplete contracts (Williamson, 1983; Hart and Moore, 1988) which predict that the upfront payment should be increasing in the specificity of the asset (lower outside options).²³ However, the magnitude of upfront payment for printed pens is surprisingly low (36% of the sale price). In terms of the wholesalers cost of production, we find that the upfront payment only covers 42% of the production costs. Note that we have good estimate of the production costs as we know the cost at which the wholesaler procures the pens from the manufacturer. Thus in the event of breach, wholesalers stand to lose around 60% of the cost of production as the resale value of printed pens is essentially zero. Also, the upfront payment of 36% leaves the wholesaler exposed to renegotiation risk. Note that one could argue that if the wholesaler has a lot of bargaining power ex-post he could extract a large fraction of the price ex-post.²⁴ However, it is difficult to believe that in this competitive market a wholesaler would have a lot of bargaining

²³ One could argue that the upfront for printed pens is higher to cover the printing costs of the wholesaler. However, we find similar results even if we adjust the upfront for printing charges (if we remove printing charges from the final upfront, we get a difference of 0.17 on the print dummy as against 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.

²⁴ Also, in the set up above have abstracted away from seller initiating renegotiation ex-post given that we never found any instance in the transactions we conducted where the seller initiated renegotiation in prices ex-post.

power to extract rents from the shopper. In addition, in the survey of the wholesalers that we conducted after the audit study, wholesalers report that they face the risk of a huge loss if the shopper reneges on a printed pen order.

While the upfront payments leaves the wholesalers exposed to the risk of breach or renegotiation, we investigate whether wholesalers use other contract dimensions to insure against these risks. We examine whether there are significant differences in the overall price contracted ex-ante for printed pens versus plain pens. If wholesalers believe that the likelihood of default or breach of contract was a fixed type distribution in the population, then charging a higher price on the printed pens would be optimal, since printed pens expose the seller to a higher loss in case of default. As discussed before, we also expect there to be a mechanical difference in price of about 40 cents due to the cost of printing, which we will adjust for when evaluating the results.

In Table 4, column (1) we regress the initial offer price (the price that is the first 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 included controls for the order in which shoppers visited the wholesalers and found 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).²⁵ 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.²⁶ More

²⁵ Note that none of the results are different if we only include wholesaler fixed effects (not reported).

²⁶ See also List (2004).

importantly, we find that even after controlling for wholesaler and shopper characteristics, the size of the coefficient on the print dummy is very similar.

In columns (4) to (6) we repeat these regressions for the final price that the wholesaler and the shopper agree upon after negotiation. We again see that the coefficient on the print dummy is 0.4. Thus the price difference between printed and plain pens stays equal to the cost of the printing even after the negotiation process. This further verifies that the difference price of printed and plain pens is mainly due to the printing costs. In fact, when we regress the percentage difference between the initial and final offer price for the pens on the print dummy, we do not find a significant difference (column (7)). 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 procurement costs.

Finally we examine how the fraction of upfront payment and the agreed-upon price relate to each other. In our bargaining script (and in the usual bargaining behavior of participants in the market) the parties first establish a price and then set the fraction of upfront payment. Therefore, we investigate whether the demanded upfront payment is a function of the price that was agreed upon.²⁷ If wholesalers are concerned that shoppers are more likely to breach a contract if the ex-ante contracted price is high they might demand a higher upfront to protect themselves against this risk. Thus we would expect a positive relationship between upfront payment and price.

In Table 5 we regress the upfront payment on the price level in the overall sample and add an interaction term for printed pens. Columns (1) to (3) use the initial upfront payment as the dependent variable. We find a strong positive relationship between the price level and the fraction of upfront payment. The coefficient on the price is 0.182 and significant at the 1 % level.

²⁷ Note that in the re-negotiation sample (reported in Table 2, panel b), where we randomized the upfront payment to be paid by the shopper, we still find that price of printed pens is Rs 0.4 higher than plain pens, suggesting that wholesalers first set the price and then negotiate the upfront payment.

The magnitude and significance of the coefficient does not change even if we include shopper and wholesaler fixed effects in columns (2) and (3). In columns (4) to (6) we then repeat the regressions using the final percentage of upfront payment. The results suggest that wholesalers are more concerned that a shopper reneges when the bargaining led to a very high price.

One could be concerned that these results could be a function of shopper and wholesaler specific fixed effects. The idea is that maybe shoppers who are particularly gullible and are willing to pay a price can also be persuaded to pay a higher fraction upfront. While we are controlling for shopper and wholesaler fixed effects in these regressions, it is still possible that in some interactions between the two parties, the shopper was more aggressive and thus got a better deal on all margins and vice versa for the wholesaler. But when we repeat the regressions for printed versus plain pens separately (Table 5, Column 7 and 8), we see that the positive relation between upfront payment and price level is only significant for the plain pens. This result is interesting since it suggests that wholesalers attempt to “lock in” a plain pen deal with a high upfront when they are taking advantage of the shopper. The idea is that the shopper might realize ex-post that he got a bad deal. Thus, without the high upfront payment, they would not come back to complete the deal. This effect is not significant in the case of printed pens, which suggests that for printed pens the wholesalers are generally more careful in setting the upfront payment to minimize risks (independent of the price).²⁸

The results above are in line with the main predictions of incomplete contracting models; that the risk of contract breach or renegotiation is more costly in the case of relationship specific investments and thus wholesalers tend to charge a higher upfront to protect against these risks. However, we calculate that only if the likelihood of breach is lower than 10%, would

²⁸ 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.

wholesalers be able to break even, given the low level of upfront payments.²⁹ It is surprising that wholesalers rely on such a high level of contract compliance given that 40% of the shoppers in the market are one time buyers and thus have an incentive to behave opportunistically. Also, if one takes into account that wholesalers face information asymmetry about the shoppers valuation, wholesalers are exposed to the risk of strategic renegotiation by shoppers. Shoppers could try to extract surplus pretending ex-post that their valuation has dropped significantly and they would only pick up the (printed) pens if they get a steep price discount. Therefore wholesalers leave themselves exposed to strategic behavior ex-post.

However, it is important to note that even a low upfront payment could reduce the occurrence of breach if the upfront payment helps screen shoppers who have a low ex-post valuation (or expect to have a low future valuation). A buyer who knows that he has a high likelihood of contract breach would be less willing to make any upfront payment. Thus the upfront payment serves as the equivalent of posting a hostage that screens out shoppers who have low future valuations of the good (Williamson 1983). It is important to note though that the same logic does not prevent shoppers to engage in strategic renegotiation: As discussed before these shoppers could always pretend to have a negative shock to valuation and hold up the wholesaler.³⁰

We provide additional support for the idea that contract breach looms much larger in the minds of wholesalers than the possibility of ex-post renegotiation. We conducted a survey of the wholesalers that were visited in the audit study three months after the audits had been concluded. We asked wholesalers to rate the likelihood of a shopper engaging in price renegotiation or

²⁹ The breach probability is based on the following back of the envelope calculation. $Cost = Upfront\ paid + (1 - probability\ of\ breach) \times (sale\ price - upfront\ paid)$. 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.

³⁰ Williamson (1983) also points out that posting a hostage whose value is lower than cost of production only helps in screening but does not help in preventing opportunistic behavior ex-post.

breaching the contract. We asked the question in several different ways by asking wholesalers how often either breach or renegotiation has happened in the last hundred transactions they undertook prior to the survey. We also asked them why they take an upfront payment from the clients.

The results summarized in the appendix, suggest that one of the main concerns of the wholesalers is breach risk rather than the probability that the buyer 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 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). This suggests an interesting contrast: wholesalers seem to fear that shoppers breach a contract if their valuation for the good drops (or they find a better outside deal) but they seem less concerned that shoppers renegotiate the price ex-post. The results imply that shoppers might be reluctant to renegotiate a contract even if there could be gains from trade. Given the lack of formal contract enforcement in this market it is surprising that shoppers are leaving rents to the wholesalers even though they would not face any recourse if they tried to renegotiate the contract. One could argue that this behavior might indicate that there are social norms, haggling costs or reputational costs that shoppers incur by renegotiating contracts. Note that we also did not find information spillover to other wholesalers when a buyer renegotiates the contract with one of the wholesalers. Thus, buyers do not face

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

high costs in terms of future trading opportunities with other wholesalers if they engage in price renegotiation.³²

6. Ex-post Re-Negotiation

Apart from the ex-ante contract structure, an important dimension of incomplete contracting models is the ex-post renegotiation of contracts. To understand the risks posed due to contractual incompleteness it is important to examine how specificity of investments affects the renegotiation outcomes. Does the ex-ante contract structure play a role in the renegotiation? We now turn to analyze the dynamics of ex-post contract renegotiation. For that purpose we do a final visit to 75 randomly selected wholesalers. Deals are negotiated as described before with one exception: To understand the relationship between the renegotiation outcome and the upfront payment, we aim to make the upfront contract as homogeneous as possible. For that purpose we ask shoppers to negotiate to a specific limit for the maximum price and upfront payment.³³

After an initial visit where the shopper places an order and agrees on a contract and delivery date, the shopper calls up the wholesaler on the day of delivery to let him know that he cannot honor the order in full. Note that before renegotiating the contract, we make sure that the printing has been done. The explanation for the renegotiation is that the shopper's ultimate customer has just canceled the order and the shopper will not be able to take possession of the order. The shopper then offers to buy the order at a reduced price. We choose this "cover story" since we learned from focus group interviews with market participants that people generally use the excuse of a valuation shock to trigger renegotiation. Also, we wanted to avoid bargaining behavior that is out of the ordinary. We find that wholesalers ask to speak to the client or for the

³² We sent some of the shoppers to visit other wholesalers after they had renegotiated the price with one of the wholesalers. We did not find any significant difference in the contracts offered by other wholesalers (not reported).

³³ We do not let shoppers bargain down the wholesalers while setting the ex-ante contract since shopper-wholesaler pairs who have lower upfront payments ex-ante may also have a different renegotiation interaction.

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 valuation shock. Finally, one hour after completing the renegotiation, the shopper calls the wholesaler back and announces that he will pay the original contract in full since the final customer had just announced that they will honor the order.³⁴ Note that we decide to conduct the renegotiation only in the last visit to a wholesaler in order not to risk suspicion by the wholesaler 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.

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 does not even agree to start a conversation about the price renegotiation. In line with the predictions of the incomplete contracting theories, we find that the willingness to renegotiate is much higher for printed as compared to plain pens (0.6 versus 0.32). While one would expect that wholesalers should always be willing to give a discount, given that the salvage value of printed pens is close to zero, in 14 cases of printed pens we find that wholesalers are unwilling to provide any reduction at all.³⁵ Furthermore, in 7 of cases the wholesaler hung up on the shopper and implicitly adopted a take-it-or-leave-it attitude. These results suggest that some wholesalers might be concerned with reputation spillovers in the market or might feel aggrieved due to renegotiation of the contract by the shopper. Overall these incidences suggest that there are cases where renegotiation does not lead to the ex-post efficient outcome.

³⁴ It is interesting to note none of the wholesalers tried to renegotiate the contract with our shoppers when they came to pick up the pens and pay the remainder of the contract. Also, none of wholesalers threatened the shoppers.

³⁵ In the surveys wholesalers report that there is no resale value for printed pens if the shopper does not take delivery.

In Panel B we now report whether the wholesalers agree to give back the upfront payments when the renegotiation fails. We see that in none of the cases with printed pens does the wholesaler offer to return the upfront payment, but in 15 out of the 40 plain pen visits, the wholesaler offers to return the upfront.³⁶ In fact, in 12 cases the wholesaler offers to give back the upfront in cash.

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. In the case of a failed renegotiation, we code the price change as zero. This is a strong assumption since it presumes that in case of failed renegotiation the shopper will pay the full price for the goods, which of course is not guaranteed. In fact, this assumption clearly understates the size of the loss that a wholesaler will have to bear especially in case of printed pens case as their resale value is essentially zero. In the next two rows of Panel C, we describe the difference in price between the printed versus plain pens. Printed and plain pens on average have a mean price after renegotiation of Rs. 4.5 each. However, this masks a serious difference since the cost of printing in the printed pens is about Rs 0.4 per pen; so in fact the price of printed pens after renegotiation is much lower price than the plain ones.

In line with the intuition of incomplete contracting models, we find that the average renegotiated price is much lower in the case of printed pen orders. This suggests that wholesalers correctly take into account their outside options while renegotiating the contract. In fact the wholesalers themselves mention in the renegotiation that they cannot use the printed pens for anything now that they have been customized. This result is also supported by the fact that the

³⁶ 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.

minimum renegotiated price for the plain pen does not fall below the minimum price at the ex-ante contracting stage, however it does for printed pens.³⁷

6.2. Renegotiation Outcomes

To test the results of renegotiation more rigorously in column (1) of Table 7, we regress the renegotiation percentage on the printed pen dummy and shopper fixed effects. We cannot include wholesaler fixed effects in these regressions since we only have one visit to each of the wholesalers. 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. This result confirms that wholesalers are well aware of the outside option when renegotiating the contract. These findings also highlight that shoppers stand to gain from renegotiating the contract ex-post especially in case of printed pens. In some cases, the shopper gets a discount of up to 20% of the ex-ante contract price. Note that the shoppers did not push the wholesaler very hard on the magnitude of discount thus the percentage of discount obtained in renegotiation is more likely to be a lower bound.

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 % is negative and significant. Thus the percentage discount offered by the wholesalers in the renegotiation is higher if the upfront payment contracted ex-ante is lower. This suggests that wholesalers are less willing to renegotiate when they might feel that they have more bargaining power, since the shopper has already paid down 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. We can infer from

³⁷ We also find that the time spent in renegotiation is higher in case of printed pens (not reported).

this result that the wholesaler's bargaining power is higher in situations where a higher upfront payment was charged.

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 in the case of printed pens (-0.195). However, in the case of plain pens, the coefficient is close to zero and not significant (-0.054). If we believe that the amount of upfront payment affects the wholesaler's ex-post bargaining power, we should expect that the percentage discount agreed is lower in cases where the wholesaler has a higher upfront payment since the now has less "room" to renegotiate. It is interesting to see that this logic holds exactly in the case of printed pens, however, there is no effect in the case of plain pens. This suggests that the wholesalers perceive their bargaining power is unaffected by the upfront payment in the case of plain pens, since their outside option is very high.

A second dimension that might affect the renegotiation is the price that is contracted ex-ante. In columns (3) and (4) of Table 7, we 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. This implies that wholesalers are only willing to renegotiate the price ex-post for the plain pens if they were able to charge a high price ex-ante. This suggests that they might be willing to reduce the profit margin only if they are starting from a high margin. The same is not true for printed pens, which implies that the wholesalers' willingness to reduce the price is independent of the initial contracted price. It suggests that the wholesaler understands that his bargaining power 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.

6.3. Reverse Hold-up

The last two columns of Table 7 focus on the likelihood that the shopper gets the upfront payment back during the renegotiation. As we saw before in the descriptive statistics in Table 6, this is only offered in case of plain pens. It is an interesting outcome in itself that in none of the printed pen orders do the wholesalers offer to return the upfront, but they do in 15 out of 40 plain pen orders. Therefore we only focus on the set of plain pen renegotiations. This is a very interesting result since it suggests that a large fraction of wholesalers choose not to hold-up the shopper (by withholding the upfront payment) when they have the chance (and possibly the moral high ground) to do so.

In Columns (5) and (6) of Table 7 we regress a dummy for whether the wholesaler offers to refund the upfront payment on the deal characteristics, such as Final upfront %, Price contracted, Quantity of pens and Pen brand. In the regression 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. The second sample includes those deals where the wholesaler is willing to reduce the ex-ante contracted price and code these as a zero, i.e. the shopper does not get the upfront payment back. The idea is that the wholesaler instead accepts a lower margin than letting the deal go altogether. This second coding is a little more ambiguous since one could also argue that it could have been coded as a one as the wholesaler could have taken the upfront of the shopper and refused delivery of the pens.

We find a strong negative correlation with 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. Thus the likelihood of getting the upfront back is decreasing in the fraction of upfront. That, is the probability of getting the upfront back is lower if the upfront paid is 40% as against to 20%. These results suggest that the wholesaler is less willing to hold-up the shopper even if he has the power to do so. However, it seems that the wholesaler does take into account the costs of being magnanimous: we find that wholesalers do not return the upfront in the case of printed pens where they stand to make a bigger loss. Interestingly, they are also less likely to return the upfront if the fraction of upfront payment contracted is higher. . These results are consistent with wholesalers trading off the possibility of building a reputation with the shopper against the immediate gains from keeping the upfront payment. One could argue that if wholesalers respond to financial incentives in their willingness to return the upfront, the underlying cause for these actions is most likely a rational calculation of the benefits of investing in reputation. If the underlying cause was social norms we might expect that the behavior is unaffected by the economic impact of the actions.

7. Conclusion

This paper uses a novel audit study methodology to understand how relationship-specific investments affect the ex-ante contract structure and ex-post renegotiation. We send trained auditors to execute real purchase orders which allow us to exogenously vary the specificity of the investment and observe the details of contract negotiation and outcomes. In line with the predictions of incomplete contracting models, we find that wholesalers demand higher upfront payments for printed pens which require a high relationship specific investment by the wholesaler. Thus upfront payments are used as a mechanism to contract against the risks of contractual incompleteness (breach and renegotiation risk). However, the upfront payment only

covers half of the procurement costs of the pens for the wholesalers. We also find that wholesalers do not charge higher prices for printed pens. The strong reliance on upfront payments at a level much below the procurement costs of the pens suggests that the main concern of wholesalers lies with shoppers not picking up an order. Thus the upfront payment acts like a screening mechanism against contract breach. In contrast the fear of strategic renegotiation (hold-up) seems much smaller since the low level of the upfront payment leaves wholesalers exposed to the risk of renegotiation. This is particularly puzzling in this market where 40% of customers are one time buyers and there is no formal legal (or extra legal) mechanism to enforce the contracts. This interpretation is confirmed by our (follow on) survey of the wholesalers: 95% of respondents reported concerns about contract breach as very high, but only 10% reported concerns about ex-post renegotiation of prices.

When looking at the ex-post contract renegotiation, we see that the wholesalers are more likely to renegotiate and accept a lower price for printed pens as compared to plain pens. In addition the percentage discount offered in renegotiation is lower if the wholesaler received higher upfront payments, especially in the case of printed pens. This suggests that the allocation of upfront payments affects the bargaining outcome. Interestingly, wholesalers show a reluctance to hold-up the shopper and in fact are often willing to refund the upfront paid (in the case of plain pens) when the renegotiation fails. This is despite the fact that the shopper reneged on the contract. We also find that likelihood of getting the upfront refunded is decreasing in the fraction of upfront payment. This suggests that wholesalers might be weighing the benefits of building reputation with the shopper against the immediate benefits of keeping the money.

While our results are largely consistent with the models of incomplete contracting, they also raise some interesting questions. First, wholesalers seem to be much more concerned that

shoppers engage in contract breach rather than ex-post renegotiation of prices. It appears that shoppers feel reluctant to renegotiate prices but at the same time they are willing to breach contracts all together. Going forward it will be important to understand if this behavior is due to social norms, haggling costs or some other costs associated with renegotiating contracts? Second, if there indeed are social or other constraints that limit the amount of contract renegotiation, one would like to understand whether they have implications for (second best) efficient contracting upfront and the resolution of contracts ex-post.

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Table 1: This table presents the summary statistics of the visits. Panel A reports the summary statistics of 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 of 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

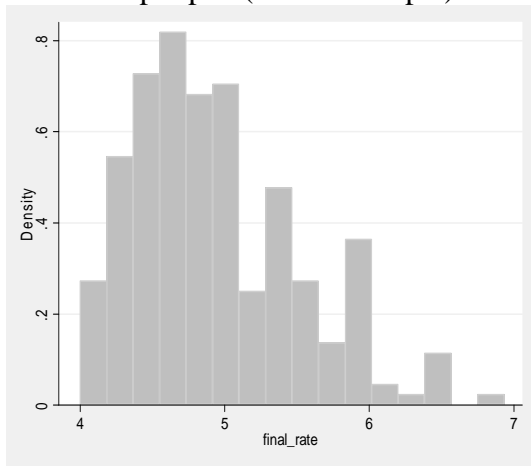
Price	Obs	Mean	Median	Std. Dev	Min	Max
Initial offer-Printed pen	240	5.33	5.22	0.772	4.0	7.5
Final rate-Printed pen	240	4.93	4.82	0.582	4.0	6.75
Initial offer-Plain pen	254	4.90	4.8	0.665	3.8	6.5
Final rate- Plain pen	254	4.53	4.45	0.465	3.8	6
Upfront payment						
Initial upfront %-Printed pen	240	0.588	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)

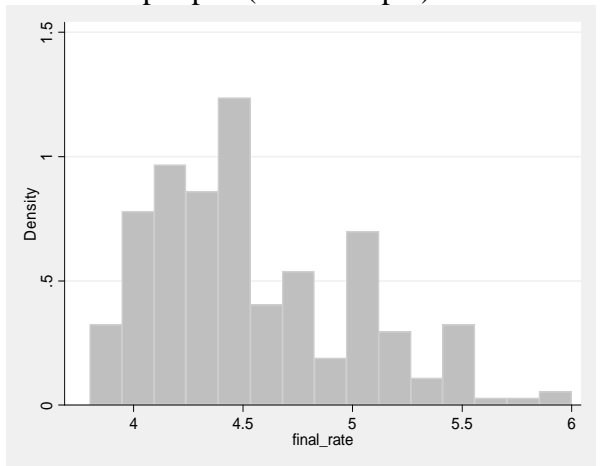
Price	Obs	Mean	Median	Std. Dev	Min	Max
Initial offer-Printed pen	35	5.15	5.25	0.606	4.0	6.5
Final rate-Printed pen	35	4.83	4.9	0.438	4.0	5.9
Initial offer-Plain pen	40	4.75	4.65	0.627	3.85	6.0
Final rate- Plain pen	40	4.42	4.30	0.410	3.8	5.25
Upfront payment						
Initial upfront %-Printed pen	35	0.526	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

Graph 1

Final rate per pen (Printed sample)

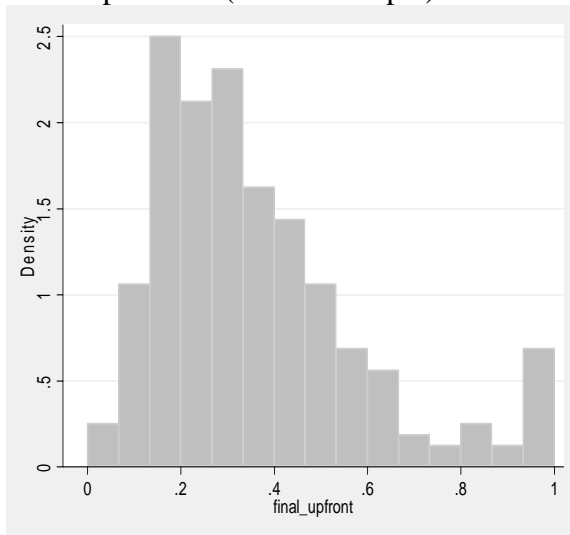


Final rate per pen (Plain sample)



Graph 2

Final Upfront % (Printed sample)



Final Upfront % (Plain sample)

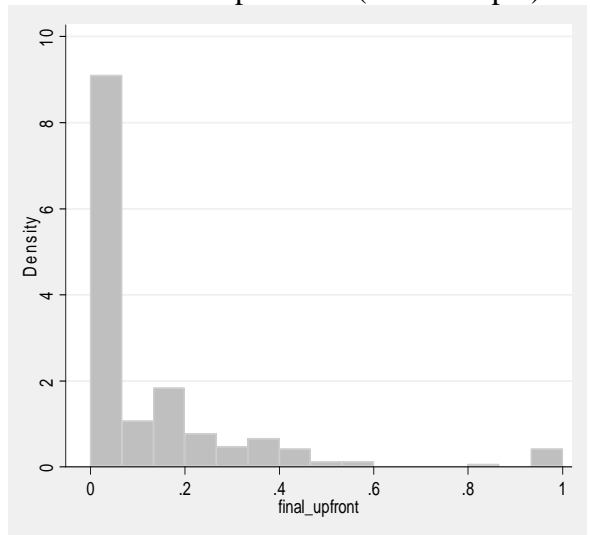


Table 3: Regressions of Initial upfront offered and Final upfront contracted

This table reports the results of OLS regressions. The dependent variables are Initial upfront % offered, Final upfront % contracted and Upfront diff where Upfront diff is defined as (Initial upfront % offered – final upfront % contracted)/ Initial upfront % offered. 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. White heteroskedasticity consistent standard errors are reported in parentheses. The symbols ***, **, * indicate significance levels of 1%, 5%, and 10% respectively.

	Initial upfront % offered			Final upfront % contracted			upfront diff
	(1)	(2)	(3)	(4)	(5)	(6)	
Print	0.396*** (0.026)	0.385*** (0.026)	0.375*** (0.026)	0.246*** (0.019)	0.244*** (0.017)	0.231*** (0.017)	-0.059* (0.033)
Quantity				-0.037 (0.063)			
Pen brand				0.044** (0.019)			
Location				-0.018 (0.031)			
Constant	0.497 (0.599)	0.197*** (0.017)	0.385** (0.158)	0.357 (0.408)	0.116*** (0.012)	0.394*** (0.147)	0.220** (0.110)
Shopper fixed effect	no	yes	yes	no	yes	yes	yes
Wholesaler fixed effect	no	no	yes	no	no	yes	yes
N	494	494	494	494	494	494	343
Adj-R2	0.314	0.418	0.511	0.257	0.392	0.526	0.190

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) and Price diff where Price diff is defined as (Initial price offered –final price contracted)/ Initial price offered. 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. White heteroskedasticity consistent standard errors are reported in parentheses. The symbols ***, **, * indicate significance levels of 1%, 5%, and 10% respectively.

	Initial price offered			Final price contracted			Price diff
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Print	0.415*** (0.064)	0.414*** (0.064)	0.396*** (0.037)	0.399*** (0.047)	0.405*** (0.048)	0.393*** (0.027)	-0.004 (0.004)
Quantity				-0.255 (0.162)			
Pen brand				-0.143** (0.064)			
Location				0.204* (0.107)			
Constant	5.300*** (1.473)	4.911*** (0.041)	4.675*** (0.190)	6.010*** (1.055)	4.531*** (0.029)	4.234*** (0.158)	0.086*** (0.022)
Shopper fixed effect	no	yes	yes	no	yes	yes	yes
Wholesaler fixed effect	no	no	yes	no	no	yes	yes
N	494	494	494	494	494	494	494
Adj-R2	0.095	0.160	0.741	0.144	0.178	0.776	0.300

Table 5: Regressions of Initial upfront % offered and Final upfront % contracted on Final price 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. Price contracted is the final contracted price per pen (including printing costs if any). Shopper fixed effects refer to fixed effects for each individual shopper. Wholesaler fixed effects refer to fixed effects for each individual wholesaler. White heteroskedasticity consistent standard errors are reported in parentheses. The symbols ***, **, * indicate significance levels of 1%, 5%, and 10% respectively.

	Initial upfront % offered			Final upfront % contracted			Final upfront % contracted	
	(1)	(2)	(3)	(4)	(5)	(6)	Printed sub-sample (7)	Plain sub-sample (8)
Print	0.813*** (0.247)	0.931*** (0.235)	1.216*** (0.236)	0.338* (0.199)	0.449*** (0.174)	0.671*** (0.167)		
Price contracted	0.172*** (0.041)	0.183*** (0.038)	0.253*** (0.065)	0.114*** (0.032)	0.115*** (0.028)	0.173*** (0.048)	0.036 (0.074)	0.213* (0.108)
Print*Price contracted	-0.098* (0.053)	-0.125*** (0.050)	-0.190*** (0.050)	-0.028 (0.043)	-0.051 (0.037)	-0.103*** (0.036)		
Constant	-0.588*** (0.184)	-0.635*** (0.172)	-0.700** (0.323)	-0.402*** (0.143)	-0.406*** (0.128)	-0.349 (0.262)	0.467 (0.373)	-0.401 (0.488)
Shopper fixed effect	no	yes	yes	no	yes	yes	yes	yes
Wholesaler fixed effect	no	no	yes	no	no	yes	yes	yes
N	494	494	494	494	494	494	240	254
Adj-R2	0.347	0.441	0.533	0.292	0.423	0.545	0.472	0.274

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 the 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 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 before renegotiation). Panel C also presents the price per pen after renegotiation for the sub-sample where the renegotiation succeeded. Printed pen refers to pen 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 column 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 before renegotiation). Column 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 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. White heteroskedasticity consistent standard errors are reported in parentheses. The symbols ***, **, * 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

Appendix: Survey Responses

The result of the survey of the wholesalers that was conducted three months after the audit study was completed is reported below. The percentages reported refer to the fraction of the wholesalers that responded affirmatively (except for question 4). In total, we were able to survey 89 wholesalers.

1) Why do you take an upfront payment?

- a) To make sure the client comes back and takes delivery-95%
- b) To make sure the client does not ask renegotiate the price after the printing is done-3%
- c) Both of the above-2%
- d) To pay for the purchase of the pens-0%
- e) Others (specify)-0%

2) In the last 100 transactions, how many clients did not show up to take delivery?

- a) No occurrence of breach: 63%
- b) Breach occurred in 1 to 5 transactions: 30%
- c) Breach occurred in more than 5 transactions: 7%

3) In the last 100 transactions, how many clients renegotiated the price of a printed pen order at delivery?

- a) No occurrence of Renegotiation: 91%
- b) Renegotiation occurred in 1 to 5 transactions: 9%

4) What fraction of your customers are repeat clients-60%

