Negotiating Flexible Prices*

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Abstract

In many markets, the price of a good or service is flexible. Buyers can either buy at the posted price or attempt to negotiate a lower price. A seller’s decision about whether to allow flexible prices and subsequent outcome in these types of flexible price markets depends, in large part, on buyer behavior. Furthermore, these markets are likely to feature substantial variation in buyer valuations. In this study we experimentally examine the negotiation tendencies of buyers when prices are flexible, and the interaction of these tendencies with variation in buyer values. Specifically, how does a buyer’s value impact: (i) the buyer’s decision to negotiation the price, (ii) the buyer’s sequence of counter-offers, conditional on negotiating the price, (iii) the final negotiated sale price, and (iv) the length of the negotiation. Our results indicate that variation in buyer values does impact some parts of the negotiation process.

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1 Introduction

In many markets, the posted or list price is flexible; a buyer faces a choice, either explicit or implicit, of whether to purchase the good at the posted price, or negotiate with the seller in an attempt to purchase the good at a lower price. Examples of such markets include: real estate, automobiles, big ticket consumer durables, services, and used goods sold in secondary markets. In such flexible price markets, there is also likely to be heterogeneity in buyer valuations for the good across potential buyers. This may be particularly true for real estate, automobiles, and used goods where individual “tastes” are likely a heavily weighted component in the determination of one’s value. The outcome of these flexible price markets (i.e., the final sale price) will depend, in large part, on the negotiation tendencies of buyers; specifically, on whether the buyer decides to negotiate the price and, conditional on negotiating, the extent to which the buyer negotiates?

The motivation of this paper is to experimentally explore the negotiation tendencies of buyers when posted prices are flexible. In particular, I examine the propensity of buyers to engage in negotiations (rather than opting to pay the posted price), and conditional on negotiating, how aggressively buyers negotiate. Furthermore, I test how variation in buyer valuations interacts with these negotiation tendencies and, ultimately, the outcome of the negotiation.

An important issue arising in flexible price markets is whether sellers should actually employ flexible prices? That is, is it profitable for sellers to implement a pricing scheme where buyers can (attempt) to negotiate/haggle a discount, or should sellers commit to a fixed, non-negotiable price? There exists a growing body of theoretical literature aimed at addressing this issue (Bester, 1993; 1994; Wang, 1995; Arnold & Lippman, 1998; Desai & Purohit, 2004; Raskovich,

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2 For discussion on the motivation for flexible or “haggle” prices, the actual negotiation process in these settings, and the factors that influence this process, we refer readers to Kassaye (1990) and Stroeker & Antonides (1997).
2007; Gill & Thanassoulis, 2009; 2013). Specifically, these papers focus primarily on the comparison of flexible pricing and fixed pricing, and the equilibrium implications under various market conditions and transaction structures. While these prior models differ, a common feature is that the optimal pricing decision(s) for sellers and the equilibrium predictions depend, in part, on: buyer values, the proportion of buyers that negotiate, and/or the bargaining ability/skill of buyers. Furthermore, in several of these models (e.g., Wang, 1995; Arnold & Lippman, 1998; Desai & Purohit, 2004; Gill & Thanassoulis, 2009) heterogeneity in buyer values is explicitly assumed. Thus, in terms using these models to generate predictions about profit maximizing seller behavior and market outcomes, it is important to understand the bargaining tendencies of buyers when prices are flexible, and the interaction of these bargaining tendencies with variation in buyer values, which is the aim of this study.

If we assume buyers are rational and self-interested, then we would not expect a buyer’s value to directly impact their behavior; a buyer would negotiate the price when it is profitable to do so and, conditional on negotiating, try to negotiate the lowest possible price. However, this excludes the possibility that a buyer may be influenced by other behavioral/psychological factors; yet, there exists a mature body of literature suggesting that such factors can influence negotiations. For example, behavior may be affected by whether the negotiation is perceived as a gain/loss and the magnitude of the gain/loss, relative the agent’s reference point (Bazerman et al., 1985; Neale & Bazerman, 1991; Kahneman, 1992; Kristensen & Gärling, 1997a; 2000).

3 We postpone our discussion of how these factors impact the equilibria in these models until our concluding remarks. At that point, we discuss the relevance and implications of our experimental findings as they relate to the predications in some of these papers.

4 More generally, the idea that agents evaluate outcomes relative to a reference point was introduced in Prospect Theory by Kahneman & Tversky (1979). An agent’s value function is S-shaped around the reference point; convex in the domain of losses and concave in the domain of gains. This induces more (less) risk seeking in the domain of losses (gains). With respect to negotiations, the gain/loss domain can impact offers, concession behavior, and the likelihood an agreement is reached (see Neale & Bazerman, 1991; and Kahneman, 1992 for a discussion).
There also exists prior literature suggesting that price fairness can impact the negotiation behavior of buyers. Namely, a buyer may negotiate more (less) aggressively when the price perceives as being less (more) fair (Maxwell et al., 1999; Kristensen, 2000; Herrmann, 2004).

In the context of flexible price negotiations, the prior literature indicates that variations in buyer values could impact negotiation behavior along two plausible dimensions: First, it could change the reference point around which buyers are evaluating whether the posted price is in the gain/loss domain, and the magnitude of the associated gain/loss perception. Second, it could change the buyer’s perception regarding the fairness of the posted price; the larger a buyer’s value the more fair the buyer may perceive the posted price to be. In turn, changes in either of these two factors could impact a buyer’s propensity to negotiate the flexible price, and conditional on negotiating, the extent or degree to which they negotiate.

To explore the negotiation tendencies of buyers, and the extent to which their negotiation behavior is impacted by their value for the good, we consider an incentivized experiment centered around a stylized flexible price negotiation task. In the task, sellers are endowed with one unit of a fictitious good that is for sale at an exogenous initial posted price. Buyers, who value for the good, are given an opportunity to purchase the good from the seller at the posted price, or attempt to negotiate a lower price. Conditional on negotiating, an alternate-offer style negotiation process ensues. We then vary buyer values across experimental treatments, while holding the posted price constant. As a result, by comparing across treatments, we are able to

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5 There is also a related body of literature documenting the importance of price fairness concerns of buyers in non-negotiation fixed price settings. For example, Huppertz et al. (1978) find that buyers are more likely to leave a store and complain if the price is unfair; similarly, Kahneman et al. (1986), Campbell (1999), and Maxwell (2002) find that unfair pricing can impact a buyers’ willingness to purchase. Along these lines, Thaler (1985) and Rotemberg (2011) develop formal models incorporating a buyer’s concern for price fairness in market transactions.
examine the negotiation tendencies of buyers and how variations in their values impact their propensity to negotiate, their negotiation behavior, and the outcome of the negotiation.

We find high rates of price negotiation across all treatments, and the exogenous manipulation of buyer values has very little impact on a buyer’s propensity to negotiate. Conditional on negotiating, buyers with higher values make higher initial counter-offers. That is, buyers with higher values for the good appear to negotiate less aggressively. However, the data suggests that the buyer’s value has very little impact on the actual final sale price of the good. Although, we do find that buyers with higher values are able to reach a negotiated agreement quicker, i.e., they are able to reach a price agreement with less total counter-offers.

Before proceeding to the experimental design, we note that a few prior experimental studies have explored topics relating to flexible prices. In a series of papers, Davis & Holt (1994), (1997), (1998) consider the role of seller’s having the ability to discount posted prices on market performance. In their experiments, buyers have the ability to request a discount from the seller. Cason et al. (2003) similarly compare market performance with fixed and flexible prices, and they allow for a more free form negotiation between buyers and sellers. These prior studies explore flexible prices in the context of a competitive market setting with multiple buyers and sellers, and focus on how flexible prices impact aggregate market outcomes (e.g., efficiency, average list price, and average transaction prices). Our study compliments these extant studies by specifically examining buyer behavior in the bi-lateral negotiation process when prices are flexible, and how buyer values impact negotiation behavior and the outcome of the negotiation.

2 Experimental Design and Hypothesis Development

2.1 Flexible Price Negotiation Task and Experimental Treatments
The experimental design is centered around a stylized, bi-lateral, flexible price negotiation task between a buyer and a seller. The seller is endowed with one unit of a fictitious good, referred to in the experiment as a “golden ticket”. The buyer, who has an induced valuation for the good, is tasked with trying to purchase the good from the seller. The transaction begins with each buyer having to make an explicit decision about whether to purchase the golden ticket from their paired seller at the posted price, or negotiate the price. If a buyer chooses to purchase the golden ticket at the posted price, then the task ends; whereas, if the buyer chooses to negotiate the price, then an alternate-offer style price negotiation ensues, with the buyer making the initial counter-offer.

In order to isolate the effect the buyer’s value has on the negotiation process, the buyer’s value is varied across treatments, while the initial posted price is exogenously set to $10 and held constant across all treatments. Specifically, we consider three different buyer values, which correspond to the following three experimental treatments:

**Low Value (L-Value):** The buyer’s private value is $12

**Medium Value (M-Value):** The buyer’s private value is $15

**High Value (H-Value):** The buyer’s private value is $18

Across these three treatments, only the buyer’s value for the good is changing, while the other aspects of the negotiation process are held constant. As a result, by comparing across these treatments we are able to explore if, and to what extent, variation in buyer values affect negotiation behavior and the outcome of the negotiation.
In some flexible price markets, the posted price would likely be chosen by the seller. However, by exogenously setting the posted price to $10, we are able to control the magnitude of the difference between the buyer’s value and the posted price across the three treatments. In addition, the exogenous posted price minimizes possible reciprocity motivations that could impact a buyer’s negotiation behavior in response to a posted price that was chosen by the seller. In particular, buyers may perceive a low (high) price set by the seller, relative to their value, as kind (unkind); in response, buyers may then be less (more) motivated to negotiate aggressively with that seller. By eliminating the seller’s choice of the posted price, we can isolate the effect of variation in buyer values on the negotiation process, which is the goal of this study.

In terms of payoffs, sellers are privately informed that if they sell the golden ticket, they will receive the sale price as payment, and they will receive zero payment otherwise. Buyers are privately informed that if they buy the golden ticket, they will receive the difference between their value and the sale price as payment, and they will receive zero payment otherwise. Given that the value of the buyer’s outside option (the buyer’s payment if the golden ticket is not purchased) is zero, the buyer’s maximum willingness to pay is simply his/her value; hence, the buyer’s value in this setting is equivalent to his/her reservation value (Raiffa, 1982).

In markets where the price is flexible, it is certainly possible that a buyer’s value is less than the posted price. However, in the experimental design we only consider values that are larger than the posted price. This is done for several reasons: First, it allows for the possibility that

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6 In many flexible price markets, the posted price might not be set by the agent that is selling the good. Said differently, it may be the case that the agent that set the price is not the same as the selling agent who will be negotiating with potential buyers. So from the perspective of the selling agent, the posted price may be exogenous. Examples include: real estate transactions where the home owner may set the posted price, but the realtor is the selling agent, or automobiles where a car sales person (who did not choose the list price) is the selling agent.

7 The idea of reciprocity (Dufwenberg & Kirchsteiger, 2004; Falk & Fischbacher, 2006) is that agents are motivated to respond in a kind manner to those who are kind, and an unkind manner to those who are unkind.
buyers could conceivably forgo negotiations and pay the posted price; thus, our ability to explore how the propensity to negotiate is affected by the buyer’s value. Second, it ensures that the contract zone is held constant across the three treatments. That is, the set of possible mutually agreeable negotiated prices lies between zero (the seller’s reservation) and $10 (the posted price) in all three treatments. This ensures that any observed differences across treatments are not a result of different size contract zones. Third, assuming their value is the reference point, then buyers will perceive the negotiation as being in the domain of gain in all three treatments; hence, any differences across treatments will not be a result of a switch in the gain/loss domain.

2.2 Hypothesis Development

If buyers are rational and self-interested, then we would not expect any differences across the three treatments. In particular, we would expect all buyers to be motivated to procure the good for as low of price as possible. Assuming there is a negligible cost associated with engaging in negotiations, we would expect buyers to always negotiate in an attempt to purchase the good at a price lower than the posted price. Conditional on negotiating, such buyers would then be motivated to negotiate the lowest possible price, irrespective of the buyer’s value for the good. Thus, for rational and self-interested buyers we would not expect to see any differences in the negotiation rates across the three treatments. Furthermore, conditional on negotiating, we would not expect to see any differences in buyer offer behavior or the final sale price across treatments.

8 If a buyer’s value was lower that the posted price, then purchasing at the posted price would result in a negative payoff. Whereas, the buyer’s outside option of not buying results in a zero payoff. Hence, all buyers in this case would either try to negotiate a price equal to or less than their value, or not purchase the good.
9 Note, while there is not a monetary cost associated with negotiating in our design, buyers may still experience some non-monetary costs from negotiating in the form of discomfort or anxiety. In addition, buyers may perceive that there is a non-zero probability that they will be unable to purchase the good at the original purchase price of $10 if they attempt to negotiate, and negotiations fail; this could be the case if, for example, buyers think that sellers may become angered or annoyed by the buyer’s attempt to negotiate and, subsequently, refuse sale to the buyer at the original posted price. Thus, even if we assume all buyers are rational and self-interested, we may see less than 100% of buyers negotiating. That said, assuming these above mentioned non-monetary costs of negotiating are not correlated with the buyer’s value, we would not expect to see differences in negotiation rates across treatments.
That is, the variation in buyer values across the three treatments would not directly impact their negotiation behavior; rather, buyers would engage in negotiations with the seller when it is profitable to do so and try to negotiate the lowest possible price.

However, as mentioned in the introduction, one possibility is that buyers in these flexible price negotiations may be influenced by whether they perceive the negotiation task as being in the domain of gains/losses, and the associated magnitude of the gain/loss. The prior literature suggests that an agent’s reference point and the associated gain/loss can impact several dimensions of the negotiation. In particular, when agents are in the domain of gains, agents may be more willing to make concessions (Bazerman et al., 1985; Neale et al., 1987; Neale & Bazerman; 1991), may make higher counter-offers (Kristensen & Gärling, 1997a, 2000); may be more likely to reach an agreement (Bazerman et al., 1985; Neale et al., 1987; Neale & Bazerman; 1991; Kristensen & Gärling, 1997a), and be more satisfied (Kristensen & Gärling, 2000), compared to when being in the domain of losses.

If we assume buyers use their value as their reference point in making their determination regarding gains/losses, which is consistent with evidence documented by White et al. (1994) and Kristensen & Gärling (1997b), (1997c), then posted prices higher than a buyer’s value would be perceived in the loss domain, while posted prices lower than their value would be perceived in the gain domain. In our design, the posted price is lower than the buyer’s value in all three treatments; hence, buyers would perceive the flexible price negotiation in the domain of gains. That said, the larger the buyer’s value relative to the posted price, the more in the domain of gains the negotiation will be perceived. So, the perceived gain, conditional on the initial posted price, will be higher in the H-Value treatment, compared to M-Value, compared to L-Value. Based on the findings from the literature, buyers with higher values, relative to the posted price,
may be less inclined to negotiate the flexible price and, conditional on negotiating, may make higher counter-offers and be more inclined to concede in the negotiation.

Another mechanism by which a buyer’s value may impact their behavior in flexible price negotiations is through fairness perceptions regarding the posted price. There exists prior literature suggesting that price fairness can impact the negotiation behavior of buyers; namely, a buyer may negotiate more (less) aggressively when the price is perceived as being less (more) fair. For example, Maxwell et al. (1999) document that buyers make more concessions, are more satisfied with the negotiation, and negotiations are shorter when the posted price is perceived as being more fair. Similarly, Kristensen (2000) find that buyers are more willing to buy at the posted price when the price is more fair. Herrmann (2004) finds that buyers indicated that they tend to engage in negotiations when prices are high, and refrain when prices are low; in particular she documents that: “sixty three percent of questionnaired respondents indicated that they refrained from bargaining because ‘prices are reasonable’” (p. 70).

If buyers use their value as the reference point for evaluating the fairness of the posted price, which in our negotiation task is essentially the only information they have available to them, then the larger their value the more fair the posted price will be perceived.\textsuperscript{10} Hence, buyers in the H-Value treatment will perceive the $10 posted price as being more fair compared to M-Value, compared to L-Value. Consequently, based on the previous literature, buyers may be less inclined to negotiate the price, and negotiate less aggressively the larger their value for the good, relative to the posted price.

\textsuperscript{10} This idea is also consistent with the notion of “egocentric” biases of fairness assessments (see Thompson & Loewenstien, 1992 for discussion), which has been documented experimentally by Loewenstein et al. (1993) and Babcock et al. (1995).
To summarize, the prior literature indicates that there are at least two possible mechanisms through which variation in buyer values could impact their negotiation behavior and, consequently, the outcome of the flexible price negotiation. First, it could change the reference point around which buyers are evaluating whether the posted price is in the gain/loss domain and/or the magnitude of the associated gain/loss; conditional on buyer values being higher than the posted price (as is the case in our design), then the larger the buyer’s value the more into the domain of gains the negotiation will be perceived. Second, it could change the buyer’s perception of the fairness of the posted price; the larger a buyer’s value the more fair the buyer may perceive the posted price to be. As a result, buyers with higher values for the good, relative to the initial posted price, may be less likely to negotiate the price and, conditional on negotiating, the may have a propensity to negotiate less aggressively.

2.3 Experimental Procedure

All experimental sessions were conducted in the Economic Science Laboratory (ESL) at the University of Arizona. All sessions were computerized, the software was programmed using z-Tree (Fischbacher, 2007), and all interactions between participants were anonymous. All participants were University of Arizona undergraduate students who were randomly recruited. We used a between groups design where each subject participated in only one of the three treatments. In total, 160 undergraduates (96 male and 64 female) participated: 56 (28 pairs) in the L-value treatment, 52 (26 pairs) in the M-value treatment and 52 (26 pairs) in the H-value treatment. A Copy of the experimental instructions is provided in the appendix.

All participants were randomly assigned to treatment, randomly assigned to either the role or buyer or seller, and then randomly paired with another participant of the opposite role. After
reading through their role specific instructions, all participants were required to correctly answer two questions about the task to ensure they had reached an adequate understanding before proceeding. Participants then played the flexible price negotiation task one time. In order to make the buyers’ initial purchase/negotiate decision as salient as possible, buyers were specifically told the following when the task began: “As the Buyer, you must decide whether you would like to purchase the golden ticket from the Sellers at price of $10, or negotiate with the Seller by making him/her a counter-offer”. Furthermore, buyers had to actively decide by either clicking a button labeled “BUY” or a button labeled “NEGOTIATE”. Figure 1 shows a screen shot of the exact decision screen viewed by buyers in the experiment.

[Figure 1 – Screen Shot of Buyer’s Purchase/Negotiate Decision]

If the buyer chose to negotiate, the dyad was given 5 minutes to reach an agreement. The negotiation ended when either: (i) the buyer or seller accepted the counter-party’s offer (in which case the good was transacted at that price), or (ii) the 5-minute time limit elapsed without an accepted offer. If the 5-minute time allotment was reached, participants were informed of this, and the participant in the pair that was currently acting was given a final opportunity to accept or reject the current offer of the counter-party.

This final accept/reject termination rule was included to facilitate a higher rate of trade, which is Pareto efficient and generates higher average subject payments. However, neither buyers nor sellers were made aware of this final accept/reject stage prior to starting the negotiation. Furthermore, there was no way for participants to guarantee that they would be the one in the position to be making this final counter-offer (as this was a function of the amount of time spent by each party making each offer). Therefore, it is highly unlikely that this termination rule
influenced the negotiation behavior of either party (i.e., the sequence of counter-offers or the total number of counter-offers).

In terms of the information structure, sellers were not informed about the buyer's value or payoff function, and buyers were not informed about the seller’s payoff function. The motivation for implementing this incomplete information set-up regarding payoffs was to minimize the saliency of distributional fairness concerns (e.g., Fehr & Schmidt, 1999) and, thus, isolate the impact of differences in buyer values. In addition, this type of incomplete information structure would be prototypical of real flexible price negotiation settings. In particular, it is unlikely (at the time of negotiations) that the seller would be informed about how much the buyer values the good and the resulting net payoff to the buyer; similarly, it is unlikely that the buyer would be informed about the seller’s cost of selling the good and the resulting net payoff to the seller.

Upon completing the negotiation task, subjects were asked to fill out a short questionnaire to gather some general demographic data. Sessions lasted approximately 30 minutes, and the average experimental earnings (including a $5 show-up payment) were $12.10 USD.

3 Results

We proceed by first presenting the aggregate data and testing for differences across the three treatments. When appropriate, we break the sample into those buyer/seller dyads that reached an agreement prior to the final accept/reject stage, which represents 80% of the full sample. This 80% of the sample can be viewed as those pairs that reached an agreement in the allotted negotiation time, while the other 20% would be those who did not reach an agreement in the time allotment, but may still have transacted based on the final accept/reject decision. We then look at possible heterogeneous treatment effects based on gender, as well as a proxy for negotiation
experience. The main findings are summarized along the way while we postpone discussion and implications for the concluding remarks.

3.1 Measures

In the data analysis, we consider several dimensions of the negotiation process. The first is the buyer’s initial decision of whether to purchase at the posted price or negotiate. The second is the degree or extent to which the buyer negotiates, conditional on negotiating. For this, we analyze the buyer’s initial offer, as well as the sequence of subsequent counter-offers; the idea being that lower counter-offers represent more aggressive negotiating by the buyer. The third, and possibly most important, is the final outcome of the negotiation process – the final sale price at which the good was transacted. The fourth is the length of the negotiation process; that is, how long it takes for the negotiating dyad to reach an agreement. As a proxy for the length of the negotiation, we use the total number of combined counter-offers between the buyer and seller needed to reach an agreement, which we denote as \# of negociating rounds.\(^\text{11}\)

3.2 Aggregate Data

We begin by looking at buyers’ propensities to engage in negotiations, and whether variation in buyer values impacts this negotiation decision. The data reveals that the percentage of buyers who chose to negotiate in the L-Value, M-Value, and H-Value treatments were 93%, 92%, and 96% respectively. A non-parametric Jonckheere-Terpstra test for trend fails to reject the null of equality (p = 0.600). It is worth noting that the percentage of buyers who negotiate, across all

\(^{11}\) Another measure of the length of the negotiation would be the actual time required to reach an agreement. However, the software did not enable us to measure time to an agreement for each dyad. However, it is likely that the number of negotiating rounds needed to reach an agreement is strongly positively correlated with time, since it takes time to think about and construct counter-offers. Thus, we argue that our results regarding how buyer values impact the number of negotiating rounds would likely generalize to the actual time needed to reach an agreement.
three treatments, may be higher than in actual flexible price markets because of experimenter
demand effects and activity bias. That said, even at these (possibly) higher rates, there is little
difference in relative negotiation rates across treatments.

**Result 1:** *Buyers have a very high propensity to negotiate the flexible price, and the buyer’s value for the good does not significantly impact their decision to engage in negotiations.*

Next we look at the offer behavior of buyers, for those buyers that chose to negotiate. Table 1
depicts the average 1st offer, as well as the 2nd and 3rd counter-offers for each of the three
treatments.\(^{12}\) From column 1, the average 1st offers in the L-Value, M-Value, and H-Value
treatments were $3.84, $4.75, and $4.70, respectively. There is a marginal positive trend between
the 1st offer and the buyer’s value (p = .105), and there is a marginally significant difference in
the 1st offer between the L-Value and M-Value treatments (p = .068). Looking at the 2nd counter-
offer, there remains a marginally significant difference between the L-Value and M-Value
treatments (p = .077). However, by the 3rd counter-offer, there are no more significant
differences between the three treatments. Comparing across the sequence of these first three
buyer counter-offers, a Kruskal-Wallis test reveals that the main effect of buyer value is
narrowly insignificant (p = .114). Taken together, the results regarding the effect of the buyer’s
value on the buyer’s counter-offer decisions can be summarized as follows:

**Result 2:** *The data reveals some evidence that buyers who have higher values attempt to
negotiate less aggressively by make marginally higher counter-offers, especially the initial offer.*

**Table 1: Effect of Buyer Values on Sequence of Counter-Offers**

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\(^{12}\) We only include the first three counter-offers because after this point in the negotiation, the sample size
becomes too small for any meaningful analysis.
We proceed by comparing the outcome of the negotiation – the final sale price – across treatments. Table 2 displays the average final sale price by treatment, separately for those pairs that reached an agreement prior to the final accept/reject stage and for all pairs. Looking at the first column of Table 2 (all pairs) we see that the average sale price in the L-Value, M-Value, and H-Values treatments is $6.84, $7.35, and $6.49, respectively. A non-parametric Kruskal-Wallis test fails to reject the null of equality (p = .540), and a trend test fails to reject the null of equality (p = 0.402). Similarly, a Mann-Whitney test reveals no significant differences in any of the three pairwise comparisons of the final sale price across the three treatments. When looking only at the subsample that reached an agreement before the last round of negotiations (second column of Table 2), the data similarly reveals no significant differences in the final sale price across treatments. This leads to the following result:

**Result 2:** Variation in buyer values does not significantly impact the final sale price.

**Table 2: Effect of Buyer Values on Final Prices**

While the final sale price is an important negotiation outcome, another important dimension of the negotiation process is its length. The length of the negotiation process can be especially important if a delay from a prolonged negotiation process is costly to either of the parties involved. It is possible that the buyer’s value may impact how long it takes to reach a negotiated agreement. Namely, buyers with higher values may be more inclined to make concessions in the negotiation; hence, it may be the case that higher buyer values lead to a more quickly reached agreement. Because we observe the intermediate steps within the negotiation, we are able to explore such a possible relation. To do so, we compare the mean and median # of negotiating
rounds (i.e., the number of total combined counter-offers need to reach an agreement) across treatments, separately for all buyer/seller pairs and the pairs that reached an agreement prior to the final accept/reject stage.

**Table 3: Effect of Buyer Values on Length of Negotiation**  
(Measured as Total # of Negotiating Rounds)

When looking at all pairs, Table 3 reveals there is very little difference in the # of negotiating rounds across the three treatments. In particular, there is no significant trend (p = .297), and none of the three pairwise comparisons across treatments are significant. However, if we look only at the buyer/seller pairs that actually reached an agreement in the allotted time, then the buyer’s value does seem to impact the # of negotiating rounds. In particular, there is a significant negative trend between the buyer’s value and the average # of negotiating rounds (p = .031). Furthermore, a pairwise comparison reveals that significantly more negotiating rounds are needed in the L-Value treatment compared to both the M-Value (p = .074) and the H-Value treatments (p = .053). Overall, the effect of buyer values on the length of the negotiation can be summarized as follows:

**Result 4:** There is a negative relation between a buyer’s value and the length of the negotiation; Buyers with a higher value for the good reach an agreement in fewer rounds of negotiating.

The main motivation of this study is to examine the negotiation tendencies of buyers in flexible price negotiations, and how variation in buyer values may impact their behavior. Because the initial posted price was held constant across treatments, and sellers were not informed of the buyer’s value, there were no direct differences across treatments from the perspective of the seller; hence, we would not expect to see any direct differences in seller
behavior across treatments. To ensure that the observed differences in buyer behavior across treatments were not a result of differences in seller behavior, we compare seller behavior across treatments. Figure 4 displays the first three seller counter-offers across treatments.

**Figure 2: Comparison of Seller Counter-Offers by Treatment**

From Figure 2 we can see there is very little difference in the sequence of counter-offers from sellers across the three treatments. The average 1st counter-offers in the L-Value, M-Value, and H-Value treatments were $8.44, $8.75, and $8.67, respectively, which are not significantly different (p = .510). The corresponding average 2nd counter-offers were $8.30, $8.27, and $7.73, which are also not statistically different (p = .864). The corresponding average 3rd counter-offers were $8.29, $7.57, and $8.63, which are also not significantly different (p = .221). Taken together, the data reveals very little difference in seller behavior across treatments, as expected a priori given the experimental design. Hence, the observed difference in buyer behavior across treatments is likely not a direct result of differences in seller behavior.

### 3.3 Possible Heterogeneous Treatment Effects

The final component of the data analysis involves testing for possible heterogeneous treatment effects. In particular, we explore whether the negotiation behavior of buyers and the interaction of variation in buyer values is different based on the buyer’s gender or negotiating experience. While, in general, there may be other factors that act to mediate the main treatment effect, we focus on these two factors for several reasons. With regard to gender, there is a mature body of literature documenting gender differences in negotiations.\(^{13}\) In addition, gender is easily

\(^{13}\) In lieu of citing individual studies from this large body of literature, we refer interested readers to the following studies that provide comprehensive, although not exhaustive, reviews: Walters et al. (1998), Kray & Thompson (2004), Bowles et al. (2007), Seagraves & Gallimore (2013), who discuss gender difference in
observable. With regard to negotiating experience, it is likely that participants have varying levels of prior negotiating experience, and this level of experience may impact his/her negotiating behavior. In turn, this could influence how a buyer’s value interacts with their negotiating behavior when posted prices are flexible.

**Figure 3: Comparison of Buyer Offers by Treatment and Gender**

Figure 3 displays the average 1st offer from buyers, broken down by treatment and gender of the buyer. From Figure 3, we see that the average 1st offers for male buyers in L-Value, M-Value, and H-Value were $3.80, $4.11, and $4.11, respectively; for female buyers, the corresponding 1st offers were $3.92, $5.39, and $5.15, respectively. In all three treatments, female buyers make higher 1st offers, and this difference is significant for M-Value (p = .068). Furthermore, a Kruskal-Wallis test reveals a significant gender effect (p = .068). Looking just at male buyers, there is very little difference in 1st offers across treatments. However, for female buyers, the 1st offer in M-Value is significantly higher than L-Value (p = .056). Taken together, the effect of gender on a buyer’s 1st offer is as follows:

**Result 5a:** Female buyers make higher 1st offers, especially in M-Value and H-Value treatments

**Result 5b:** Female buyers appear to be marginally more responsive to changes in their valuations in that they make higher 1st offers when their value is higher

As a proxy for negotiating experience, we asked subjects in the post experiment questionnaire if they had bought an item from Craigslist (a secondary market website where posted prices are generally flexible) in the last year. We then classify those subjects that answered yes (52%) as higher experience, and those that answered no (48%) as lower experience. Figure 4 shows the average 1st offer, broken down by treatment and experience level. From Figure 4, we see that the negotiations; Croson & Gneezy (2009) and Niederle & Vesterlund (2011) who review the role of gender differences in decision making more generally.
average 1st offers for lower experience buyers in L-Value, M-Value, and H-Value were $4.20, $4.78, and $4.73, respectively; for higher experience buyers, the corresponding 1st offers were $3.59, $4.73, and $4.68, respectively. There are no significant differences in 1st offers across experience levels for any of the three treatments. Additionally, a Kruskal-Wallis test does not reveals a significant effect of experience (p = .695). Thus, based on our proxy measure for prior negotiating experience, our data indicates the following:

**Result 6:** There seems to be very little difference in the buyer’s 1st offer based on whether buyers had some prior experience in flexible price negotiations.

**Figure 4: Comparison of Buyer Counter-Offer by Treatment and Negotiating Experience**

### 4 Concluding Remarks

In the exchange of many goods and services, the posted price is flexible; buyers face a choice of whether to purchase the good at the initial posted price, or negotiate the price with the seller. In this paper, we examine the negotiating tendencies of buyers when the posted price is flexible, and to what extent the buyer’s value for the good (relative to the posted price) impacts: (i) a buyer's propensity to negotiate the price, (ii) the counter-offer behavior of buyers, (iii) the final sale price, and (iv) the length of the negotiation. To do so, we conduct an experiment where participants engage in a stylized flexible price negotiation task. We then manipulate the buyer’s value across experimental treatments (low value, medium value, and high value), while holding constant the initial posted price.

The experimental data reveals that variation in buyer values affected some aspects of the negotiation process, but not all aspects. Overall, very high rates of negotiation were observed
across all treatments, and the buyer’s value had no effect on their decision to negotiate the price. With regard to the counter-offers made by buyers, there was some evidence that buyers with higher values made higher 1st and 2nd counter-offers. However, by the 3rd counter-offer there was no significant difference based on the buyer’s value; that is, the buyer’s value did not persistently affect their counter-offers throughout the negotiation process. As a result, the buyer’s value had little effect on the final negotiated sale price. However, the data did reveal that higher buyer values resulted in a shorter negotiation process, i.e. less total counter-offers needed to reach an agreement. Overall, the buyer’s value had little impact on the negotiated price, but the negotiation process was expedited when buyers had higher values.

The data reveals that a very large percentage of buyers (94%) choose to forgo paying the posted price and attempt to negotiate the price. While this percentage may be inflated relative to percentages in the field because of experimenter demand effects, it suggests that when prices are flexible, many buyers may attempt to negotiate a lower sale price. In the setting we consider, as well as most markets with flexible prices, there is no monetary cost or risk associated with negotiating, as the buyer can always purchase at the original posted price; hence, we would expect high rates of negotiating. This is consistent with the conventional wisdom that “it never hurts to ask” for a discount. The large fraction of bargainers/hagglers also has possible important implications regarding optimal seller decisions about flexible pricing. For example, in the 2-seller model of Desai & Purohit (2004), if a large fraction of buyers are hagglers, then fixed pricing yields higher profits than flexible pricing; thus, firms may prefer committing to fixed prices. In the N ≥ 2 seller model of Gill & Thanassoulis (2009) and the 2-seller model of Gill & Thanassoulis (2013) where firms can’t commit to a fixed price, a large fraction of bargainers results in higher list prices and higher negotiated prices. In this case, the presences of a large
fraction of bargainers may benefit sellers and, as concluded by Gill & Thanassoulis (2009), “too
many bargainers can indeed spoil the broth” (p. 668).

Our results also reveal that buyer values seem to have little impact on the final
negotiated price. While we implement a structured alternate-offer style negotiation process in order to
explicitly examining the negotiation process, some of the prior flexible pricing models assume a
Nash bargaining solution in the negotiation stage (Bester, 1993; Wang, 1995; and Desai &
Purohit, 2004). An artifact of Nash bargaining in this flexible price negotiation is that the
solution does not depend on the buyer’s value. In particular, the Nash product in our setting
would be: \((V - p_f - d^B)^\beta \times (p_f - d^S)^{1-\beta}\) where \(V\) is the buyer’s value, \(p_f\) is the final
negotiated sale price, \(d^B\) is the buyer’s disagreement point, \(d^S\) is the seller’s disagreement point,
and \(\beta\) and \(1 - \beta\) are the buyer’s and seller’s bargaining powers, respectively. If we assume
that the buyer could always buy at the posted price, then \(d^B = V - p_p\) where \(p_p\) represented the
posted price, and \(d^S = 0\).\(^{14}\) So the Nash product simplifies to \((p_p - p_f)^\beta \times (p_f)^{1-\beta}\), which we
can see does not depend on \(V\); thus, the Nash bargaining solution (i.e., the \(p_f\) that maximizes the
Nash product) does not depend on \(V\). Note, if we assume equal bargaining weights between
buyer and seller (i.e., \(\beta = \frac{1}{2}\)), then the Nash bargaining solution is \(p_f = $5\). Across all three
 treatments, We observe final sale prices larger than $5 (average of $6.90 across treatments),
which suggests that sellers, on average, are exhibiting relatively more bargaining power/skill.
That said, there are no significant differences in the final sale price across treatments based on
variation in buyer values. Our findings indicate that modeling the outcome of the flexible price

\(^{14}\) In stating that the buyer’s disagreement point is \(d^B = V - p_p\), We am implicitly assuming that the buyer can
always purchase the good at the original posted price, even after negotiations have commenced. That is, at any point
in the negotiation interaction, the buyer can simply offer \(p_p\) and the seller would except since this was the original
asking price. Hence, the worst the buyer can do in this case, even after engaging in negotiations, is purchase the
good at the original posted price and earn a payoff of: \(V - p_p\).
negotiation as the Nash bargaining solution may be both a reasonable and accurate simplification, although possibly not with equal bargaining weights for the buyer and seller.

As mentioned in the introduction, several prior studies have documented the importance of reference points in negotiations, and the distinction between whether the negotiation is in the domain of gains or losses. In our setting, since values are higher than the posted price in all treatments, all buyers are in the domain of gains. That said, assuming they use their value as the reference point, the higher their value the bigger the gain. This allows us to shed light on the comparative statics of how buyer behavior varies within the gain domain. What we find is that the higher the buyer’s value, the higher the initial counter-offer and the less offers needed to settle the negotiation. This provides further support for the idea that buyer values act as the dominant reference point (White et al., 1994; Kristensen & Gärling, 1997b; 1997c), and that buyers negotiate less aggressively when the negotiation is (further) in the domain of gains (Bazerman et al., 1985; Neale et al., 1987; Neale & Bazerman; 1991; Kristensen & Gärling, 1997a; 2000).

Engaging in bi-lateral price negotiations often requires the expenditure of costly resources in the form of: money, time, and/or emotions. As a result, there can be possible efficiency gains if long, drawn-out negotiations are avoided. One may be inclined to think that by lowering the posted price or offering a discount, a seller could help circumvent such costly negotiations. Our results suggest that lowering the posted price (i.e., increasing the difference between a buyer’s value and the posted price) may not reduce the propensity of buyers to attempt to negotiate the price. However, by lowering the posted price or offering a discount, sellers may be able to shorten the negotiation process by reducing the number of offers needed to reach an agreement.
References

Appendix – Copy of all Experimental Instructions

General Experimental Procedure Instructions
(Read Aloud to All Participants at the Start of the Experiment)

Welcome to the ESL, and thank you for participating. In this experiment, you will be participating in a 2-person decision task. In the task, you will be randomly assigned to either the role of the BUYER or the role of the SELLER, and then randomly and anonymously paired with another participant of the opposite role as yours. Momentarily, I will launch the experimental software, which will first indicate the player role you have been assigned. Please remain on this screen while I come around and hand out the full set of instructions for the task. Please quietly and carefully read through all the instructions. After you have read through the instructions, you will be prompted to click the continue button at the bottom of your screen to proceed. From this point forward, please carefully follow all the prompts on the computer screen as you proceed through the experiment. You will first be asked to correctly answer 2 questions about the task to ensure that you have reached an adequate understanding of the task and its payoff structure. Once you have correctly answered these two questions, the actual decision task will begin. After everyone has finished the task, you will then be asked to fill out a short 10-question questionnaire, which will last about 2 minutes. Once the questionnaire has ended, you will be prompted to the final payment screen, where the outcome of the task and your total experimental earnings will be displayed to you. At this point, please remain quietly in your seat until an experimenter comes to your carrel and privately pays you’re your earnings. After, you have been paid you may quietly exit one of the 2 doors on the left. For the remainder of the experiment there is to be no talking or interaction with other participants of any kind. Thank you for your cooperation.
Participant Instructions

Player Role: SELLER

Welcome and thank you for participating! Your participation in this experiment is VOLUNTARY. Please read these instructions carefully. Do not talk to your neighbors. Please remain quiet during the entire experiment. Please raise your hand if you have any questions and an experimenter will come by and answer them privately. You may also refer back to these instructions at any time. All remaining decisions in during this experiment are to be completed individually, and verbal interaction with other participants is strictly PROHIBITED. Thank you for your cooperation.

You will receive a $5 show-up payment for participating. In addition, you can receive additional compensation based on your randomly assigned player role, the decision(s) that you make in the decision task described below, and/or the decisions made by the other participant with whom you have been randomly matched. Upon completion of the decision task, please remain quietly seated in your carrel and wait until an experimenter comes to you and privately pays you your experimental earnings. After you have been paid, you will be free to quietly exit the lab.

Decision Task:

You have been randomly assigned the role of: SELLER. In this experiment, there is a fictitious good called a “golden ticket”. As the seller you have one golden ticket. In addition, you have been randomly paired with another participant in the lab who has been randomly assigned to the role of BUYER. The buyer is interested in buying the golden ticket that you have. Your earnings from participating in this task will depend on whether or not you are able to sell the golden ticket to the buyer as follows:

You sell the golden ticket: If you are able to sell the golden ticket to the buyer, then you will receive the price the buyer paid (in dollars) as payment for the golden ticket, plus the $5 show-up payment.

You do not sell the golden ticket: If you are not able to sell the golden ticket to the buyer, then you will only receive the $5 show-up payment because the golden ticket has no additional value to you.

Whether or not you sell the golden ticket to the buyer will depend on the outcome that results from your interaction with the buyer.

This interaction between you and the buyer will take place as follows:

The initial posted price that you can sell the golden ticket for has been pre-set to $10.00. First, the buyer will have an opportunity to purchase the golden ticket from you at this initial posted price of $10.00. If the buyer chooses to purchases the golden ticket from you at the initial price,
the golden ticket is then sold to the buyer at the $10 initial price, and the task ends. You will receive the $10 price paid by the buyer as payment.

If the buyer does not purchase the golden ticket at the initial price, then the buyer will have an opportunity to negotiate with you over the price of the golden ticket. If the buyer decides to engage in negotiations, he/she will do so by proposing to you a counter-offer price between $0 and $10. At that point, you will have two options: (1) you may accept the counter-offer price proposed by the buyer, or (2) you may continue negotiating with the buyer. If you accept the buyer’s proposed counter-offer price, then the golden ticket is then sold to the buyer at the buyer’s proposed price, and the task ends. You will receive the price that the buyer proposed in the counter-offer as payment for the golden ticket.

If you choose to continue negotiations with the buyer, you will do so by proposing a counter-offer price between $0 and $10 back to the buyer. Again, the buyer will then have an opportunity to buy the golden ticket at your proposed counter-offer price, or continue negotiating with you. If the buyer accepts your proposed price, the golden ticket is then sold to the buyer at your proposed price, and the task ends. You will receive the price proposed in your counter-offer as payment for the golden ticket.

If the buyer chooses to continue negotiations, he/she will then make another proposed counter-offer price between $0 and $10 back to you. You will then have an opportunity to accept this proposed price by the buyer, or continue negotiations by making a proposed counter-offer between $0 and $10 back to the buyer. This alternating process of making a proposed counter-offer price between you and the buyer will continue until one of the following two things happens:

i) You accept the buyer’s proposed counter-offer price, or the buyer accepts your proposed counter-offer price. If this happens, the golden ticket is sold to the buyer at that proposed price, and the task will end. You will receive the proposed price as payment for the golden ticket.

ii) You and the buyer have negotiated for the maximum allowable time of 5 minutes without you or the buyer accepting the price proposed by the other for the golden ticket. If after this 5 minute time allotment you and the buyer have not reached an agreement on the price, then you will not sell the golden ticket to the buyer. The task will end, and will receive zero payment for the golden ticket.

If you and the buyer begin negotiating, then you will both be given a maximum of 30 seconds to make each of the negotiation decisions you face. That is, both you and the buyer will have a maximum of 30 seconds to decide whether or not to accept a counter-offer price (when applicable), and a maximum of 30 seconds to decide on the amount of the counter-offer price (when applicable).

**Questionnaire:**

After the decision task, you will be asked to complete a short questionnaire. Your answers to the questionnaire are confidential and will not be shared with any other participants.
Payment:

After you have finished the decision task and the questionnaire, please remain quietly seated in your carrel until all participants have finished the task and the questionnaire, and the experiment has ended. At that time, an experimenter will come to you and individually pay you your earnings for the experiment. Again, your total earnings for the experiment will be either: (i) the sum of the payment you received from the buyer for the golden ticket (if you were able to sell the golden ticket to the buyer) plus the $5 show-up payment, or (ii) just the $5 show-up payment (if you were unable to sell the golden ticket to the buyer). After you receive your payment, please then quietly exit the lab.

Thank you for your cooperation and participation!
Welcome and thank you for participating! Your participation in this experiment is VOLUNTARY. Please read these instructions carefully. Do not talk to your neighbors. Please remain quiet during the entire experiment. Please raise your hand if you have any questions and an experimenter will come by and answer them privately. You may also refer back to these instructions at any time. All remaining decisions in during this experiment are to be completed individually, and verbal interaction with other participants is strictly PROHIBITED. Thank you for your cooperation.

You will receive a $5 show-up payment for participating. In addition, you can receive additional compensation based on your randomly assigned player role, the decision(s) that you make in the decision task described below, and/or the decisions made by the other participant with whom you have been randomly matched. Upon completion of the decision task, please remain quietly seated in your carrel and wait until an experimenter comes to you and privately pays you your experimental earnings. After you have been paid, you will be free to quietly exit the lab.

Decision Task:

You have been randomly assigned the role of: BUYER. In this experiment, there is a fictitious good called a “golden ticket”. As the buyer, you are interested in purchasing a golden ticket, which has value to you. Specifically, your value for this golden ticket is $18. In addition, you have been randomly paired with another participant in the lab who has been assigned to the role of SELLER. This seller has been given a golden ticket, and is interested in selling that golden ticket to you. Your earnings from participating in this task will depend on whether or not you are able to buy the golden ticket from the seller as follows:

You buy the golden ticket: If you are able to buy the golden ticket from the seller, then you will earn the difference between your value of $18 and the price you paid to the seller (in dollars) for the golden ticket, plus the $5 show-up payment.

You do not buy the golden ticket: If you are not able to buy the golden ticket from the seller, then you will only receive the $5 show-up payment.

Whether or not you buy the golden ticket from the seller will depend on the outcome that results from your interaction with the seller.

This interaction between you and the seller will take place as follows:

---

15 These instructions correspond to the H-Value treatment where the buyer’s induced private value for the golden ticket was set to $18. In the other two treatments, the experimental instructions for the buyers were identical, except the buyer’s value was changed in the instructions to match that of the treatment.
First, you will have an opportunity to purchase the golden ticket from the seller at the initial posted price, which has been pre-set to: $10. If you choose to buy the golden ticket from the seller at the initial price, then the golden ticket is sold to you for $10, and the task ends. You will receive $18 minus the $10 price you paid to the seller as payment for purchasing the golden ticket.

If you choose not to purchase the golden ticket at the initial price, then you will have an opportunity to negotiate with the seller over the price of the golden ticket. If you decide to engage in negotiations, you will do so by proposing to the seller a counter-offer price between $0 and $10. At that point, the seller will have two options: (1) the seller may accept your proposed counter-offer price, or (2) the seller may continue negotiating with you. If the seller accepts your proposed counter-offer price, then you have bought the golden ticket at your proposed price, and the task ends. You will receive $18 minus your proposed counter-offer price as payment for buying the golden ticket.

If the seller chooses to continue negotiations with you, then he/she will do so by proposing a counter-offer price between $0 and $10 back to you. Again, you will then have an opportunity to buy the golden ticket from the seller at the seller’s proposed counter-off price, or continue negotiating with the seller. If you accept the seller’s proposed price, then you have bought the golden ticket at the seller’s proposed price, and the task ends. You will receive $18 minus the seller’s proposed counter-offer price as payment for purchasing the golden ticket.

If you choose to continue negotiations, you will then make a proposed counter-offer price between $0 and $10 back to the seller. The seller will then have an opportunity to accept your proposed price or continue negotiations by making a proposed counter-offer between $0 and $10 back to you. This alternating process of making a proposed counter-offer price between you and the seller will continue until one of the following two things happens:

i) You accept the seller’s proposed counter-offer price, or the seller accepts your proposed counter-offer price. If this happens, you will have bought the golden ticket from the seller at that proposed price, and the task will end. You will receive $18 minus the accepted proposed price as payment.

ii) You and the seller have negotiated for the maximum allowable time of 5 minutes without you or the seller accepting the price proposed by the other for the golden ticket. If after this 5 minute time allotment you and the seller have not reached an agreement on the price, then you will not buy the golden ticket from the seller. The task will end, and will receive zero payment because you did not purchase the golden ticket.

If you and the seller begin negotiating, then you will both be given a maximum of 30 seconds to make each of the negotiation decisions you face. That is, you and the seller will have a maximum of 30 seconds to decide whether or not to accept a counter-offer price (when applicable), and a maximum of 30 seconds to decide on the amount of the counter-offer price (when applicable).

**Questionnaire:**

After the decision task you will be asked to complete a short questionnaire. Your answers to the questionnaire are confidential will not be shared with any other participants.
Payment:

After you have finished the decision task and the questionnaire, please remain quietly seated in your carrel until all participants have finished the task and the questionnaire, and the experiment has ended. At that time, an experimenter will come to you and individually pay you your earnings for the experiment. Again, your total earnings for the experiment will be either: (i) your value of $18 minus the price you paid to the seller for the golden ticket (if you were able to buy the golden ticket from the seller) plus the $5 show-up payment, or (ii) just the $5 show-up payment (if you were unable to buy the golden ticket from the seller). After you receive your payment, please then quietly exit the lab.

Thank you for your cooperation and participation!
As the Buyer, you must decide whether you would like to purchase the golden ticket from the Sellers at price of $10, or negotiate with the Seller by making him/her a counter-offer.

Please make your decision below by clicking the corresponding button below:

Click to buy the golden ticket for $10

Click to negotiate the price with the Seller
Table 1: Effect of Buyer Values on Sequence of Counter-Offers

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Buyer's Sequence of Counter-Offers</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; Offer</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; Counter-Offer</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; Counter-Offer</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-Value</td>
<td></td>
<td>$3.84</td>
<td>$4.85</td>
<td>$5.97</td>
</tr>
<tr>
<td>M-Value</td>
<td></td>
<td>$4.75</td>
<td>$5.79</td>
<td>$6.49</td>
</tr>
<tr>
<td>H-Value</td>
<td></td>
<td>$4.70</td>
<td>$5.28</td>
<td>$4.81</td>
</tr>
</tbody>
</table>

### Treatment Effects

<table>
<thead>
<tr>
<th>Analysis of Variance</th>
<th>$p = .312$</th>
<th>$p = .381$</th>
<th>$p = .271$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trend Test</td>
<td>$p = .105$</td>
<td>$p = .251$</td>
<td>$p = .769$</td>
</tr>
<tr>
<td>L-Value vs M-Value</td>
<td>$p = .068$</td>
<td>$p = .077$</td>
<td>$p = .205$</td>
</tr>
<tr>
<td>L-Value vs H-Value</td>
<td>$p = .142$</td>
<td>$p = .306$</td>
<td>$p = .822$</td>
</tr>
<tr>
<td>M-Value vs H-Value</td>
<td>$p = .437$</td>
<td>$p = .771$</td>
<td>$p = .945$</td>
</tr>
</tbody>
</table>

Notes: All reported measures are treatment-level averages. Reported $p$-values for Analysis of Variance are from a non-parametric Kruskal–Wallis Test. Reported $p$-value for Trend test are from a Jonckheere-Terpstra non-parametric test. Reported $p$-values for pairwise comparisons are from a Mann-Whitney U-test.
Table 2: Effect of Buyer Values on Final Sale Prices

<table>
<thead>
<tr>
<th>Treatment</th>
<th>All Pairs Sale Price</th>
<th>Sale Price for Pairs that agreed before the last round</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-Value</td>
<td>$6.84</td>
<td>$6.99</td>
</tr>
<tr>
<td>M-Value</td>
<td>$7.35</td>
<td>$7.46</td>
</tr>
<tr>
<td>H-Value</td>
<td>$6.49</td>
<td>$7.21</td>
</tr>
</tbody>
</table>

**Treatment Effects**

- Analysis of Variance: $p = .540$ vs $p = .538$
- Trend Test: $p = .402$ vs $p = .130$
- L-Value vs M-Value: $p = .116$ vs $p = .187$
- L-Value vs H-Value: $p = .504$ vs $p = .166$
- M-Value vs H-Value: $p = .762$ vs $p = .639$

**Notes:** All reported measures are treatment-level averages. Reported $p$-values for Analysis of Variance are from a non-parametric Kruskal–Wallis Test. Reported $p$-value for Trend test are from a Jonckheere-Terpstra non-parametric test. Reported $p$-values for pairwise comparisons are from a Mann-Whitney test.
Table 3: Effect of Buyer Values on Length of Negotiation
(Measured as Total # of Negotiating Rounds)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>All Pairs</th>
<th>Pairs that agreed before the last round</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
</tr>
<tr>
<td>Low Value</td>
<td>7.62</td>
<td>8</td>
</tr>
<tr>
<td>Medium Value</td>
<td>6.88</td>
<td>6</td>
</tr>
<tr>
<td>High Value</td>
<td>7.16</td>
<td>6</td>
</tr>
</tbody>
</table>

Effect of Variance

<table>
<thead>
<tr>
<th></th>
<th>Analysis of Variance</th>
<th>Trend Test</th>
<th>L-Var vs M-Var</th>
<th>L-Var vs H-Var</th>
<th>M-Var vs H-Var</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$p = .785$</td>
<td>$p = .185$</td>
<td>$p = .297$</td>
<td>$p = .213$</td>
<td>$p = .536$</td>
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<td></td>
<td>$p = .297$</td>
<td>$p = .031$</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>$p = .213$</td>
<td>$p = .074$</td>
<td></td>
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<tr>
<td></td>
<td>$p = .171$</td>
<td>$p = .053$</td>
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<td></td>
<td>$p = .536$</td>
<td>$p = .272$</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: All reported measures are treatment-level averages. Reported p-values for Analysis of Variance are from a non-parametric Kruskal–Wallis Test. Reported p-value for Trend test are from a Jonckheere-Terpstra non-parametric test. Reported p-values for pairwise comparisons are from a Mann-Whitney test.
Figure 2: Comparison of Seller Counter-Offers by Treatment

Figure 3: Comparison of Buyer Counter-Offers by Treatment and Gender
Figure 4: Comparison of Buyer Counter-Offers by Treatment and Negotiating Experience