

# The Effect of Listing Price Strategy on Real Estate Negotiations: An Experimental Study

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## Abstract

When selling a home, an important decision for the home owner is choosing an optimal listing price. This decision will depend in large part on how the chosen list price impacts the post negotiation final sale price of the home. In this study, we design an experiment that enables us to identify how different types of common list price strategies affect housing negotiations. Specifically, we examine how *rounded*, *just below* and *precise* list prices impact the negotiation behavior of the buyer and seller and, ultimately, the final sale price of the home. Our results indicate that the initial list price strategy does play an important role in the negotiation process. Interestingly, these impacts generally attenuate with negotiating experience.

**Keywords:** listing price; real estate; negotiation; flexible price; experiment

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# 1 Introduction

A key decision in selling a home is selecting the listing price. Typically, this initial list price serves as the starting point in the negotiation process, which ultimately determines the final sale price. Given the magnitude of house prices, even a small percentage change in the final sale price can have significant financial ramifications for the seller. As a result, one of the chief aims of the seller is choosing the optimal list price that will generate the highest sale price. In making this decision, it is imperative to understand how the choice of list price will impact the negotiation process and, consequently, the final sale price.

Although the set of possible list prices is large, since homes tend to sell for six figure amounts, real estate list prices tend to be clustered (Allen and Dare, 2004; Palmon et al., 2004; Thomas et al., 2010; Beracha & Seiler, 2014). Specifically, there tends to be a disproportionate number of homes listed at prices where the last three digits are 000, 500, or 900, or the last four digits are 0,000, 5,000 or 9,000. For example, Beracha & Seiler (2014) consider over 300,000 real estate transactions and document that 14% are listed with a price ending in 0,000, 16% ending with 5,000, and 35% ending in 9,000. Thomas et al. (2010) find that over 62% of the houses in their sample of over 16,000 transaction are listed with prices ending in 000. Given the extensive clustering of list prices observed empirically, the motivation of this study is to shed light on how the *type* of list price impacts the negotiation process and, ultimately, the final sale price?

To do so, we develop a novel experimental design where we systematically vary the type list price, which enables us to explore the effect of the initial list price strategy on purchase negotiations. Specially, we study how variation in the *thousands* digit of the list price affects the negotiation behavior of the buyer and seller and, consequently, the final sale price. We consider three different types of listing prices, which we refer to as list price strategies: (i) *rounded*, (ii) *just below*, and (iii) *precise*. Consistent with the characterization used in Beracha & Seiler (2014), a “round” price is one where the thousands digit is either 0 or 5, “just below” is a price where the thousands digit is either 4 or 9, and a “precise” price is defined as having a thousands digit of either 1, 2, 3, 6, 7, or 8.

Within the experiment, participants engage in a stylized, bi-lateral housing negotiation. As part of the experimental design, we exogenously vary the list price strategy across treatments, while holding the other aspects of the negotiation process constant. In the “rounded” (R) treatment the list price is set to \$200,000, in the “just below” (JB) treatment the list price is set to \$199,000. For “precise” pricing, we consider two variations: the *high* precise (HP) treatment features a list price of \$201,326, whereas the *low* precise (LP) treatment features a list price of \$198,674. This systematic manipulation of the list price strategy enables us to compare outcomes across treatments to identify the corresponding effect of the list price strategy. Furthermore, we are able to observe all intermediate steps within the negotiation process including the entire sequence of offers and counter-offers, which allows us to identify how the various list price strategies separately affect the negotiation behavior of buyers and sellers. This level of investigation is not possible using transactions data because with transactions only the outcome is observable.

A small body of literature exists that focuses on the relation between types of list prices and real estate sales. Allen & Dare (2004) use transactions data from Florida and document that “charm” pricing is associated with higher final sale prices, and Palmon et al. (2004) use transactions data from Texas and find that “just below even” list prices are associated with lower final sale prices, compared to “even” list prices.<sup>3</sup> Thomas et al. (2010) use transactions data from Long Island and South Florida and find that “precise” list prices (those ending in 000) lead to higher final prices. The most closely related study to ours is a recent paper by Beracha & Seiler (2014) who use data on over 300,000 residential real estate transactions in Hampton Roads, Virginia, spanning 1993 – 2011. The authors find that just below pricing is associated with the largest negotiated discounts. However, because just below pricing is also associated with the greatest degree of over-pricing by sellers, just below pricing leads to the greatest net proceeds to the seller. Because of the endogeneity of list price strategies, it is difficult to identify the effect of list prices on the size of the negotiated discount and the final price using empirical transaction data. Our study advances this prior empirical work by identifying the causal effect of various list price strategies on the negotiation process and the final negotiated price, by systematically and exogenously varying list price strategies.

In particular, we contend that a controlled experiment affords us several advantages relative to these prior transactions-based empirical studies. First, we are able to systematically control for the fundamental value of the property being transacted, which is latent for real properties. This mitigates the endogeneity problem resulting from systematic over/under-pricing associated with certain list price strategies (e.g., Beracha & Seiler, 2014 who document over-pricing of homes listed at a just below price). Second, we are able to abstract from the dimension of housing quality. This is important because with transactions data, housing quality is either imprecisely observed or not observed at all, which can lead to selection bias when estimating the effect of list prices. Alternatively stated, sellers with lower or higher quality properties may systematically gravitate towards certain list price strategies.<sup>4</sup> Because the underlying quality of the property is unobservable in the field, it is not possible using transactions data to separate the effect of list prices on final transaction prices from possible differences in property quality; this problem is overcome in an experimental setting. Third, by randomly and exogenously assigning list price strategies within a negotiating dyad, we are able to avoid possible selection bias based on the negotiating style/ability of sellers. There is likely to be substantial heterogeneity among sellers in the housing market, and sellers of either low or high negotiation ability may systematically gravitate toward certain list price strategies. The endogenous selection of list price strategy by

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<sup>3</sup> Allen & Dare (2004) define a “charm” price as a price ending in 500, 900, 4,900, 5,000, 9,000, or any other non-zero number. Hence, their characterization of a charm price does not match either of the three list price strategies we consider, and it encompasses (as a subset) what we define as just below and precise. Furthermore, their broad characterization of a charm price includes variation in all digits up to the thousands digit; thus, there is no clear way to connect our results regarding the effect of rounded, just below, or precise pricing with the results from Allen and Dare on charm pricing. Palmon et al. (2004) examine variations in the hundreds digit and characterize “even” prices as those ending with 000, and “just below even” as those ending with 900. Thus, their definitions would be along the lines of our definitions of round and just below pricing, respectively.

<sup>4</sup> Paloma et al. (2004) point to such a concern by noting “Selection bias might be present if sellers’ decision to list their properties at even or just-below-even prices is associated with some unobserved variables that are correlated with the inherent value of the property” (p. 129).

sellers in transactions data, again, makes it difficult to isolate the effect of list prices on final sale prices. However, by randomly and exogenously assigning sellers to list price strategies in the experiment, we can identify (via average treatment effects) the impact of list pricing strategies.

Overall, our results indicate that the list price strategy does impact negotiations. In particular, we find that high precise pricing leads to the highest final sale price. With regard to negotiated discount, high precise pricing results in the smallest percentage discount while just below pricing results in the largest percentage discount, relative to the list price. Our data also suggest that list prices affect buyers and sellers differently. Namely, buyers make the lowest offers when the price is rounded, while sellers make the lowest counter-offers when the price is just below. Furthermore, the effect of the list price has a more persistent effect on sellers throughout the negotiation process. Lastly, we find that negotiating experience tends to attenuate the observed effects of the various list price strategies.

The main motivation of this study is to explore the impact of various list price strategies on final sale prices within the context of real estate negotiations. That said, real estate is by no means the only type of good where the list (or posted) price is flexible and generally viewed as negotiable. Other examples of flexible price goods include: new and used automobiles, goods sold in secondary markets, consumer durable goods, and sub-contracted services. 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). In terms of broader implications, we conjecture that our main results on how list price strategies impact real estate negotiations are applicable, more generally, in these other markets where list prices are also negotiable. Most notably, our results suggest that setting precise prices for these negotiable goods will result in the least aggressive negotiation behavior by buyers and, consequently, yield the highest final sale prices.

## 2 Related Literature

While the primary motivation of this study is to investigate list price strategies in residential real estate transactions, there does exist a mature body of literature relating, more generally, to list prices in consumer goods markets. In particular, the presence of a disproportionate number of prices ending in 9 has been empirically documented (Twedt, 1965; Friedman, 1967; Schindler & Wiman, 1989; Kreul, 1992; Shindler & Kirby, 1997; Holdershaw et al., 1997).<sup>5</sup> Furthermore, several studies have documented that prices ending in 9 can be effective in generating higher sales (Schindler & Kibarian, 1996; Stiving & Winer, 1997; Gendall et al., 1997; Kalyanam & Shively, 1998; Gednek & Sattler, 1999; Anderson & Simester, 2003; and Bizer & Schindler, 2005). The idea is that consumers tend to *drop-off* the right most digits (Basu, 1997, 2007; Bizer & Schindler, 2005) or that there is a left-digit bias (Poltock & Schwartz, 1984; Korvost &

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<sup>5</sup> The phenomenon of prices ending in 9 have been referred to and explored under various terms including *pricing in the nines* (Basu, 1997; 2007), *9-ending pricing* (Gednek & Sattler, 1999; Bizer & Schindler, 2005), *odd-pricing* (Monroe, 1979; Evans & Berman, 1997), and *just below pricing* (Stiving & Winer, 1997).

Damian, 2008); hence, consumers pay less attention to those rightmost digits.<sup>6</sup> Relatedly, Janiszewski & Uy (2008) find that more precise anchoring values lead to lower adjusted judgement values made by participants, compared to their corresponding rounded equivalent.

While these prior studies suggest list price strategies may influence residential real estate transactions, they may not translate directly. The reason is that in real estate transactions, unlike many consumer goods markets, the list price is generally viewed as negotiable. That is, the list price serves as the starting point of the negotiations. Furthermore, purchase prices in real estate transactions tend to be much larger than most other retail consumer goods. As a result, list price strategies may impact the negotiation process between the buyer and seller differently than just the buyer's decision about whether to purchase a good at a fixed posted price.<sup>7</sup> That said, we view this study as contributing to the extant literature on list price strategies by investigating their effect on negotiated outcomes in real estate transactions where prices are negotiable.

With regard to real estate transactions, there is a body of literature on the relation between list prices and sale prices (e.g., Anglin et al., 2003; Han & Strange, 2014; Haurin et al., 2010; Haurin et al., 2013; Knight, 2002; and Miller & Sklarz, 1987).<sup>8</sup> However, these studies focus primarily on how the relative position of the list price to the fundamental property value impact final sale prices and time on the market (as opposed to examining the type of list price strategy employed).<sup>9</sup> There are a few prior empirical studies that look specifically at list price strategies (Allen & Dare, 2004; Paloma et al., 2004; Thomas et al., 2010; and Beracha & Seiler, 2014). However, as discussed in the introduction, these empirical studies using transactions data provide challenges in identifying the causal impact of list price strategies. The study by Thomas et al. (2010) also provides some experimental evidence of the role of the type of list price in a real estate setting; specifically, the authors show that precise list prices of hypothetical houses for sale result in lower reported price assessments and higher reported willingness to pay amongst participants, compared to rounded price equivalents (i.e., prices ending in 000). We also use a controlled experiment where we systematically and randomly vary list price strategies, which enable us to causally identify how the list price impacts both the negotiation process and the final

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<sup>6</sup> Formal models of inattention bias have been developed by Chetty et al. (2009), Della Vigna (2009), and Finkelstein (2009). Lacetera et al. (2012) provide empirical evidence of inattention bias with respect to rightmost digits using used car transaction data; specifically, the authors find that there are discontinuous sales price drops at 10,000 and 1,000 mile odometer thresholds.

<sup>7</sup> In a recent paper, Mason et al. (2013) experimentally investigate how precise list prices can impact initial offers in simulated negotiation over various hypothetical consumer goods (with 2 digit prices), where they characterize a precise price as a price ending in zero. They find that price offers are lower with the precise price, compared to the corresponding rounded price. The authors also find that precise pricing leads to a lower final settlement price in a hypothetical used car negotiation (with a 4 digit price).

<sup>8</sup> Anenberg & Kung (2014) examine list price changes when nearby REO properties enter the market. Anenberg & Laufer (2014) use the spread of list price to sale price ratio as a way to create forward-looking price home indexes. Neither study approaches the level of granularity in, or focus of, list prices and their effect of the negotiation process as in our study.

<sup>9</sup> A recent paper by Pope et al. (2014) studies the role of focal points in the determining the final sale price in real estate transaction, and the document significant evidence that final sale prices are likely to end in round numbers (e.g, prices divisible by \$25,000 and \$50,000). In analyzing a subset of their data, the authors find that the list price does not explain the observed patterns in the data.

sale price. Thus, we see this study as an important and necessary step in deepening our understanding how list prices impact real estate negotiations.

With regard to flexible price markets, more generally, an important issue that arises is whether it is profitable for sellers to implement a pricing scheme where buyers can (attempt) to negotiate, or rather, should sellers commit to a fixed, non-negotiable price. Several papers have theoretically explored this topic (Bester, 1993, 1994; Wang, 1995; Arnold & Lippman, 1998; Desai & Purohit, 2004; Raskovich, 2007; Gill & Thanassoulis, 2009, 2015). Often, the optimal pricing decisions for sellers and the resulting equilibrium predictions depend, in part, on the negotiation behavior of the buyers. Thus, in terms using these models to generate predictions about optimal seller behavior and market outcomes, it is important to understand the bargaining tendencies of buyers. However, the prior models abstract away from the possibility that the negotiation behavior of buyers may be endogenous to the chosen flexible list price. The results from this study regarding how different list price strategies impact negotiations can have important implications in other markets as to whether sellers should allow prices to be flexible and if so, what type of list price should be set.

### 3 Experimental Design

Our experimental design is centered around a stylized, bi-lateral real estate negotiation. In the negotiation, there is a seller who is endowed with a fictitious house that is for sale at an initial list price, denoted  $p_l$ . The other party is a buyer, who is tasked with trying to negotiate the purchase of the house from the seller.

The negotiation process begins with the buyer choosing to either purchase the house at the initial list price, or make a counter-offer to the seller. Conditional on the buyer making a counter-offer, the seller then has an opportunity to either accept the buyer's counter-offer, or reject and make a counter-offer back to the buyer. If the seller accepts, then the negotiation ends. If the seller makes a counter-offer, the buyer then has an opportunity to accept the counter-offer, or reject and make a counter-offer. The negotiation continues in this alternate-offer style format until either: (i) the buyer or seller accepts the offer of the other party, or (ii) the maximum time allotment of 3-minutes elapses without an agreement (in which case the house is not transacted).

Sellers are privately informed of their reservation value, denoted by  $r$ , for the house at the beginning of the negotiation process. Similarly, buyers are privately informed at the beginning of the negotiations of their value for the house, denoted by  $v$ . If the buyer and seller are able to reach a negotiated agreement, then  $p_f$  denotes the final negotiated price. In terms of payoffs, sellers are privately informed that they will receive a payoff of  $p_f - r$  if they sell the house, and a payoff of zero if they fail to sell the house. Buyers are privately informed that they will receive a payoff of  $v - p_f$  if they buy the house, and a payoff of zero if they fail to buy the house. To remain as close as possible to actual residential real estate prices, and to allow for variation in the thousands digit of the list price, all monetary values are in terms of 6-figure *experimental currency dollars* (ECD), which are then converted into actual dollars after the experiment ends.

We consider 4 different list prices for the house, which are characterized as follows:

**Rounded Price (R):  $p_l = \$200,000$**

**Just Below Price (JB):  $p_l = \$199,000$**

**High Precise Price (HP):  $p_l = \$201,326$**

**Low Precise Price (LP):  $p_l = \$198,674$**

Consistent with the characterization used by Beracha & Seiler (2014), the rounded price features a thousands digit of 0, the just below price a has thousands digit of 9, and the two precise list prices feature thousands digits of 1 and 8.

Because a precise list price can be either above or below the rounded price, it is possible that these two different types of precise prices have different effects on the negotiation. By considering two different precise prices, one that is above the rounded price (HP) and one that is symmetrically below the rounded price (LP), we can test if and to what extent the position of the precise price matters. Furthermore, it allows us to rule out the possibility that any observed difference in the precise price is merely a result of it being the lowest or highest price.

In addition to variation in the list price, another feature that is likely to characterize real estate negotiations is variation in the price originally paid by the seller. It is possible that this variation in the original purchase price of the house may mediate the effect of list price strategy. In particular, if the list price of the home is close to the purchase price, then the purchase price may act as an induced anchor or “price floor” during the negotiations, from the perspective of the seller (see Kahneman, 1992 for a discussion of anchor points in negotiations and Kristensen & Gärling, 2000 for evidence that anchor points impact negotiations). In this case, sellers may be resistant to sell the house at a price below the original price they paid for the house, i.e., these sellers may be resistant to sell at a price that generates a “perceived” loss, i.e., nominal loss-aversion (Genesove & Mayer, 2001; Engelhardt, 2003). Thus, the seller may be less inclined to negotiate when the original purchase price is closer to the list price.<sup>10</sup> Consequently, this rigidity by the seller could then attenuate any possible effects that variation in the list price strategies may have on negotiations.

To explore whether the original purchase price paid by the seller impacts negotiations, and possibly interacts with the list price strategy, we consider two different original *purchase prices* for the home, denoted by  $p_0$ . In the *high purchase price* case, sellers are privately informed, prior to the start of the negotiation, that they originally paid a price of  $p_{0h} = \$195,000$  for the house. In the other case, the *low purchase price*, sellers are privately informed that they originally paid  $p_{0l} = \$185,000$  for the house. The idea being that in the high price case the purchase price is set to a value that is *slightly lower* than the list price; thus, sellers in this case who do not want to sell

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<sup>10</sup> The idea that agents may behave differently based on whether outcomes are in the domain or perceived gains/losses was first introduced in Prospect Theory by Kahneman & Tversky (1979). In the model, 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, which induces more (less) risk seeking in the domain of losses (gains). In the context of negotiations, this differential behavior can then impact counter-offers, concession behavior, and the likelihood that an agreement is reached (see Neale & Bazerman, 1991 and Kahneman, 1992 for a thorough discussion and a review of the literature documenting the impact of variation in the gain/loss domain on negotiations.

the house for a perceived loss would not want to negotiate below \$195,000. In the low price case, sellers who do not want to sell the house for a perceived loss would not want to negotiate below \$185,000. Therefore, all final negotiated prices between \$185,000 and \$195,000 would be perceived by sellers as a loss in the high purchase price case and as a gain in the low purchase price case. Hence, this “break even” constraint puts more upward pressure on the price in the high purchase price case compared to the low purchase price case.<sup>11</sup>

To summarize, we consider four different list price strategies interacted with two variations in the seller’s initial purchase price, resulting in a 4 X 2 experimental design. Table 1 displays the full list of parameter values used in each of the 8 different conditions. From Table 1, we see that in all 8 conditions, the buyer’s value,  $v$ , is held constant at \$205,000.<sup>12</sup> In addition, the seller’s reservation,  $r$ , is always set to be \$20,000 below the list price. This ensures that the bargaining zone, which is the difference between the list price and the seller’s reservation value, is constant at \$20,000 for each of the four list price conditions. Thus, by comparing negotiation behavior and the resulting negotiation outcome across the four different list price conditions, we are able to identify how the list price strategy impacts negotiations.

### **[Insert Table 1 – Parameter Value Combinations by Treatment]**

The only difference between the four conditions in Panels A and B is whether the seller was told that the original purchase price was *high* at  $p_{oh} = \$195,000$  or *low* at  $p_{ol} = \$185,000$ . The seller’s payoff does not depend on the original purchase price, so manipulating the information the seller gets regarding the original purchase price does not impact the financial incentives in any way. However, this manipulation does alter the reference point for the sellers around which they evaluate perceived gains and losses, which is its intended purpose. Therefore, by comparing negotiation behavior and outcomes across the conditions in Panels A and B (holding constant the list price, but varying the original purchase price), we can identify if the original purchase price impacts negotiations, and to what extent this may interact with different list price strategies.

We acknowledge that the negotiation process we implement in our design is stylized and may abstract away from features that are present in real house negotiations. That said, the stylized features and the controlled laboratory setting enable us to shed light on the causal effect of variation in the list price strategy on negotiations. In particular, by systematically varying and exogenously assigning the list price in the negotiation, we circumvent one possible source of bias based on the seller’s attitude toward or ability in negotiating and/or selection effects based on

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<sup>11</sup> Furthermore, because buyers are not informed about the original purchase price, there is no scope for variation in this information to impact their negotiation behavior across treatments.

<sup>12</sup> Because the buyer’s value is higher than the list price, it is pareto efficient for the house to be transacted at any price between the list price and the seller’s reservation value. We acknowledge that it is possible in housing negotiations for the buyer to have a value below the list price. When the buyer’s value is below the list price, this scenario would likely lead to a lower final negotiated price (condition on a transaction), across all listing price strategies. That said, the aim of our paper is to understand the *relative* comparison of negotiation behavior and final prices across different list price strategies. We contend that the level of the buyer’s value (either above or below the list price) is unlikely to have a differential impact on negotiation behavior and final prices when comparing across the different list price strategies. As such, we choose to normalize the buyer’s value to be above the list price strategy in all treatments to promote transactions and avoid negotiation impasses.



unobserved housing quality. Lastly, implementing a controlled experiment enable us to observe all the intermediate steps of the negotiation process (i.e., the sequence of counter-offers from each party), and more rigorously examine how the list price strategy separately impacts the behavior of the buyer and the seller.

## 4 Experimental Procedure

All experimental sessions were conducted in the Economics Science Laboratory (ESL) at the University of Arizona in October 2013. The experiment was computerized and the software was programmed using z-Tree.<sup>13</sup> All interactions between subjects were anonymous. The subject pool consisted of undergraduate students who were recruited via email from an established database. We ran 8 sessions, and a total of 132 subjects (66 negotiating pairs) participated in the experiment. In each session, subjects were randomly assigned to either the role of buyer or the role of seller and remained in this role for the entire experiment. A copy of the participant instructions can be found in the appendix.

We implemented a combination of a within and between subjects design. The manipulation of the high/low original purchase price conditions was done between groups: four sessions of the high purchase price and four sessions of the low purchase price. The manipulation of the four list price strategies was done within groups; in each experimental session, subjects participated in four separate negotiations corresponding to each of the four different list price strategy treatments. To help mitigate repeated game effects, all subjects were randomly re-matched with a different subject of the opposite role between each negotiation, and subjects were clearly informed of this matching protocol via the instructions.

To control for possible order effects of the within subjects manipulation of list price treatments, we used a balanced design with four different orders of the treatments. Each of the four different list price strategies appeared as the first round of negotiations in one of the orderings.<sup>14</sup> That is, approximately  $\frac{1}{4}$  of the dyads faced each of the four list price strategies the first round of negotiations. This balanced design enables us to test for list price treatment effects in the first round of negotiation only, without any possible confounds. At the same time, we are able to test for treatment effects in the aggregate across all four rounds of negotiations, and explore whether the treatment effects are attenuated as subjects gain experience.

After completing the four rounds of negotiations, subjects were asked to complete a short questionnaire (about 5 minutes in length). The purpose of the questionnaire was to elicit some subject level information on demographics, experience and attitude toward negotiations, and personality traits, which we then use to explore possible heterogeneous treatments effects (more detail on the specific question is discussed in the Results section). In terms of compensation, subjects were randomly paid for one of the four rounds of negotiation. Their earnings from the

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<sup>13</sup> We thank Urs Fischbacher (Fischbacher, 2007) for providing this software.

<sup>14</sup> With 4 different treatments, it was not practical to run 24 sessions corresponding to the 24 unique orderings of the 4 treatments. As an alternative, we ran 4 different orderings with each treatment coming first in one of the orderings followed by a random assignment of the other 3 treatments. This resulted in the following 4 different orderings of the treatments: (i) R-JB-LP-HP, (ii) JB-LP-HP-R, (iii) LP-JB-R-HP, (iv) HP-LP-JB-R.

selected round where then converted at a rate of 1000 ECDs = \$1. In addition, all subjects received a \$5 show-up payment. On average, subjects earned a total of \$17.50, and each session lasted approximately 45 minutes.

## 5 Results

We proceed by presenting the aggregate experimental results. We first look at the data concerning the effect of the original purchase price paid by the seller. We then look at the data concerning the effect of the four different list price strategies. We conclude exploring some possible heterogeneous treatment effects based on subject level demographics, negotiation experience, and personality traits. The main findings are summarized along the way, while we postpone a formal discussion of the results until Section 6.

### 5.1 The Effect of Original Purchase Price Paid by the Seller

To test whether the original purchase price paid by the seller (i.e., whether the sale of the house is in the perceived loss or gain domain) has an effect on seller behavior and the negotiation outcome, we compare the data across the high (\$195,000) and low (\$185,000) purchase price conditions, aggregated over the four different orderings of the list price strategies. In particular, for the negotiation outcome we look at the *final sale price* (which is the final negotiated price, conditional on agreement between buyer and seller). For seller behavior, we also look at the *seller's 1<sup>st</sup> counter-offer*, which is the price the seller counter-offered back to the buyer (conditional on the buyer making an initial offer to the seller). Table 2 compares the final sale price and the seller's 1<sup>st</sup> counter-offer across the two purchase price conditions for each of the four different list price strategies.

#### [Insert Table 2 – The Effect of the Purchase Price Paid by Seller]

Looking first at the final sale price (Panel A of Table 2), we see that when the list price is HP, R and JB, there are no significant differences in the final sale price between the high and low purchase price conditions ( $p = .613$ ,  $p = .443$ , and  $p = .714$ , respectively). With a LP list price, the data does reveal that the final sale price is significantly higher in the high purchase price condition ( $p = .045$ ). However, when taken as a group, an ANOVA test does not reveal a significant effect of the initial purchase price on the final sale price ( $p = .640$ ).

When considering the seller's 1<sup>st</sup> counter-offer (Panel B of Table 2), a similar pattern emerges in the data. Specifically, there is no difference in the seller's 1<sup>st</sup> counter-offer when the list price is HP, R, or JB ( $p = .374$ ,  $p = .113$ , and  $p = .563$ , respectively). But, when the list price is LP, the seller's 1<sup>st</sup> counter-offer is marginally significantly higher in the high purchase price condition ( $p = .075$ ). Again, when examined across all list price strategies, an ANOVA test does not reveal a significant effect based on the initial purchase price ( $p = .174$ ).

Taken together, the data reveals that the manipulation of original purchase price seems to have had little impact on seller behavior and the negotiation outcome, which is summarized below:

**Result 1:** Conditional on the given list price strategy, the negotiation behavior of sellers and the final negotiation outcome is not impacted by whether the original purchase price paid by the seller is high (\$195,000) or low (\$185,000).

Because there was little difference in the negotiation behavior of sellers and the final price based on the original purchase price, there is little reason to expect the two original purchase price conditions to differentially interact with the four list price treatments. Thus, for the remainder of the analysis we pool the data from the high and low purchase price conditions.

## **5.2 The Effect of List Price Strategy on Negotiations**

Next we turn to the primary focus of the study, the effect of list price strategy. When comparing across list price strategies, we present and analyze the data from just the *first round* (which consists of only the subset of subjects who faced that given list price strategy in the first negotiating round), as well as the *aggregate* data (which consist of all subjects in the sample).

### **5.2.1 The Effect of List Price Strategy on Final Sale Price and Negotiation Outcome**

Figure 1 displays the average final sale price for each of the four list price strategies. For only the first round, the average final sale prices when the list price was HP, R, JB, and LP are \$193,288, \$189,763, \$187,617, and \$187,967, respectively. For the aggregate data, the average final sale prices when the list price was HP, R, JB, and LP are \$191,598, \$190,203, \$188,754, and \$188,490, respectively. The pattern that emerges is a strong and significant correlation between the list price and the final sale price; the lower the initial list price, the lower the final price. Specifically, a Jonckheere-Terpstra non-parametric test for ordered alternatives strongly rejects the null of equality in favor of the descending ordered alternative for both the first round ( $p = .003$ ) and aggregate data ( $p < .001$ ).

#### **[Insert Figure 1: Comparison of Final Sale Price by List Price Strategy]**

While the correlation between list price and final sale price is interesting, it is not fully indicative of how the list price strategy affects the final sale price. To better measure how the list price strategy impacts the final price, we calculate the *% discount*, which is the percentage difference between the list price and the final sale price. Table 3 compares the average % discount for each of the four list price strategies, in the first round and in the aggregate data. Considering only the first round, we see that the average % discount when the list prices are HP, R, JB, and LP are 3.94%, 5.12%, 5.72%, and 5.39%, respectively. While a Kruskal-Wallis test fails to reject the null of equality of these four samples ( $p = .309$ ), a pairwise comparison between the % discount when the list price is HP and JB using a Mann-Whitney test reveals a significant difference ( $p = .056$ ). Thus, in the first round, HP pricing yields the smallest % discount while JB pricing leads to the largest % discount.

#### **[Insert Table 3 – Effect of List Price Strategy on Negotiated Discount]**

When looking at the aggregate data, the corresponding average % discounts are 4.83%, 4.90%, 5.15%, and 5.13%, respectively. While it is still the case that HP pricing yields the smallest % discount and JB pricing yields the largest % discount, the range of the % discounts are much

smaller. Furthermore, the pairwise difference in the % discount between HP and JB is no longer significant. The data suggest that as subjects garner more experience with this negotiation process, the effect of list price strategy on the % discount is attenuated.

The main results of the effect of the list price strategy on the negotiation outcome are summarized as follows:

**Result 2a:** Lower list prices lead to lower final prices.

**Result 2b:** In the first round of negotiations, HP pricing leads to the smallest negotiated discount, while JB pricing leads to the largest negotiated discount.

**Result 2c:** Experience attenuates the impact of the list price strategy on the negotiated discount.

### 5.2.2 The Effect of List Price Strategy on Buyer Behavior

Because we observe all the intermediate steps within the negotiation process, we are able to also analyze how the list price strategy separately impacts the negotiation behavior of both the buyer and seller. We first examine the negotiation behavior of the buyer. Table 4 displays the average *buyer's initial offer* made to the seller (as a percentage of the list price) for both the first round and in the aggregate data.

#### [Insert Table 4 – Effect of List Price Strategy on Buyer's Initial Offer]

In Table 4, the average initial offer from the buyer in the first round when list prices are HP, R, JB, and LP are 90.95%, 80.64%, 88.14%, and 87.97%, respectively. A Kruskal-Wallis strongly rejects the null of equality of these four samples ( $p = .018$ ). In addition, Mann-Whitney pairwise comparisons reveal that the buyer's initial offer is significantly lower when the list price is R, compared to when it is HP, JB, and LP ( $p = .007$ ,  $p = .072$ ,  $p = .022$ , respectively). Furthermore, the buyer's initial offer is marginally higher with a HP list price compared to a JB list price ( $p = .096$ ). Overall, the data from the first round suggests buyers make the least aggressive initial offer with a HP list price, and the most aggressive offer with a R list price.

Looking next at the aggregate sample from Table 4, the corresponding initial offers from the buyer are 88.29%, 86.54%, 87.06%, and 88.02%, for HP, R, JB, and LP, respectively. In the aggregate data, the same general pattern emerges but its magnitude is somewhat muted. Namely, the buyer's initial offer is significantly lower when the list price is R compared to HP ( $p = .049$ ) and LP ( $p = .089$ ). Thus, even after some experience with the negotiation process, buyers continue to make the most aggressive offers with a R list price.

In addition to looking at the buyer's initial offer, we are able to analyze if the list price affects the buyer's counter-offer behavior throughout the entire negotiation process. Specifically, Figure 2 displays the sequence of the average buyer's counter-offer (as a % of the list price) for the first four offer/counter-offers.<sup>15</sup> As expected, buyer counter-offers increase throughout the negotiation process in all of the list price strategies. When comparing across the different list price strategy, we observe from Figure 2 that the effect from the list price strategy on the buyer's initial offer

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<sup>15</sup> We analyze only the first four offer/counter-offers because there are too few observations for any meaningful analysis after the 3<sup>rd</sup> counter-offer, since most negotiations ended in an agreement by that point in the process.

does not persist throughout subsequent buyer counter-offers. That is, for the 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> buyer counter-offers, there are no significant pairwise differences among any of the four different list price strategies. The data appear to suggest that the list price strategy has very little effect on the buyer's subsequent counter-offers throughout the negotiation process.

The main results regarding how the list price strategy affects the negotiation behavior of the buyer are summarized as follows:

**Result 3a:** In the first round of negotiations, R pricing leads to the most aggressive initial offers by buyers, while HP pricing leads to the least aggressive initial offers.

**Result 3b:** Even as subjects gain experience, R pricing continues to lead to the most aggressive initial offers by buyers, although the magnitude is smaller.

**Result 3c:** After the initial offer, the list price strategy has very little effect on the subsequent counter-offers made by the buyer. That is, the list price strategy does not persistently impact buyer behavior throughout the negotiation process.

### 5.2.3 The Effect of List Price Strategy on Seller Behavior

We next examine how the list price strategy affects the negotiation behavior of the seller. Table 5 displays the average seller's 1<sup>st</sup> counter-offer made back to the buyer (as a percentage of the list price) for both the first round and in the aggregate data. Initially considering only the first round of negotiations, Table 5 reveals that the average 1<sup>st</sup> counter-offer made by the seller when the list prices are HP, R, JB, and LP are 97.38%, 96.39%, 95.71%, and 94.93%, respectively. A Kruskal-Wallis test rejects the null hypothesis of equality across these four samples ( $p = .026$ ). Furthermore, a Jonckheere-Terpstra test strongly rejects the null of equality of these percentages in favor of the descending ordered alternative ( $p = .002$ ). Thus, the lower the list price, the lower the seller's 1<sup>st</sup> counter-offer.

#### [Insert Table 5 – Effect of List Price Strategy on Seller's 1<sup>st</sup> Counter-Offer]

Just as with buyers, when looking at the seller's 1<sup>st</sup> counter-offer in the aggregate data, a similar pattern emerges as in the first round, although it is less pronounced. Namely, when comparing across the four list price strategies, an ANOVA test strongly rejects the null of equality of the sample ( $p = .007$ ). In addition, a Jonckheere-Terpstra test strongly rejects the null of equality of these percentages in favor of the descending ordered alternative ( $p = .001$ ). Thus, consistent with the initial round results in the aggregate data, the lower the list price, the lower the seller's 1<sup>st</sup> counter-offer.

We next consider if, and to what extent, the list price strategy has a persistent effect on the negotiation behavior of sellers throughout the negotiation process. To do so, we examine the sequence of the first four average seller counter-offers across the four list price strategies. Figure 3 displays the relevant data. Unlike with buyers, the list price strategy does have a persistent effect throughout the negotiation process. Namely, HP pricing continues to result in the highest counter-offers, while JB pricing leads to the lowest counter-offers. The pairwise difference

between HP and JB is strongly significant for the 2<sup>nd</sup> ( $p = .002$ ), 3<sup>rd</sup> ( $p = .003$ ), and 4<sup>th</sup> ( $p = .037$ ) counter-offers made by the seller.

**[Insert Figure 3 – Sequence of Seller Counter-Offers by List Price Strategy]**

Unlike with buyers, when sellers make their 1<sup>st</sup> counter-offer it is in response to the initial offer made by the buyer, and the seller's 1<sup>st</sup> counter-offer may be impacted by the buyer's initial offer. Hence, variation in the seller's 1<sup>st</sup> counter-offer may be a result of variation in the buyer's initial counter-offer and not a response to different list price strategies. Said differently, it may be the case that across treatments, sellers are responding to the buyers' initial offer in a consistent way. If this was the case, then we would expect to see sellers' 1<sup>st</sup> counter-offers being a consistent amount relative to buyers' initial counter-offer across all treatments. To investigate this possibility, we look at the effect of each list price strategy on the seller's 1<sup>st</sup> counter-offer while controlling for the buyer's initial offer. Table 6 displays the results from a regression of sellers' 1<sup>st</sup> counter-offer on dummy variables representing each of the list price strategies (with R being the excluded variable) and the buyer's initial offer.

**[Insert Table 6 – Regression Analysis of Seller's 1<sup>st</sup> Counter-Offer]**

The first column of Table 6 displays the output from a regression of the seller's 1<sup>st</sup> counter-offer on dummies for each of the list price strategies without controlling for the buyer's initial offer. Consistent with the analysis above, we see a strong monotonic relation emerge; namely, HP pricing results in significantly higher 1<sup>st</sup> counter-offers compared to R ( $p = .022$ ), JB ( $p < .001$ ), and LP ( $p < .001$ ), while R pricing yields significantly higher 1<sup>st</sup> counter-offers compared to JB ( $p = .004$ ) and LP ( $p = .002$ ). The second column of Table 6 displays the regression output including the buyer's initial offer. We can see that the buyer's initial offer has a small but significant positive effect on the seller's 1<sup>st</sup> counter-offer; for every \$1,000 increase in the buyer's initial offer, the seller's 1<sup>st</sup> counter-offer increases by an average of \$62. However, even after controlling for the buyer's initial offer, list price strategy still significantly impacts the seller's 1<sup>st</sup> counter-offer; namely, all the coefficient estimates on the dummy variable have the same sign, similar magnitude, and remain significant.

The main results concerning the impact of list price strategies on the negotiation behavior of the seller are as follows:

**Result 4a:** In the first negotiation, there is a strong correlation between the seller's 1<sup>st</sup> counter-offer and the list price; the lower the list price, the lower the seller's counter-offer.

**Result 4b:** As sellers gain experience with this negotiation process, lower list prices continue to result in lower relative 1<sup>st</sup> counter-offers, although the effect is less pronounced.

**Result 4c:** The effect of list price strategy continues to impact the sequence of seller counter-offers throughout the negotiation process; HP pricing always results in the highest counter-offers, while JB pricing results in the lowest counter-offers.

**Result 4d:** The buyer's initial offer has a small impact on the seller's 1<sup>st</sup> counter-offer. Yet even after controlling for the buyer's initial offer, the list price strategy continues to impact the seller's 1<sup>st</sup> counter-offer.

#### 5.2.4 The Effect of List Price Strategy on Length of Negotiation

While the final price is an important dimension along which to evaluate the outcome of a negotiation, another important dimension of the negotiation process is its length. Understanding how list price strategies impact the length of the negotiations can be especially important because drawn out negotiations and delays is often costly to both parties involved. For example, from the seller's perspective, an extensive literature exists that documents the importance of mitigating "time on the market" to spare sellers carrying costs (mortgage payments, hazard insurance, etc.). A similar argument can be made that a longer negotiation process can negatively impact buyers who expend search costs, extended stays in temporary housing, and so forth. Because we observe all the intermediate steps of the negotiation process, we are able to explore the relationship between the list price strategy and the *length* of the negotiation. As a proxy for the length of the negotiation process, we use the total number of offers made by both the buyer and seller prior to an agreement being reached, which we denote as *# of total offers*.<sup>16</sup>

Figure 4 compares the average # of total offers across the four list price strategies, for both the first negotiation and when aggregated. From Figure 4, we see that in the first negotiation, there is a strong relation between the list price and the # of total offers. When the list price is HP, an average of 7.06 offers are needed to reach an agreement, while this drops to 4.50 when the price is LP. Statistically, a Kruskal-Wallis strongly rejects the null of equality of these four samples ( $p = .008$ ). Furthermore, a Jonckheere-Terpstra test strongly rejects the null of equality of these percentages in favor of the descending ordered alternative ( $p = .001$ ).

#### [Insert Figure 4 – Comparison of Total Number of Offers by List Price Strategy]

As has been the case with much of the other analyses, the effect of the list price strategy on the length of negotiation is attenuated when looking at the aggregated data when subjects gain negotiation experience. Specifically, in the aggregate data, R pricing leads to the highest average number of total offers at 8.10, while LP pricing continues to result in the least number of offers at 7.22 (this difference is marginally significant  $p = .086$ ). Although the spread within the number of offers is much narrower across the treatments, a Jonckheere-Terpstra test still rejects the null of equality of these percentages in favor of the descending ordered alternative ( $p = .045$ ), which provides some evidence that lower list prices do lead to shorter negotiations.

The main findings on how the list price strategy impacts negotiation length are summarized as follows:

**Result 5a:** In the first negotiation, the lower the initial list price, the shorter the negotiation process (significantly fewer counter-offers are needed to reach an agreement).

**Result 5b:** In the aggregate data, as subjects gain negotiating experience, the effect of list price strategy on negotiation length is diminished.

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<sup>16</sup> Another measure of the length of the negotiation process would be the actual time required to reach an agreement. However, as a by-product of the experimental software, we are unable to measure time to an agreement for each negotiation pair. However, it is likely that the number of total offers needed to reach an agreement is strongly positively correlated with time, since it takes time to construct counter-offers.

### 5.3 The Effect of Gender

We now explore if, and to what extent, gender of the negotiating parties acts to mediate the main treatment effects of list price strategy on negotiation behavior.<sup>17</sup> Figure 5 segments initial offers by gender of the buyer. The result is a similar “U-shaped” pattern for both male and female buyers. Namely, initial offers are relatively high when the price is HP, drop to their lowest level when the price is R, and then increase again when the price is JB and LP. An ANOVA test does not reveal a significant effect of gender ( $p = .144$ ). However, this effect is more pronounced in males, and appears to be driven by the fact that males react more than females when the list price is LP, in the form of significantly higher average initial offers ( $p = .064$ ).

#### [Insert Figure 5 – Buyer’s Initial Offer by Gender and List Price]

With regard to the gender effect of the seller, Figure 6 similarly compares the seller’s 1<sup>st</sup> counter-offer, segmented by gender. For sellers, an ANOVA test reveals a significant effect of gender on the 1<sup>st</sup> counter-offer ( $p = .001$ ). Similar to buyer behavior, this seems to be primarily driven by the differential responses by male and female sellers to a LP list price. Compared to JB pricing, male sellers increase their 1<sup>st</sup> counter-offer when the list price is LP, while female sellers decrease their 1<sup>st</sup> counter-offer. Furthermore, male sellers’ 1<sup>st</sup> counter-offer with a LP list price is 2% higher than that of female sellers, and this difference is significantly higher ( $p = .004$ ).

#### [Insert Figure 6 – Sellers’ 1<sup>st</sup> Counter-Offer by Gender and List Price]

Taken together, the effect of gender can be summarized as follows:

**Result 6a:** Male and female buyers exhibit a similar pattern of initial offers across the different list price strategies, with males making marginally higher initial offers when the list price is LP.

**Result 6b:** Male and female sellers exhibit a partially differential response to the list price strategy, with males making significantly higher counter-offers when the list price is LP.

### 5.4 The Effect of Prior Negotiating Experience

It is likely that subjects come into the experiment with differing levels of prior negotiating experience. This level of experience may impact how subjects react to the various list price strategies. To explore this possibility, we collect information on each subject’s prior negotiating experience via a post-experiment questionnaire. The question on which we construct our measure of negotiating experience asks subjects to report how many times in the last year they purchased an item where they negotiated the final price. We then stratify the sample into two groups based on their answer: (i) *low experience* – those subjects who reported having purchased

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<sup>17</sup> We focus on possible gender difference for two main reasons. Firstly, it is easily observable in the lab. Secondly, and more importantly, there is a mature body of literature that has documented gender differences in negotiations. In lieu of citing individual studies, we refer interested readers to the following studies that provide comprehensive, although not exhaustive, views of the literature: Seagraves & Gallimore (2013) who discuss the role of gender specifically in real estate negotiations, Walters et al. (1998), Kray & Thompson (2004), and Bowles et al. (2007) who discuss gender differences in negotiations more generally, and Croson & Gneezy (2009), and Niederle & Vesterlund (2011) who review the role of gender in competition.



zero goods where they negotiated the price, and (ii) high experience – those subjects who reported having purchased five or more items where they negotiated the price.<sup>18</sup>

Looking first at buyer behavior, Figure 7 compares the buyer's initial offer across the list price strategies, parsed by negotiating experience of the buyer. As one might expect, Figure 7 shows that prior negotiating experience attenuates the effect of the list price strategy. In particular, buyers with more experience show much less variation in their initial offers to the different list prices. This effect is the most pronounced when comparing the initial offer associated with the list prices HP and R. Low experience subjects offer 88.75% when the list price is HP and 85.12% when the list price is R, while the corresponding values for the high experience buyers are 86.88% and 86.12%. Thus, the data suggest that buyers with less experience are likely to react more, in the sense of making a lower initial offer when facing an R list price.

**[Insert Figure 7 – Buyers' Initial Offer by Negotiating Experience and List Price]**

Looking next at seller behavior, Figure 8 compares the seller's 1<sup>st</sup> counter-offer across the list price strategies, segmented by negotiating experience of the seller. Consistent with expectations, sellers with more negotiating experience display much less reaction in their 1<sup>st</sup> counter-offers. Furthermore, sellers with higher levels of experience make more aggressive 1<sup>st</sup> counter-offers, regardless of the list price strategy. However, for both low and high experience sellers, there is a consistent pattern in the effect of the list price. Namely, lower list prices tend to result in lower 1<sup>st</sup> counter-offers by the seller, a response that is stronger for the lesser experienced sellers.

**[Insert Figure 8 – Sellers' 1<sup>st</sup> Counter-Offer by Negotiating Experience and List Price]**

The general findings regarding the effect of prior negotiation experience by the negotiating parties on the impact of list prices and negotiation behavior is summarized as follows:

**Result 7:** For both buyers and sellers, higher levels of prior negotiating experience attenuates, although not eliminates, the effect list price strategies have on initial offers and counter-offers.

## **6 Discussion**

When examining the effect of list price strategy on final sale price, our results indicate that HP pricing leads to the smallest negotiated discount, while JB pricing leads to the largest negotiated discount. In the first negotiating round, the average discount is 3.94% for HP pricing and 5.72% for JB pricing, while in the aggregate data, the corresponding average discounts are 4.83% and 5.13%. Our results regarding the effect of list price strategies on negotiated discounts are consistent, both in terms of direction and order of magnitude of the difference, with those found in Beracha & Seiler (2014) using empirical transactions data. From the seller's perspective, we

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<sup>18</sup> This stratification roughly results in the low experience subjects representing the lowest tercile and the high experience subjects representing the highest tercile. If we instead stratify the sample based on the median, the results are qualitatively similar, although not quantitatively as robust. In addition, we also asked subjects whether or not they had purchased an item on Craigslist (a secondary market website where transactions are most often negotiated at the time of sale), and a question of whether they had ever purchased a car (another asset where negotiation is common). If we stratify the sample into low and high experience based on whether they answered affirmatively to either of these questions, the results are also qualitatively very similar.

find that HP pricing leads to the highest final sale price. This finding differs from Beracha & Seiler (2014) who conclude that JB pricing leads to the highest final prices. While there appears to be an inconsistency in the findings across the studies, the differing results can be reconciled when taking into account the role of housing values. Specifically, in our design there is no variation in home values, thus higher final sale prices associated with HP pricing follows from the fact that the HP list price was the highest and HP pricing leads to the smallest negotiated discounts. However, in the transactions data used by Beracha and Seiler, the authors find that JB pricing is associated with the greatest degree of over-pricing. Hence, this over-pricing outweighs the larger negotiated discounts associated with JB pricing, which nets greater proceeds for the seller. Our findings suggest the list price strategy that maximizes the seller's net proceeds will depend on the extent of over-pricing associated with JB pricing. JB pricing will be preferred when the property is over-priced, whereas HP pricing will be optimal when the list price is set closer to the true value.

Because of our ability to observe all the intermediate steps within the negotiation process, we are able to identify how the list price strategy separately impacts the negotiation behavior of buyers and sellers, which allows us to shed light on *why* different list price strategies may impact the outcome of negotiations. What we find is that buyers and sellers appear to be differentially impacted by the list price strategy. Specifically, buyers are impacted the most by R pricing, in the form of making significantly lower initial offers. However, as the negotiation process continues, list price has very little effect on subsequent buyer counter-offers. Conversely, sellers are most impacted by HP and JB pricing, in the form of making higher initial counter-offers with HP pricing and lower initial counter-offers with JB pricing. Furthermore, this effect persists in subsequent counter-offers by the seller throughout the negotiation process. Taken together, the results indicate that observed differences in the outcome of the negotiation based on the list price strategy is likely attributed, in large part, to changes in the negotiation behavior of sellers.

Another pattern that emerges from our data is the persistent difference in the negotiation process between the HP and LP list pricing. In particular, we find that HP pricing leads to a higher final sale price, a lower negotiated discount, and higher seller counter-offers compared to LP pricing. Our results suggest that the *position* of the precise price may matter. Conditional on the seller choosing a precise price, setting a precise price that falls *just above* the corresponding rounded price may yield a higher price than choosing a precise price *just below* the rounded price. However, our results also indicate that a LP list price results in a significantly shorter negotiation, compared to a HP list price. Thus, sellers who are concerned about prolonging time-on-the-market may opt for a LP list price because the benefit of a quick negotiation/sale with the buyer may outweigh the disadvantage of a lower final sale price.

Throughout the analysis, a consistent result is that any observed effects of the list price strategy in the first negotiation round data are attenuated in the aggregate data across all negotiating rounds. Alternatively stated, as buyers and sellers gain negotiating experience, the impact of the list price strategy is weakened. This muting effect is further confirmed when we incorporate self-reported measures of negotiating experience. Specifically, when we stratify buyers and sellers based on their negotiating experience in other markets and analyzed the effect of list price

strategy, we observe that buyers and sellers who report being more experienced negotiators show less variation in their counter-offers. That said, while negotiating experience did mitigate the impact of list price strategy, it did not eliminate it. An important implication of this result is that we may expect the effect of list price strategy to be stronger in real estate transactions by individuals, where the negotiating parties are likely to have less experience. Yet, even when the transaction is being brokered by experienced real estate agents, list price strategy may still impact the negotiation process, although to a lesser extent.

## 7 Conclusion

Buying a home is one of the most financially significant transactions a person will ever make. One of the key decisions involved in selling a house is choosing the initial list price, from which negotiations will typically commence. Given the order of magnitude of house prices, even small percentage changes in the final sale price can translate into sizable absolute dollar amounts. Therefore, it is important for the seller to choose a list price that will maximize the final sale price. To this end, it is imperative to first understand how listing price strategies impact the negotiation process and, ultimately, the outcome of the negotiation.

The main motivation of this study is to use an innovative experimental approach to investigate the effect of three commonly implemented list price strategies – *Rounded*, *Just Below*, and *Precise* – on housing negotiations. Within the experiment, subjects engage in a stylized, bilateral housing negotiation between a buyer and seller. We then systematically vary the initial list price strategy across treatments, while holding the other features of the negotiating process constant. This enables us to identify the effect of these list price strategies on the negotiation behavior of buyers and sellers, as well as the outcome of the negotiation.

Our results indicate that the list price strategy plays an important role in the negotiations. In terms of the negotiation outcome, we find that a high precise list price (a precise price that is just above the rounded price) results in the highest final sale price. In terms of the negotiated discount (percentage difference between list price and final sale price), we find that high precise pricing leads to the smallest discount, while just below pricing leads to the largest discount. With regards to the negotiation behavior of buyers and sellers, our results indicate that the list price strategy impacts buyers and seller differently. Buyers make the lowest initial offer when facing a rounded list price, but this effect dissipates in the buyer's subsequent counter-offers throughout the negotiation. For sellers, just below pricing results in the lowest 1<sup>st</sup> counter-offers (and is robust to controlling for the buyer's initial offer) and persists throughout the negotiation process. Lastly, we find that negotiating experience tends to attenuate the above mentioned effects of the list price strategy, although not always eliminating the effect entirely.

Our paper is not the first to examine the question of how list prices impact real estate transactions (see Allen & Dare, 2004; Palmon et al., 2004; and Beracha & Seiler, 2014). Instead, we are the first to explore the question of how list prices affect negotiations. By implementing a controlled experiment, our approach benefits from the ability to draw causal inference regarding the effect of list price strategies on real estate negotiations, while circumventing several plausible sources of bias associated with inferences drawn from transactions-based data (e.g., systematic

selection of the list price strategy based on seller's negotiating style/ability and/or unobservable housing quality). Therefore, we view this study as an important and necessary complement to the extant empirical literature aimed at advancing our understanding of how list prices impact real estate negotiations. In this paper, our new experimental results, along with the prior empirical findings documented in Beracha & Seiler (2014), combine to provide a clearer and more robust understanding of how list price strategies impact the real estate negotiation process.

When selecting a list price strategy, sellers (or their agents) may be basing their decision on additional indirect factors other than how the list price will affect the final price directly. For example, the choice of list price may impact the demand for the property, via search patterns of buyers (Seiler et al. 2012), which could then indirectly impact the final sale price. Relatedly, the choice of list price may contain signaling value (e.g., about the value of property, the seller's negotiating tendencies, the seller's reservation, or the seller's motivation to sell), which could also indirectly impact the final sale price. While beyond the scope of the current study, these issues of how list price strategies affect housing transactions through these indirect channels are interesting and important, and certainly warrant future research. In this paper, we focus very specifically on causally identifying how various list price strategies directly impact negotiation behavior and the resulting final sale price. Our results suggest that the type of list price can impact the magnitude of the negotiated discount, the final sale price, and the length of the negotiation process.

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**Table 1 – Parameter Value Combinations by Treatment***Panel A: High Purchase Price (domain of potential perceived losses for seller)*

List Price Strategy	$p_l$	$v$	$r$	$p_{0h}$
Rounded (R)	\$200,000	\$205,000	\$180,000	\$195,000
Just Below (JB)	\$199,000	\$205,000	\$179,000	\$195,000
Low Precise (LP)	\$198,674	\$205,000	\$178,674	\$195,000
High Precise (HP)	\$201,326	\$205,000	\$181,326	\$195,000

*Panel B: Low Purchase Price (domain of potential perceived gains for seller)*

List Price Strategy	$p_l$	$v$	$r$	$p_{0l}$
Rounded (R)	\$200,000	\$205,000	\$180,000	\$185,000
Just Below (JB)	\$199,000	\$205,000	\$179,000	\$185,000
Low Precise (LP)	\$198,674	\$205,000	\$178,674	\$185,000
High Precise (HP)	\$201,326	\$205,000	\$181,326	\$185,000

Notes: This table summarizes the parameter values for each of the 8 treatments that comprise our experimental design. Panel A corresponds to the high purchase price condition where the initial purchase price, denoted as  $p_{0h}$ , is \$195,000, while Panel B corresponds to the low purchase price condition where the initial purchase price, denoted as  $p_{0l}$ , is set to \$185,000.  $p_l$  denotes the list price and its four different values correspond to the four list price strategies we consider in the design.  $v$  and  $r$  denote the buyer's and seller's reservations values, respectively in each of the treatments.

**Table 2 – The Effect of the Purchase Price Paid by Seller**

<i>Panel A – Final Sale Price</i>		<u>List Price Strategy</u>			
<u>Initial Purchase Price</u>	High Precise (\$201,326)	Rounded (\$200,000)	Just Below (\$199,000)	Low Precise (\$198,674)	
High Purchase Price (\$195,000)	191,384	190,307	188,312	189,754	
Low Purchase Price (\$185,000)	191,766	190,125	189,081	187,561	
<i>p</i> -value	(0.613)	(0.443)	(0.714)	(0.045)**	

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<i>Panel B – Seller's 1<sup>st</sup> Counter-Offer</i>					
<u>Initial Purchase Price</u>	High Precise (\$201, 326)	Rounded (\$200,000)	Just Below (\$199,000)	Low Precise (\$198,674)	
High Purchase Price (\$195,000)	197,574	196,307	193,873	194,554	
Low Purchase Price (\$185,000)	197,248	195,176	194,069	192,691	
<i>p</i> -value	(0.374)	(0.113)	(0.563)	(0.075)*	

Notes: Panel A compares the final sale price of the house across the two different initial purchase price conditions, and Panel B compares the seller's 1<sup>st</sup> counter-offer across the two different initial price conditions. Reported p-values are from a t-test of the pairwise comparison across initial purchase price conditions for a given list price strategy. All the results are robust if a Mann-Whitney U-test is used.

**Table 3 – Effect of List Price Strategy on Negotiated Discount**

List Price Strategy	% Discount	
	Aggregate	First Round
High Precise (HP)	4.83%	3.94%
Rounded (R)	4.90%	5.12%
Just Below (JB)	5.15%	5.72%
Low Precise (LP)	5.13%	5.39%
Treatment Effects ( <i>p</i> -values in parentheses)		
Comparison of Means	(0.863)	(0.309)
Trend Test	(0.208)	(0.076)*
HP vs R	(0.882)	(0.261)
HP vs JB	(0.494)	(0.056)*
HP vs LP	(0.521)	(0.152)
R vs JB	(0.579)	(0.579)
R vs LP	(0.611)	(0.895)
JB vs LP	(0.953)	(0.772)

Notes: This table compares the average negotiated discount (as a % of the initial list price) across the four list price strategies, aggregated over both initial purchase price conditions. The *aggregate* data comprises the data from all subjects over all four negotiating rounds, while the *first round* data comprises only the subset of subjects who faced the corresponding list price strategy in the first round of negotiations. Reported *p*-values for the comparison of means are from an ANOVA test for the aggregate data and a Kruskal-Wallis test for the first round data. Reported *p*-values for the trend test are from a Jonckheere-Terpstra test. Reported *p*-values for the pairwise comparisons are from a *t*-test for the aggregate data and a Mann-Whitney U-test for the first round data.

**Table 4 – Effect of List Price Strategy on Buyers’ Initial Offer**

List Price Strategy	Buyers’ Avg. Initial Offer (% of List Price)	
	Aggregate	First Round
High Precise (HP)	88.29%	90.95%
Rounded (R)	86.54%	80.64%
Just Below (JB)	87.06%	88.14%
Low Precise (LP)	88.02%	87.97%
Treatment Effects (p-values in parentheses)		
Comparison of Means	(0.348)	(0.018)**
Trend Test	(0.258)	(0.897)
HP vs R	(0.049)**	(0.007)***
HP vs JB	(0.195)	(0.096)*
HP vs LP	(0.406)	(0.501)
R vs JB	(0.221)	(0.072)*
R vs LP	(0.089)*	(0.022)**
JB vs LP	(0.278)	(0.326)

Notes: This table compares the average initial offer for buyers (as a % of the initial list price) across the four list price strategies, aggregated over both initial purchase price conditions. The *aggregate* data comprises the data from all subjects over all four negotiating rounds, while the *first round* data comprises only the subset of subjects who faced the corresponding list price strategy in the first round of negotiations. Reported p-values for the comparison of means are from an ANOVA test for the aggregate data and a Kruskal-Wallis test for the first round data. Reported p-values for the trend test are from a Jonckheere-Terpstra test. Reported p-values for the pairwise comparisons are from a t-test for the aggregate data and a Mann-Whitney U-test for the first round data.

**Table 5 – Effect of List Price Strategy on Sellers’ 1<sup>st</sup> Counter-Offer**

List Price Strategy	Sellers’ Avg. 1 <sup>st</sup> Counter-offer (% of List Price)	
	Aggregate	First Round
High Precise (HP)	98.15%	97.38%
Rounded (R)	97.54%	96.39%
Just Below (JB)	96.94%	95.71%
Low Precise (LP)	96.90%	94.63%
Treatment Effects (p-values in parentheses)		
Comparison of Means	(0.007)***	(0.026)**
Trend Test	(0.001)***	(0.002)***
HP vs R	(0.041)**	(0.207)
HP vs JB	(0.002)***	(0.052)*
HP vs LP	(0.002)***	(0.004)***
R vs JB	(0.074)*	(0.792)
R vs LP	(0.075)*	(0.063)*
JB vs LP	(0.467)	(0.238)

Notes: This table compares the average 1<sup>st</sup> counter-offer for sellers (as a % of the initial list price) across the four list price strategies, aggregated over both initial purchase price conditions. The *aggregate* data comprises the data from all subjects over all four negotiating rounds, while the *first round* data comprises only the subset of subjects who faced the corresponding list price strategy in the first round of negotiations. Reported p-values for the comparison of means are from an ANOVA test for the aggregate data and a Kruskal-Wallis test for the first round data. Reported p-values for the trend test are from a Jonckheere-Terpstra test. Reported p-values for the pairwise comparisons are from a t-test for the aggregate data and a Mann-Whitney U-test for the first round data.

**Table 6 – Regression Analysis of Sellers’ 1<sup>st</sup> Counter-Offer**

	Seller’s 1 <sup>st</sup> Counter-Offer	
	(1)	(2)
HP	2046.77** (886.37)	1713.85** (879.693)
JB	-2652.91*** (897.70)	-2581.25*** (882.81)
LP	-2993.63*** (929.39)	-2998.93*** (913.58)
Buyer’s Initial Offer		.062*** (.022)
Constant	195451*** (664.78)	184689.6*** (3975.51)

Notes: Column (1) reports the results of an OLS regression of the seller’s 1<sup>st</sup> counter-offer on dummy variables for each of the list price strategies (with R as the excluded variable). Column (2) reports the results of an OLS regression of the seller’s 1<sup>st</sup> counter-offer on dummy variables for each of the list price strategies (with R as the excluded variable) and the buyer’s initial offer. Standard errors are reported in parenthesis.

$p < .01$  denoted by \*\*\*;  $p < .05$  denoted by \*\*

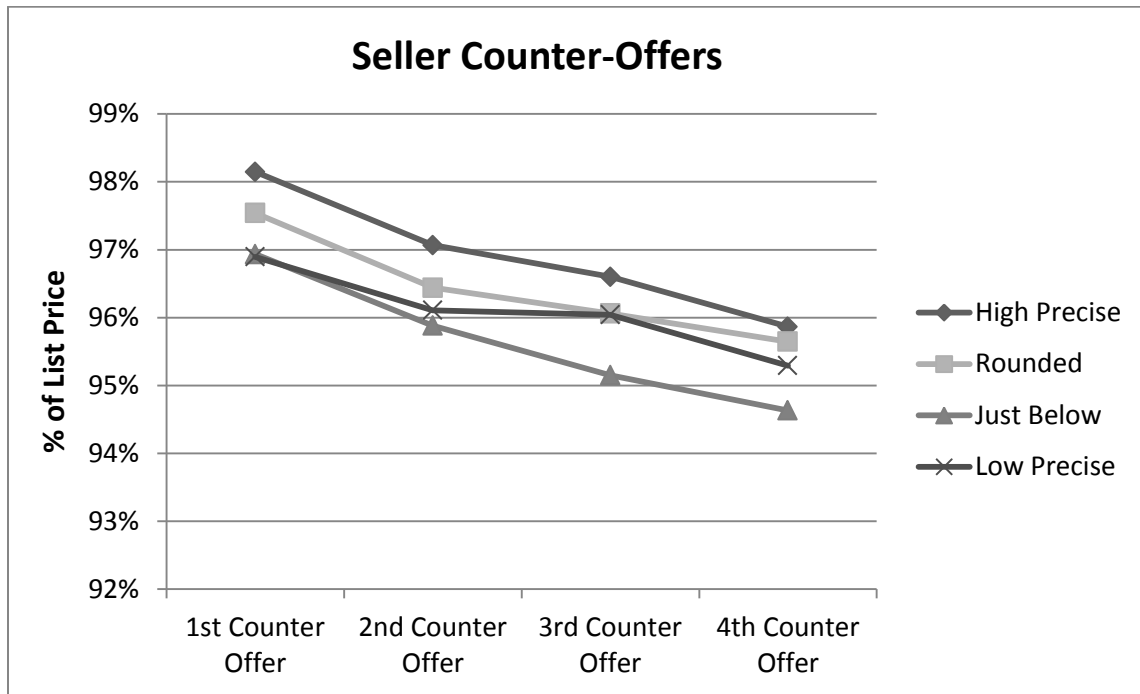
**Figure 1 – Comparison of Final Sale Price by List Price Strategy**



**Figure 2 – Sequence of Buyer Offers by List Price Strategy**



**Figure 3 – Sequence of Seller Counter-Offers by List Price Strategy**



**Figure 4 – Comparison of # of Total Offers by List Price Strategy**





**Figure 5 – Buyers' Initial Offer by Gender and List Price**



**Figure 6 – Sellers' 1<sup>st</sup> Counter-Offer by Gender and List Price**



**Figure 7 – Buyers' Initial Offer by Negotiation Experience and List Price**



**Figure 8 – Sellers' 1<sup>st</sup> Counter-Offer by Negotiation Experience and List Price**



## Appendix: Copy of Experimental Instructions

### EXPERIMENTAL INSTRUCTIONS

PLAYER ROLE: **HOME BUYER**

#### NEGOTIATION TASK:

You have been randomly assigned to assume the role of: **HOME BUYER**. As the home buyer, you are interested in purchasing a fictitious house that is for sale. Once the experiment begins, you will be randomly paired with another participant in the lab, designated to the role of **SELLER**, who is interested in selling a house to you. Your payment in the negotiation task will be based on whether you are able to buy the house from the seller, and at what price you are able to buy the house.

Once you have been paired with the seller, you will receive the following information about this house you are trying to buy: (i) the *list price* at which the house is for sale, and (ii) your *reservation value* for the house, which is equivalent to the maximum price you would be willing to pay for the house.

After you receive the information about the house, you will begin the negotiation process by deciding whether to purchase the home at the list price, or negotiate with the seller by making a counter-offer. If you purchase at the list price, then you buy the house at the list price and the negotiation ends.

If you decide to make a counter-offer, then the seller will have two options: (i) accept your counter-offer, or (ii) continue negotiating with you. If the seller accepts your counter-offer, then you will buy the house at this accepted price and the negotiation ends. If the seller continues negotiating, then the seller will make a counter-offer price back to you.

This alternating process of making price offers back and forth between you and the seller will continue until one of the following two things happens:

- i) Either you or the seller accepts the price offered by the other party.
- ii) You and the seller have negotiated for the maximum allowable time of **3 minutes** without either you or the seller accepting the price offer of the other party. If you and the seller have not reached an agreement on the price within 3 minutes, the negotiation will end, you will not buy the house, and you will not earn any money.

#### EARNINGS FROM THE NEGOTIATION:

In the negotiation task, we will be using experimental currency dollars (ECDs), and all prices, offers, counter-offers, and earnings throughout the experiment will be displayed in terms of ECDs. At the end of the experiment, your earnings in ECDs will be converted into dollars at a rate of: **\$1000 ECD = \$1**.

Your earnings from the negotiation with the seller will depend on the following two possible outcomes of the negotiation:

- i) **You buy the house:** Your earnings (in ECDs) will be:  $\$(\text{your reservation value} \text{ minus accepted price})$
- ii) **You do not buy the house:** Your earnings (in ECDs) will be: **\$0**

## MULTIPLE ROUNDS AND RANDOM RE-MATCHING:

You will be participating in this negotiation task a total of **4 times**. **In each of the 4 rounds of negotiations, you will be randomly re-matched with a different seller.** That is, the seller you will be paired with will be different in each round. Additionally, in each round, the house's list price, and your reservation value may be different. However, your earnings in each of the rounds will be determined in the same way as described above. An Experimenter will announce the conclusion of each negotiation round. At the start of each round, the information about the new house you are potentially buying will be displayed, so **look at this information carefully** before you begin.

## PROCEDURE AND COMPUTER INTERFACE:

All of your decisions in each of the 4 rounds of the negotiation task will be made through the computer. At the beginning of each round, you will see a screen that displays your reservation value for the house, and the house's list price. Below is an example of what you will see:

You are about to proceed with the first round of negotiations

Your reservation value for the house in this round is: **\$255000**

The list price of the house in this round is: **\$250000**

On the next screen, the negotiation with the seller will begin. You will have 3 minutes to potentially reach a price agreement with the seller

If you purchase the house: your earnings for this round will be the difference between your value for the house and the price you paid

If you do not purchase the house: your earnings for this round will be zero

Please click the CONTINUE button below when you are ready to proceed

Each time the seller continues negotiating the price, you will see a screen that displays the seller's counter-offer. On this same screen, you will choose whether to accept the seller's counter-offer or continuing negotiating. To accept the seller's counter-offer, you will click the ACCEPT button on the lower left. To continue negotiating, you will enter your counter-offer into the box on the lower right and click the SUBMIT button. **When you are making your counter-offer, you only need to enter the numeric value of the offer (do not enter a dollar sign or any commas). For example if you wanted to make a counter-offer of \$180,000, you would enter: 180000.** Below is an example of what you will see if the seller continues negotiating with you:

List price: \$250000  
Your reservation value: \$255000

**THE SELLER HAS CHOSEN TO CONTINUE NEGOTIATING**  
The seller has made a counter offer price of: \$245000

Please choose whether to accept the seller's counter offer, or continue negotiating the price with the seller  
Please make your decision below:

**ACCEPT COUNTER OFFER**

To accept the seller's counter offer of: \$245000,  
please click the ACCEPT button below

**CONTINUE NEGOTIATING WITH SELLER**

To continue negotiating with the seller, please enter your  
counter offer into the empty field below and hit the SUBMIT  
button:

Counter Offer (to the nearest dollar):

You and the seller will each have a maximum of **30 seconds** to decide to accept the current counter-offer or continue negotiating. A time counter is provided in the upper right corner of the screen for your reference. As the buyer, accepting a price that is *higher* than your reservation value would result in you making negative earnings; while not buying the house would result in zero earnings. Therefore, you will not be allowed to accept any counter-offers from the seller that are more than your reservation value. Similarly, your counter-offers to the seller must be less than or equal to your reservation value. After the negotiation round ends, you will see a summary screen that displays the outcome of the negotiation and the amount of earnings you generated from that round of negotiations.

**EXAMPLE NEGOTIATIONS:**

Here are some example negotiations to help show how your earnings are determined:

**Example 1** – You receive the following information about the house:

List Price: \$250,000  
Your reservation value: \$255,000

Suppose you do not pay the list price and you make a counter-offer of \$242,500. If the seller accepts your counter-offer:

You would receive earnings (in ECDs) of:  $\$255,000 - \$242,500 = \$12,500$

**Example 2** – You receive the following information about the house:

List Price: \$195,000

Your reservation value: \$200,000

Suppose you did not pay the list price and you made a counter-offer of \$170,500. The seller did not accept this counter-offer and made a counter-offer back to you of \$185,000. If you then accepted the seller's counter-offer:

You would receive earnings (in ECDs) of:  $\$200,000 - \$185,000 = \$15,000$

### **QUESTIONNAIRE:**

After completing the 4 rounds of negotiations, you will be asked to complete a short questionnaire, which will take about 5 minutes to complete. Your answers to the questions are confidential and will not be shared with any other participants. Furthermore, your answers to the questions will not impact your experimental earnings.

### **FINAL PAYMENT:**

Your total experimental earnings will be determined as follows: You will receive \$5 for showing up and participating in the experiment. In addition, you will be paid your negotiation earnings from 1 of the 4 randomly selected negotiation rounds, which will be converted into dollars at a rate of \$1,000 ECDs = \$1. As an example, if you made \$12,000 ECDs in round 2 and that round was selected for payment, then your total earnings would be:  $\$5 + \$12 = \$17$ .

After you have finished the decision task and the questionnaire, you will see a final summary screen that lists the outcome of each of the negotiation rounds, your corresponding earnings (in ECDs) for that round, and what your final payment will be if that round is selected for payment. An Experimenter will come to your carrel where you will roll a 4-sided die to determine which negotiation round you will be paid for. You will then be paid your total earnings that correspond to the round that was selected from the outcome of your die roll. Please remain quietly seated until the Experimenter reaches your carrel. Once you have received your payment, please quietly exit the lab.

**Thank you for your cooperation and participation!**

## EXPERIMENTAL INSTRUCTIONS

PLAYER ROLE: **HOME OWNER**

### NEGOTIATION TASK:

You have been randomly assigned to assume the role of: **HOME OWNER**. As the home owner, you have been endowed with a fictitious house that is for sale. Once the experiment begins, you will be randomly paired with another participant in the lab, designated to the role of **BUYER**, who is interested in purchasing the house from you. Your payment in the negotiation task will be based on whether you are able to sell the house to the buyer, and at what price you are able to sell the house.

Once you have been paired with the potential buyer, you will receive the following information about the house you are selling: (i) the *list price* at which the house is for sale, (ii) the *original purchase price* that you paid for the home, and (iii) your *reservation value* for the house, which is equivalent to the minimum price you would be willing to sell the house for.

After you receive the information about the house, the buyer will begin the negotiation process by deciding whether to purchase the home at the list price, or make you a counter-offer. If the buyer chooses to purchase at the list price, then you sell the house at the list price and the negotiation ends.

If the buyer decides to make you a counter-offer, then you will have two options: (i) you may accept the buyer's counter-offer, or (ii) you may continue negotiating with the buyer. If you accept the counter-offer, then you will sell the house at this accepted price and the negotiation ends. If you continue negotiating, then you will make a counter-offer back to the buyer.

This alternating process of making offers back and forth between you and the buyer will continue until one of the following two things happens:

- i) Either you or the buyer accepts the price offered by the other party.
- ii) You and the buyer have negotiated for the maximum allowable time of **3 minutes** without either you or the buyer accepting the offer of the other party. If you and the buyer have not reached an agreement on the price within 3 minutes, the negotiation will end, you will not sell the house, and you will not earn any money.

### EARNINGS FROM THE NEGOTIATION:

In the negotiation task, we will be using experimental currency dollars (ECDs), and all prices, counter-offers, and earnings throughout the experiment will be displayed in terms of ECDs. At the end of the experiment, your earnings in ECDs will be converted into dollars at a rate of: **\$1000 ECD = \$1**.

Your earnings from the negotiation with the buyer will depend on the following two possible outcomes of the negotiation:

- i) **You sell the house:** Your earnings (in ECDs) will be:  $\$(\text{accepted price} \text{ minus your reservation value})$
- ii) **You do not sell the house:** Your earnings (in ECDs) will be:  $\$0$

## MULTIPLE ROUNDS AND RANDOM RE-MATCHING:

You will be participating in this negotiation task a total of **4 times**. **In each of the 4 rounds of negotiations, you will be randomly re-matched with a different buyer.** That is, the potential buyer you will be paired with will be different in each round. Additionally, in each round, the house's list price, the original purchase price, and your reservation value may be different. However, your earnings in each of the rounds will be determined in the same way as described above. An Experimenter will announce the conclusion of each negotiation round. At the start of each round, the information about the new house you are selling will be displayed, so **look at this information carefully before you begin.**

## PROCEDURE AND COMPUTER INTERFACE:

All of your decisions in each of the 4 rounds of the negotiation task will be made through the computer. At the beginning of each round, you will see a screen that displays the original price you paid for the house, your reservation value, and the house's list price. Below is an example of what you will see:

You are about to proceed with the first round of negotiations

The price you originally paid for the house is: **\$240000**

Your reservation value for the house in this round is: **\$230000**

The list price of the house in this round is: **\$250000**

On the next screen, the negotiation with the buyer will begin. You will have 3 minutes to potentially reach a price agreement with the buyer.

If you sell the house: your earnings for this round will be the difference between the sale price and your reservation value for the house.

If you do not sell the house: then your earnings for this round will be zero.

Please click the CONTINUE button below when you are ready to proceed

Each time the buyer continues negotiating the price, you will see a screen that displays the buyer's counter-offer. On this same screen, you will choose whether to accept the buyer's counter-offer or continuing negotiating. To accept the buyer's counter-offer, you will click the ACCEPT button on the lower left. To continue negotiating, you will enter your counter-offer into the box on the lower right and click the SUBMIT button. **When you are making your counter-offer, you only need to enter the numeric**



value of the offer (do not enter a dollar sign or any commas). For example if you wanted to make a counter-offer of \$180,000, you would enter: 180000. Below is an example of what you will see if the buyer continues negotiating with you:

Original purchase price: \$240000  
List price: \$250000  
Your reservation value: \$230000

**THE BUYER HAS CHOSEN TO NEGOTIATE**

The buyer has made a counter offer price of: **\$242000**

Please choose whether to accept the buyer's counter offer, or continue negotiating the price with the buyer  
Please make your decision below:

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**ACCEPT COUNTER OFFER**

To accept the buyer's counter offer of: **\$242000**,  
please click the ACCEPT button below

**CONTINUE NEGOTIATING WITH BUYER**

To continue negotiating with the buyer, please enter your  
counter offer into the empty field below and hit the SUBMIT  
button:

Counter Offer (to the nearest dollar):

You and the buyer will each have a maximum of **30 seconds** to decide to accept the current counter-offer or continue negotiating. A time counter is provided in the upper right corner of the screen for your reference. As the home owner, accepting a price that is *lower* than your reservation value would result in you making negative earnings; while not selling the house would result in zero earnings. Therefore, you will not be allowed to accept any counter-offers from the buyer that are less than your reservation value. Similarly, your counter-offers to the buyer must be greater than or equal to your reservation value. After the negotiation round ends, you will see a summary screen that displays the outcome of the negotiation and the amount of earnings you generated from that round of negotiations.

**EXAMPLE NEGOTIATIONS:**

Here are some example negotiations to help show how your earnings are determined:

**Example 1** – You receive the following information about the house:

Original Purchase Price: \$240,000  
List Price: \$250,000  
Your reservation value: \$230,000

Suppose the buyer did not pay the list price and made you a counter-offer of **\$242,500**. If you were to accept the buyer's counter-offer:

You would receive earnings (in ECDs) of:  $\$242,500 - \$230,000 = \$12,500$

**Example 2** – You receive the following information about the house:

Original Purchase Price: **\$190,000**

List Price: **\$195,000**

Your reservation value: **\$175,000**

Suppose the buyer did not pay the list price and made you a counter-offer of **\$170,500**. You did not accept this counter-offer (because it is less than your reservation value) and made a counter-offer of **\$185,000** back to the buyer. If the buyer accepted your counter-offer:

You would receive earnings (in ECDs) of:  $\$185,000 - \$175,000 = \$10,000$

### **QUESTIONNAIRE:**

After completing the 4 rounds of negotiations, you will be asked to complete a short questionnaire, which will take about 5 minutes to complete. Your answers to the questions are confidential and will not be shared with any other participants. Furthermore, your answers to the questions will not impact your experimental earnings.

### **FINAL PAYMENT:**

Your total experimental earnings will be determined as follows: You will receive \$5 for showing up and participating in the experiment. In addition, you will be paid your negotiation earnings from 1 of the 4 randomly selected negotiation rounds, which will be converted into dollars at a rate of \$1,000 ECDs = \$1. As an example, if you made \$12,000 ECDs in round 2 and that round was selected for payment, then your total earnings would be:  $\$5 + \$12 = \$17$ .

After you have finished the decision task and the questionnaire, you will see a final summary screen that lists the outcome of each of the negotiation rounds, your corresponding earnings (in ECDs) for that round, and what your final payment will be if that round is selected for payment. An Experimenter will come to your carrel where you will roll a 4-sided die to determine which negotiation round you will be paid for. You will then be paid your total earnings that correspond to the round that was selected from the outcome of your die roll. Please remain quietly seated until the Experimenter reaches your carrel. Once you have received your payment, please quietly exit the lab.

**Thank you for your cooperation and participation!**