Deal or No Deal? How Round vs. Precise Percentage Offers and Price-Ending Mimicry Affect Impasse Risk in Over 25 Million eBay Negotiations

[Brief Report: 3,903 words, Abstract: 200 words]

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Abstract

Negotiations can end with a successful deal or with an impasse. To minimize the impasse risk, how assertive and precise should negotiators' first offers be? Recent studies diverge in their findings as to the advantages and disadvantages of making round vs. precise offers. Based on over 25 million eBay negotiations, the present research establishes correlational evidence that buyer offers at round percentages of the seller's list price—for instance, exactly 50% (75%, 90%, etc.)—coincide with a markedly smaller impasse risk than offers just above (e.g., 50.1%) or just below (49.9%) these round percentages. We also find that buyers who mimic sellers' list price precision (e.g., offering $89.95 for a product listed at $99.99) and exact price endings ($30.13 for a list price of $40.13) incur markedly smaller impasse risks. Our findings show that the effectiveness of buyers' round vs. precise offers depends on the roundness of the seller's list price, therefore extending previous research that focused on offer precision without taking the opponent's list price into account. Multiple robustness checks—examining negotiators' experience, price levels, product demand, etc.—corroborate the reported findings. We discuss promising avenues for future research on the interpersonal effects of offer precision and price-ending mimicry.

Keywords: negotiation; offer; impasses; numeric precision; mimicry

Introduction

Imagine you want to buy a phone on an online marketplace (e.g., eBay's Best Offer) that is listed at a 'round' price of $200.00 (i.e., four trailing zeros; Leib et al., 2021, 2022; Loschelder et al., 2017). This price seems a bit high and you decide an offer at around 80% of the seller's list price is appropriate. Now, which number maximizes your chances of reaching a deal? Do you offer exactly 80% of the list price ($160.00), slightly less than 80% (a "just-below" offer; e.g., $159.99 or $159.87), or slightly more than 80% (a "just-above" offer at $160.01 or $160.23)? Imagine another seller offers the same phone model in comparable condition for $199.99—one cent less, creating a 'precise' price (without trailing zeros; Lee et al., 2018). Which offer would this seller react to most positively? Do you offer a round $160.00 (i.e., just above 80% of the list price), or a precise $159.99 (just below 80%)? To our knowledge, no empirical studies have yet established how the magnitude and precision of buyers' offers compared to sellers' list prices (as well as their interplay) affect the chances of reaching an agreement vs. an impasse.

Interestingly, prior publications provide support for all the strategies outlined in the examples above—some favoring round offers, others favoring precise ones just below or just above the round number (see Figure 1). First, multiple studies support round offers ($160.00), because these are cognitively easier to calculate (Braithwaite & Siegler, 2018), mentally processed more fluently (Hines, 1990; Wadhwa & Zhang, 2015), perceived as more convenient and likable (Lynn et al., 2013; Wieseke et al., 2016), and lead to a feeling of completion, thereby increasing the likelihood of reaching an agreement (Yan & Pena-Marin, 2017). Related studies show that precise offers just below (e.g., $159.99 or $159.87) and just above the round value ($160.01 or $160.23) can increase the impasse risk because negotiators are perceived as more rigid, inflexible, and uncooperative (Lee at al., 2018). Additionally, the magnitude of just-below offers may be cognitively "rounded off" and underestimated (Bizer & Schindler,

2005; Strulov-Shlain, 2021), which may also foster impasses. In all, these studies predict a lower impasse risk of round compared to precise offers (Figure 1.2a).

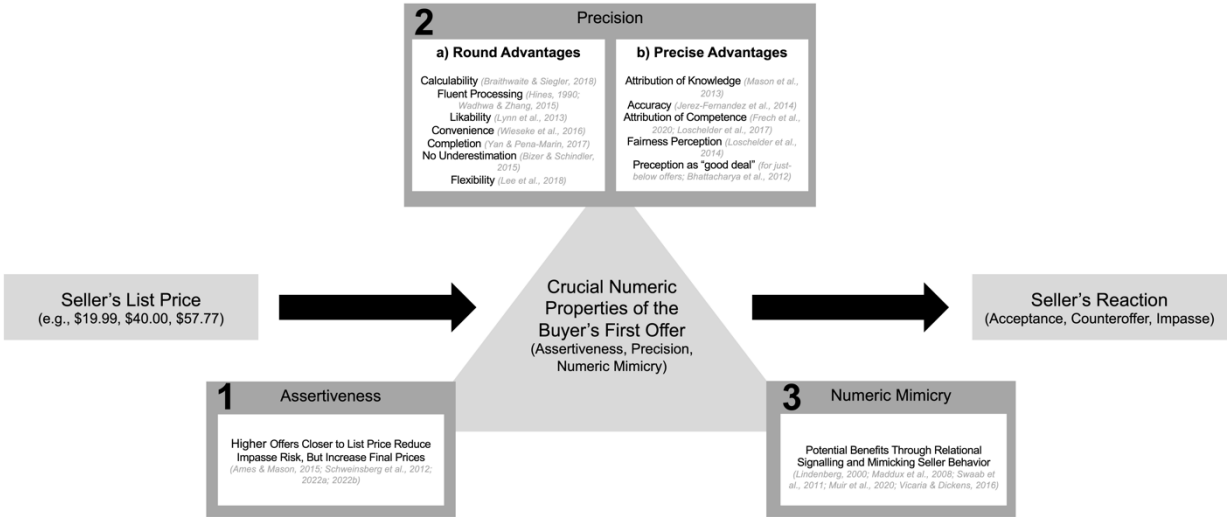
In stark contrast, other findings suggest the opposite: an advantage of precise offers (Figure 1.2b). Precise offers may foster agreements because negotiators are seen as more knowledgeable (Mason et al., 2013), accurate (Jerez-Fernandez et al., 2014), and competent (Frech et al., 2020; Loschelder et al., 2017). Precise offers are also psychologically perceived as fairer (Loschelder et al., 2014), which may facilitate agreements (De Bruyn & Bolton, 2008). Precise offers just above a round number could be particularly attractive as they favor offer recipients slightly (e.g., splitting 50.1%-49.9% and not 50-50). Furthermore, just-below offers (e.g., $159.99) could be psychologically perceived as "a good deal" (Bhattacharya et al., 2012; Guido & Peluso, 2004), and therefore lead to more agreements. In all, these latter studies predict a lower impasse risk for precise compared to round offers. As previous studies show conflicting results and suggest competing predictions on whether round or precise offers reduce the impasse risk more, an empirical investigation using large-scale data with real-world incentives seems warranted.

The conflicting evidence outlined above also points to another crucial gap in the literature—the interplay of sellers' initial list prices and buyers' first offers remains unexplored: Buyers' round vs. precise offers may elicit different effects depending on whether sellers themselves opened with a round vs. precise price. Precise offers tend to induce more precise counteroffers (Cardella & Seiler, 2016; Kimbrough et al., 2021), but it remains unclear how this 'mimicry' in turn affects impasse likelihood. Sellers asking for a round $200.00 might prefer a buyer also offering a round $160.00 over a precise $161.23; in contrast, sellers listing at $198.23 might prefer a buyer making an equally precise offer. Indeed, prior research on mimicry in negotiations shows that imitating the counterpart's behavior (Maddux et al., 2008) or speech (Swaab et al., 2011) can improve negotiation outcomes (Muir et al., 2020). Thus,

mimicking the seller's level of price precision (e.g., offering $89.95 for a $99.99 list price) or even mimicking the exact price ending ($30.13 for a $40.13 list price) could be a relational signal (Lindenberg, 2000) that elicits positive interpersonal perceptions (Vicaria & Dickens, 2016), thereby facilitating agreements.

Figure 1

Crucial Numeric Properties of the Buyer's First Offer



Note. In response to a seller's list price, buyers decide on a first offer with three crucial numeric properties: its (1) assertiveness, i.e., how high is the first offer, (2) precision, i.e., number of trailing zeros, and (3) numeric mimicry, i.e., does their offer mimic the seller's price precision or price ending (vs. no mimicry). Sellers then respond to the buyer's offer by accepting, making a counteroffer, or declining the offer, thereby ending the negotiation with an impasse.

Finally, offer magnitude should exert a crucial effect, as more assertive offers cause more impasses (Ames & Mason, 2015; Schweinsberg et al., 2012; 2022a; 2022b). The exact nature of this relation remains unclear, however: Certain offers might coincide with a reduced impasse risk, for instance, because they are mentally processed more fluently (e.g., 50% of the list price) than others (53% of the list price; see "prominent numbers", Converse & Dennis, 2018).

Analyzing real-world data from over 25 million incentivized eBay negotiations (Backus et al., 2020) with high variation in list prices and buyer offers allows us to capture relationships that might not be found in the laboratory with small(er) samples and much less variation in list

price and buyer offers (Strulov-Shlain, 2021; Zhang et al., 2021; Loschelder et al., 2019; Sparkman et al., 2020 for similar approaches). The present study has three goals: First, we examine the relationship between buyers' offer magnitude and impasse risk. Second, we study whether offers at round percentages of list prices (e.g., 80%) systematically coincide with impasse risks that are different from precise percentages just above (e.g., 80.01%, 80.1%, 80.49%) or just below (79.99%, 79.9%, 79.5%). Third, we extend the literature by examining the interplay of sellers' and buyers' precision (vs. roundness), and by investigating whether buyers mimicking sellers' precision or exact price endings coincides with reduced impasse risk.

Method

Data Set

We used the eBay Best Offer data set by Backus et al. (2020), featuring 28,203,943 unique buyer-seller negotiations for over 30 product categories (e.g., art, electronics, sporting goods). Sellers can list multiple items and determine prices, on which interested buyers can make an offer. Sellers can then accept, decline, or make a counteroffer. Negotiations end after a maximum of three rounds of (counter-)offers either in a negotiated agreement or with an impasse. Negotiations in which neither seller nor buyer accepted any (counter-)offer of the other party throughout the three rounds of the negotiation process are coded as impasses.

Data Set Preparation

The original data set consists of two files, one with product-related information and one with negotiation-related information. We merged and restructured both files using a MySQL database and conducted several robustness checks similar to those conducted by Backus et al. (2020) to remove invalid offers and data errors. Overall, we excluded 6.2% of all negotiations, resulting in a final data set of $N = 26{,}454{,}176$ unique negotiations for 18,751,993 unique

products across 34 product categories (see SOM for key summary statistics and details; https://osf.io/9yd5w/?view_only=0d6174e3fb9d4dbcb9d64d5dcd2bea76).

Offer Magnitude and Impasse Risk Variables

We created two new variables. First, a variable for buyers' offer magnitude that is standardized by sellers' list prices[1]:

$$Buyers'\ offer\ magnitude = \frac{buyers'\ first\ offer}{sellers'\ list\ price} \times 100\%$$

This offer magnitude variable ranges from 0% to 100%, with values closer to 100% indicating higher and therefore more conciliatory offers closer to sellers' initial list price. For example, a buyer's offer of $160.00 for a product listed at $200.00 represents an offer magnitude of 80%; a more assertive offer of only $130.00 results in an offer magnitude of only 65%.

Second, we computed impasse risk by dividing the total number of impasses in a given offer range by the total number of negotiations in this range. For example, out of N = 997,240 negotiations that buyers opened with an offer in the interval around 75% of the seller's list price (≥74.50% and <75.50%), 653,918 ended in an agreement, and 343,322 ended in an impasse. Hence, the impasse risk for 75% offers is 343,322 / 997,240 = 34.43%. This approach allows us to examine impasse risk as a function of buyers' offer magnitude and to explore local impasse risk optima (see Figure 2).

Analyses and Results

Local Impasse Risk Optima

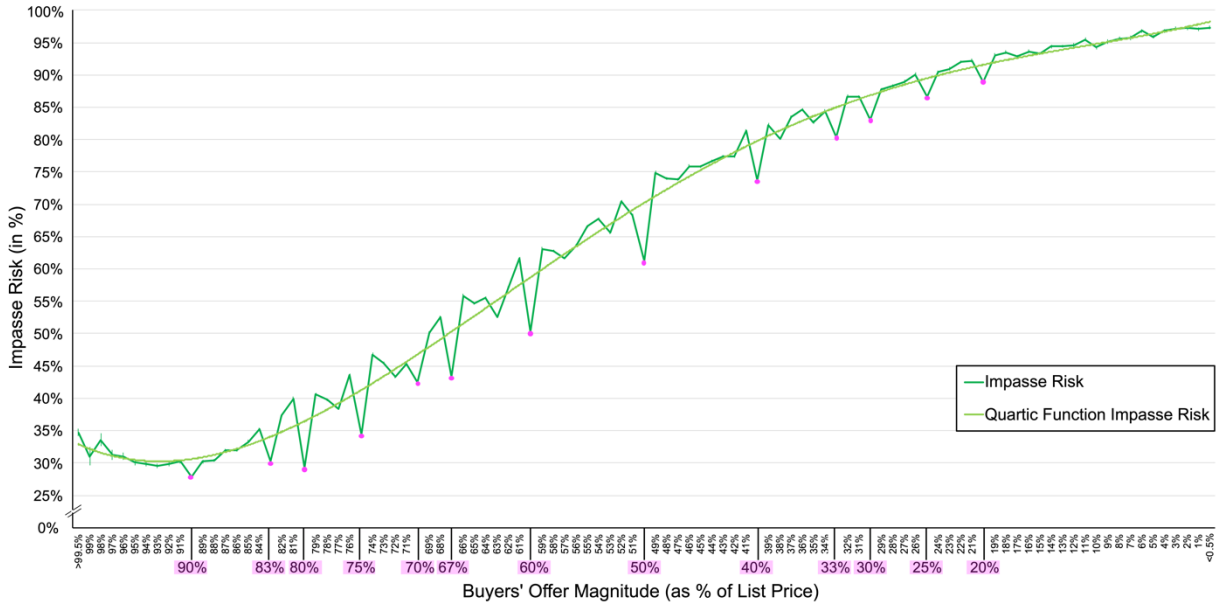
For our first analysis, we grouped all 26,454,176 negotiations according to buyers' offer magnitude in steps of 1% (e.g., offers ≥74.50% and <75.50% grouped as '75% offers') and

[1] In contrast to Backus et al. (2020), we deliberately focus on negotiators' *first* offers because it was our explicit research goal to examine how sellers' initial listing price and buyers' first offer jointly determine the likelihood of an agreement vs. impasse—particularly with respect to local impasse optima, precision mimicry, and price-ending mimicry.

plotted the corresponding impasse risk (Figure 2). Two key findings emerged—a nonlinear relationship of buyers' offer magnitude and impasse risk, as well as local impasse risk optima for certain offer percentages. The nonlinear relationship was best described by a quartic function (i.e., 4th order polynomial, R^2 = .988; for details see SOM and Schweinsberg et al., 2022a). Remarkably, certain offer percentages were characterized by particularly low impasse risks. Figure 2 shows a number of significant dips on the impasse risk curve (n = 13) below the quartic function (see pink dots); these local optima occurred for buyers' offer magnitudes of 90%, 83% (5/6), 80%, 75%, 70%, 67% (2/3), 60%, 50%, 40%, 33% (1/3), 30%, 25%, and 20% of sellers' list prices. The impasse risk dips are significantly different from the surrounding data points, as indicated by very narrow, non-overlapping error bars (see Knezevic, 2008). The general pattern persisted across 22 different robustness analyses (e.g., even vs. odd list prices, see SOM).

Figure 2

Impasse Risk as a Function of Buyers' Offer Magnitude



Note. More assertive offers from buyers (i.e., lower offer magnitude as % of list price, from left to right) are associated with higher impasse risks. This relationship is best described by a *quartic* function (4th order polynomial; light green line). Error bars represent conservative 99% CIs. The CIs are very short and, at times, barely visible. Local optima (dips) in impasse risk (n = 13) are emphasized as pink dots on the dark green line and highlighted in pink on the x-axis.

The local optima with markedly reduced impasse risks occurred for offers that constitute round and easily calculable percentages of the seller's initial list price (e.g., 90%, 80%, 75%). It would be premature, however, to conclude that this effect is driven by round numbers. Given that the 75% offer range in Figure 2 encompasses all offers from ≥74.50% to <75.50%, the local optima could be driven either by sellers preferring easily calculable offers at exactly round percentages (i.e., $75.00 is exactly 75% of a $100.00 list price), or—in stark contrast—by sellers' systematically preferring precise percentages just below (e.g., $74.99 or $74.87) or just above (e.g., $75.01 or $75.23; see Figure 1.2a/b for competing predictions). To examine these hypotheses, we conducted more granular analyses of these 13 dips in impasse risk—contrasting round vs. just-below vs. just-above offers. To explore the interplay of sellers' and buyers' respective offer precision (and to test the robustness of our findings), we conducted these analyses as a function of sellers' (a) even vs. (b) odd list prices. Given that sellers used even list prices more frequently for higher-priced listings (*Md* = $110.00, *SD* = 421.37) than odd list prices (*Md* = $39.99, *SD* = 233.20), we separately analyzed even and odd list prices to eliminate a (potentially) confounding factor.

Even List Price – Which Offers Drive the Impasse Risk Optima?

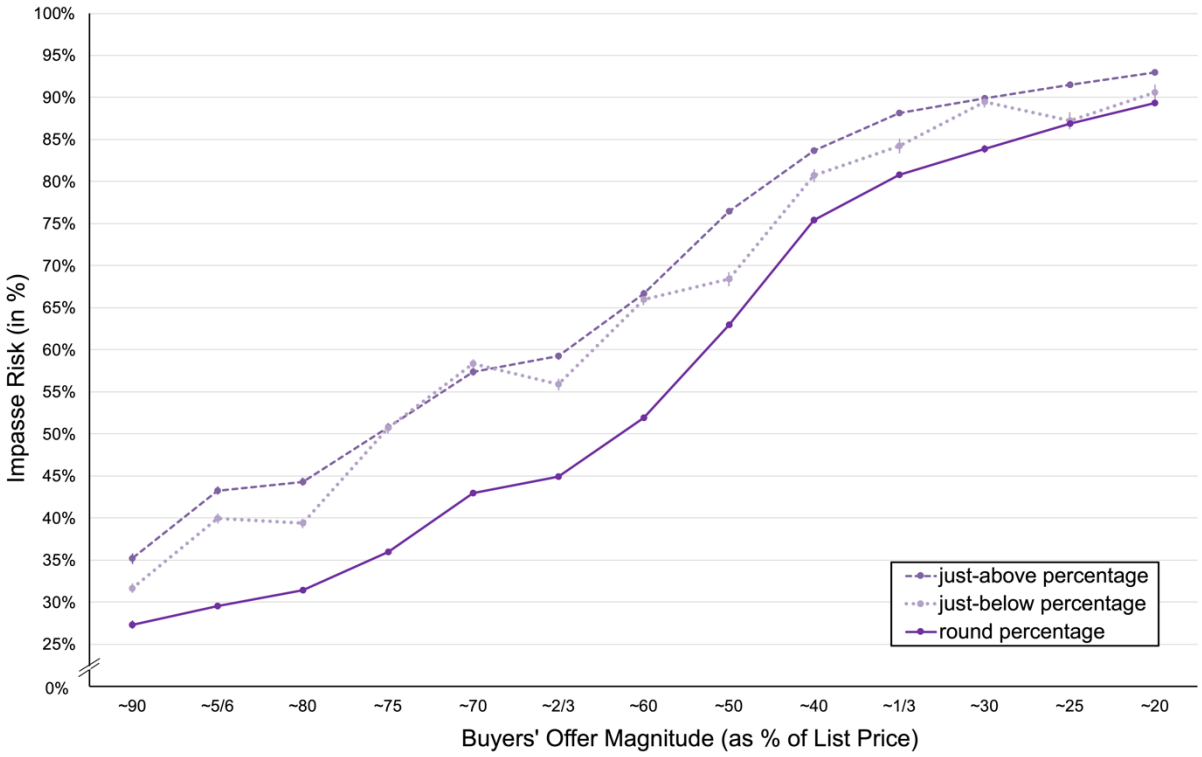
For even list prices (i.e., cent values divisible by two), local impasse risk optima can emerge because buyers make offers (a) just below, (b) just above, or (c) at exactly round percentages of the list price.[2] By definition, round percentages are only possible for even list prices that are divisible by two without residuals. The resulting sample of even list prices with buyer offers around the impasse risk dips (i.e., pink dots in Figure 2) consisted of *N* = 4,269,778 negotiations.

[2] For the local impasse optima at 83%, 67%, and 33%, it is plausible that the dips likely occur around 5/6 (83.33%), 2/3 (66.67%), and 1/3 (33.33%) of the list price. We therefore coded these easily calculable percentages of 83.33% (i.e., $100 offer for a $120 listing), 66.67% (i.e., $80 offer for a $120 listing) and 33.33% (i.e., $40 offer for a $120 listing) as "round" percentages, and compared them to offers just below and just above.

Figure 3 shows that offers at round, easily calculable percentages of the list price coincided with reduced impasse risks. For all 13 local optima, the impasse risk was uniformly lower for round compared to just-below and just-above percentages (with one exception at 25%). These differences were highly significant, as established by non-overlapping error bars (Knezevic, 2008). The error bars represent conservative 99% CIs, which are wider than usual 95% CIs. The round percentage advantage was stronger for moderate (90%–60%) than for more assertive buyers' offers (50%–20%). For moderate offers, round percentages reduced the impasse risk by 12.20 percentage points; for more assertive offers, they reduced the impasse risk by only 5.39 percentage points. This pattern persisted across 26 robustness analyses, e.g., when tightening the definition of just-below and just-above from ±0.5% to ±0.1%, when only including round list prices in steps of $10, $5, or $1, when differentiating between immediate and delayed negotiation outcomes (Backus et al., 2020), and when controlling for demand, negotiators' experience, or country of residence (see SOM for all analyses). The pattern also persisted when excluding all round list prices with two or more trailing zeros (e.g., $80.00, $79.00). In all, the robustness analyses indicate that the effects are not limited to round list prices ($100.00) and round buyer offers ($80.00) and are therefore not driven solely by numeric roundness (see Figure S3E, SOM).

Figure 3

Impasse Risk for Even List Prices as a Function of Buyers' (a) Round, (b) Just-Below, and (c) Just-Above Offer Percentages



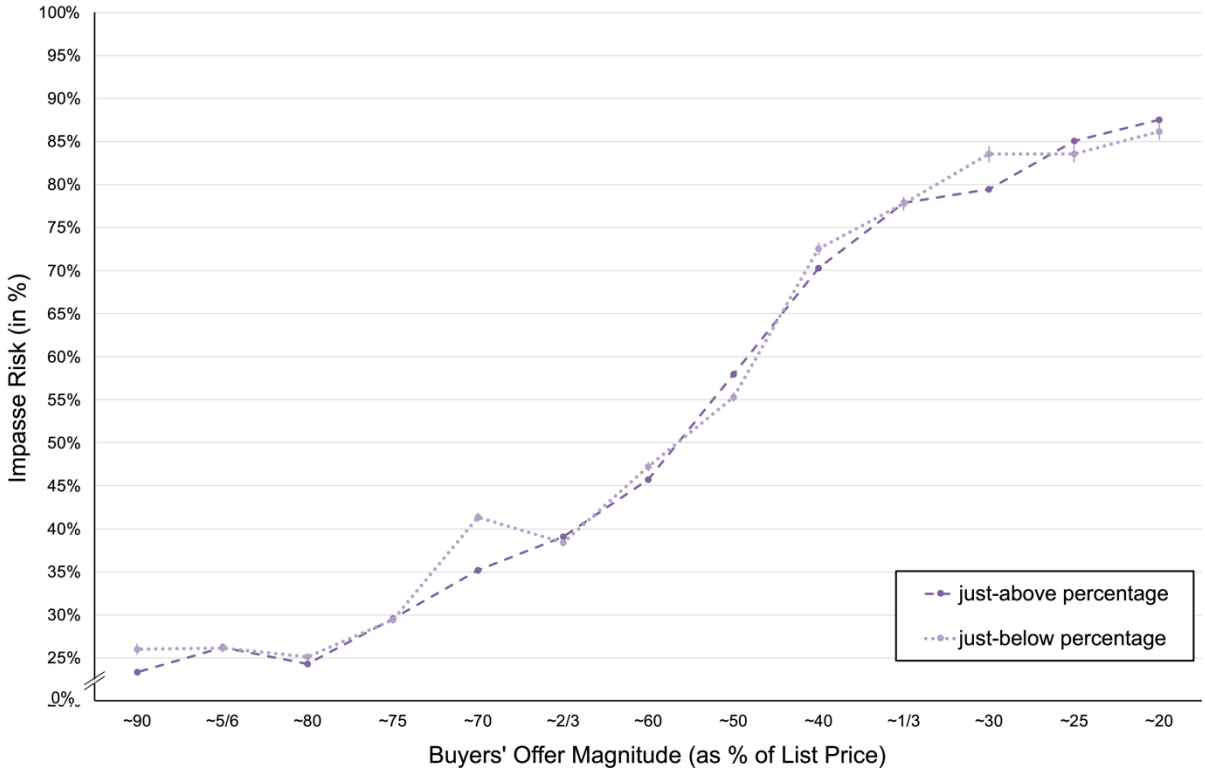
Note. Buyers' first offers at round percentages of sellers' list prices (solid line) coincided with markedly lower impasse risks than precise offers just above (dashed line; +0.5%) and just below (dotted line; −0.5%) these round percentages. Error bars represent conservative 99% CIs and are at times very short and barely visible. The visualized differences in impasse risks are highly significant, as indicated by non-overlapping error bars (with one exception for 25% offers).

Odd List Prices – Which Offers Drive the Impasse Risk Optima?

For odd list prices (i.e., ending with odd cent amounts, e.g., $99.99, $50.01, $24.95), buyers (mostly) cannot make round percentage offers. For example, one cannot offer exactly 50.00% of $99.99. Hence, buyers who want to offer approximately 50% of the list price have to decide whether to offer just above or just below 50%. The analysis of all odd list prices with offers around the local optima (N = 4,843,640 negotiations) showed that neither just-above nor just-below percentage offers coincided with consistently lower impasse risks (Figure 4). This null finding persisted across 21 robustness analyses (see SOM).

Figure 4

Impasse Risk for Odd List Prices as a Function of Buyers' Just-Below vs. Just-Above Offers



Note. Buyers' offers just above (dashed line; +0.5%) and just below (dotted line; −0.5%) round percentages of list prices coincided with similar impasse risks. No consistent superiority of just-below or just-above percentage offers emerged. Error bars represent 99% CIs and are very short and barely visible.

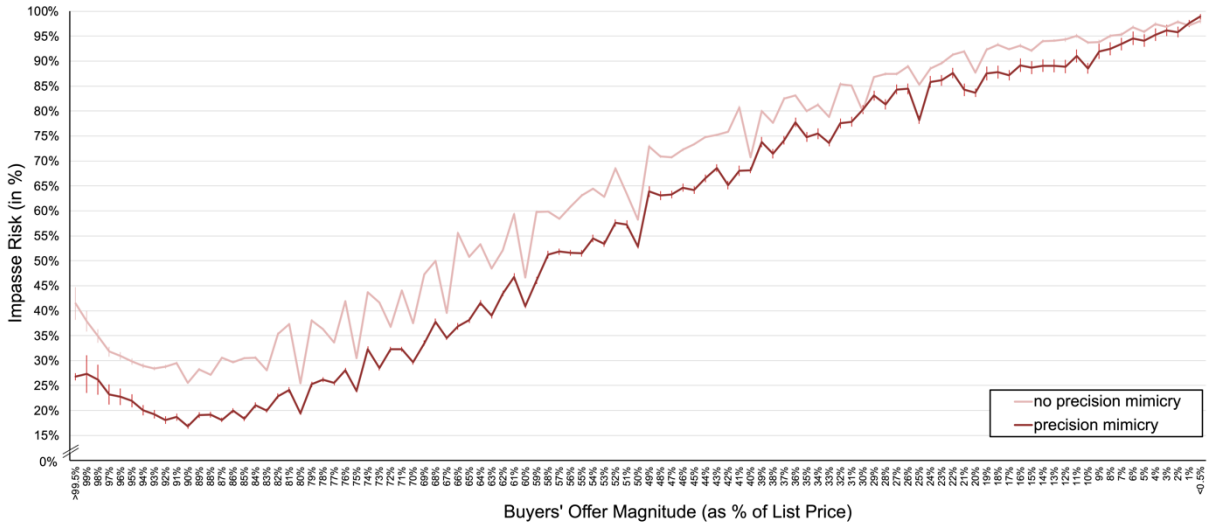
Mimicking Price Precision and Price Endings

Finally, we analyzed two mimicry effects—price-precision mimicry (e.g., offering $89.95 for a $99.99 list price) and price-ending mimicry (e.g., offering $30.13 for a $40.13 list price). As a potential mimicry advantage is not limited to the 13 local optima, we included all precise list prices (i.e., without trailing zeros) across the full range of buyer offers (N = 13,415,662 negotiations). Figure 4 shows that price-precision mimicry coincides with lower impasse risk. Buyers who respond to a cent-precise list price (e.g., $99.99) with a cent-precise offer ($87.32)—thereby mimicking the precision level (i.e., same number of trailing digits unequal zero)—experienced a lower impasse risk than buyers who did not mimic sellers' precision (i.e., offers with more trailing zeros, e.g., $89.90, $90.00). On average, impasse risk

decreased by 7.49 percentage points for precision mimicry compared to no mimicry (Figure 5). This pattern persisted across 20 robustness analyses (see SOM).

Figure 5

Impasse Risk for Cent-Precise List Prices as a Function of Precision Mimicry



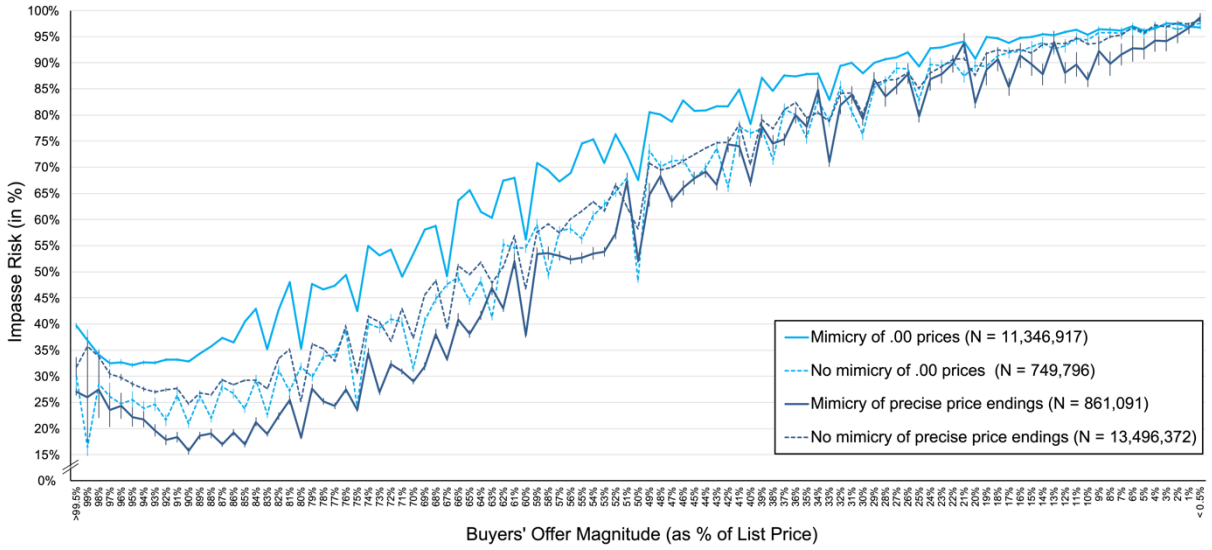
Note. Buyers who mimicked the precision level of sellers' list prices (dark red line) experienced lower impasse risks than buyers who did not mimic the precision level (light red line). Error bars represent 95% CIs. Differences are significant, as indicated by non-overlapping error bars (Knezevic, 2008).

Further expanding our understanding of mimicry effects, we assumed that not only mimicking the number of precise digits but also mimicking the exact price ending (e.g., $30.13 for a $40.13 list price) could reduce impasse risk. Indeed, price-ending mimicry was advantageous when sellers' price endings offered some degree of precision to be mimicked (i.e., at least one nonzero decimal digit; Figure 5, dark blue lines). The mean impasse risk decreased by 5.47 percentage points. For round list prices ending in "$.00" (see Figure 5, light blue lines), we found the opposite relationship—mimicking round prices coincided with a disadvantage. The mean impasse risk increased by 8.58 percentage points. In other words, negotiations with round list prices and precise buyer offers coincided with lower impasse risks[3]. This pattern persisted across 20 robustness analyses (see SOM).

[3] Please note that $.00 list price endings are more frequently used for high-price products with higher impasse risks, and that $.00 list price endings might coincide with fundamentally different impasse risks than precise list

Figure 6

Impasse Risks as a Function of (1) List Price Precision and (2) Price-Ending Mimicry



Note. When buyers exactly mimicked the cent-precise endings of sellers' list prices, they experienced markedly lower impasse risks (dark blue solid line) compared to not mimicking these price endings (dark blue dashed line). This mimicry advantage emerged whenever list prices offered some degree of precision to be mimicked. For round list prices (i.e., zeros as decimals), buyers who mimicked the $.00 ending encountered markedly higher impasse risks (light blue solid line) compared to no mimicry (light blue dashed line). At 95% CI, differences between mimicry and no-mimicry offers (solid and dashed lines of the same color) are generally significant as indicated by non-overlapping error bars.

Discussion

Our study provides novel insights on the interplay of seller list prices and buyer offers by analyzing agreements vs. impasses from over 25 million incentivized, real-world negotiations. We seek to expand the literature in three ways: First, we identified 13 dips in impasse risk (i.e., local optima) for round and easily calculable percentage offers at 90%, 83% (5/6), 80%, 75%, 70%, 67% (2/3), 60%, 50%, 40%, 33% (1/3), 30%, 25%, and 20% of sellers' initial list prices. Second, we established that these local impasse risk optima are primarily driven by offers that mark exactly round percentages of list prices (e.g., 90.00%), and not percentages just above (90.10%) or just below (89.90%). Third, we found that precision mimicry coincided with a

price endings (see Backus et al., 2019). Impasse risk comparisons in Figure 6 should therefore only be made between solid and dashed lines of the same color; we urge caution to make comparisons between light and dark blue lines.

reduced impasse risk. Buyer offers that (a) mimicked the precision of cent-precise list prices, or (b) mimicked the exact price ending of a cent-precise list price coincided with decreased impasse risk (7.49 and 5.47 percentage points respectively). All reported general patterns persisted across 109 robustness analyses (see SOM).

Theoretical and Empirical Contributions

Local Impasse Optima

Thirteen buyer offer percentages, which are easily calculable from sellers' list prices, were associated with particularly low impasse risks. We are not aware of prior research having identified such optima. Upon closer inspection, we found that offers at exactly round percentages of the list price (e.g., 80.00%) coincided with lower impasse risks than offers at percentages just below (79.99%) or just above (80.01%). This applies to 10 out of our 13 dips that are located at round percentages (i.e., 90%, 80%, 75%, 70%, 60%, 50%, 40%, 30%, 25%, 20%). The three remaining dips at 83%, 67%, and 33% were not driven by round percentage values (e.g., 83.00%), but rather by easily calculable fractions at 5/6 (e.g., $100 offer for a $120 listing), 2/3 ($80 for a $120 listing), and 1/3 ($40 for a $120 listing). The 13 impasse risk dips were not limited to round list prices (e.g., $100.00) but also occurred for cent-precise prices, for which round percentage offers are also numerically precise (e.g., $88.88).

Hence, the psychological mechanisms behind this effect cannot be solely explained by sellers' preferences for numerically round prices. Instead, our analyses suggest that sellers mentally process and evaluate buyer offers relative to their own list prices. For example, a buyer's offer of $50.00 is processed and evaluated more fluently for a list price of $100.00 (i.e., easily recognizable as half the list price) than for a list price of $96.00 (i.e., 52.08%). These novel findings underline the need for future research to further examine the interplay and underlying cognitive processes for round vs. precise list prices and buyer offers. Furthermore, list prices in the data set were highly heterogeneous (62,552 different prices) and

the 13 dips emerged over all 26,454,176 negotiations. This suggests that impasse risk dips occur when fractions are easy to calculate (e.g., 90% of $100.00 is easier to calculate than 90% of $99.90). For example, for a $75.00 list price, we would predict that impasse dips occur more likely at 80% [$60.00] compared to 75% [$56.25] or 70% [$52.50]. Further research is needed to verify this, as well as to understand whether the psychological mechanisms for processing offers at round percentages (e.g., 80%) of the list price are the same as for offers at 5/6, 2/3, or 1/3, and to compare the relative importance of round percentage offers vs. precision mimicry in influencing impasse risk (see also Table S3–S5, SOM).

Precision Mimicry and Price-Ending Mimicry Decrease Impasse Risk

We also found that offers mimicking sellers' precision and exact price endings coincide with reduced impasse risk. Previous work documented advantages of mimicking mannerisms and speech (Maddux et al., 2008; Swaab et al., 2011), but our work is the first to establish the mimicry of numeric precision and price endings. Interestingly, price-ending mimicry only reduced the impasse risk for precise list prices with one ($93.20) or no trailing zeros ($93.21). In contrast, mimicking $.00-ending prices had the exact opposite effect with *in*creased impasse risk. We propose two explanations for this pattern: First, making a round percentage offer (e.g., 90%) for a round list price (e.g., $49.00) often implies making a precise offer (e.g., 90% = $44.10). In turn, mimicking the exact price ending would oftentimes imply making a just-below or just-above percentage offer (e.g., $44.00 = 89.8%), which are associated with higher impasse risks. Second, almost half of the list prices in our data set end with $.00 ($N$ = 8,062,994; 43.00% of all listings), and almost 90% of all initial buyer offers also end with $.00 ($N$ = 23,174,440; 87.60% of all negotiations). Round $.00-offers are therefore extremely common, and sellers might not draw interpersonal inferences from 'normal' buyer behavior. On the other hand, sellers seem to draw interpersonal inferences when buyers behave counter-normatively by making odd and precise offers that mimic sellers' counter-normative list prices.

Mimicry should enhance perceived similarity, trust, and rapport in these situations (Maddux et al., 2008; Swaab et al., 2011), and buyers may intentionally use their own offers as behavioral signals and interpret sellers' list prices accordingly (see Backus et al., 2019).

Methodological and Applied Contributions

The present theoretical and empirical insights are enabled by analyzing millions of real-world negotiations, which is in line with recent calls for using data from unstructured negotiation settings (Jang et al., 2018; Karagözoğlu, 2019). Our approach is made possible by technical and methodological advances in big data analyses and the open science movement, through which researchers are able to analyze big public data sets from different perspectives (e.g., Backus et al., 2020; Keniston et al., 2021; Send & Serena, 2022). Following the open science movement, we make our code and extensive documentation publicly available to facilitate future projects by fellow scholars (see SOM).

Negotiation practitioners want to make assertive offers *while* minimizing their impasse risk. Our analyses of correlational data from over 25 million real-world negotiations suggest that, when a list price exists, buyers should carefully consider all numeric properties of the seller's price (e.g., assertiveness, price-ending, precision) when crafting their own first offer. If the list price is even, buyers may want to consider making offers at round, easily calculable, prominent percentages of sellers' list prices (i.e., 80.00%; Converse & Dennis, 2018). For odd list prices, for which round percentage offers are not possible, negotiators may want to consider mimicking either the precision level or the exact price ending of the list price. Our mimicry findings also extend the strategic possibilities for interpersonal signaling for different offers. Negotiators might want to both mimic price endings in their first offer and signal fairness (and elicit sympathy) by 'splitting the difference' with their subsequent offers (see Backus et al., 2020). For now, however, all of these recommendations should be treated with a certain degree of caution as causality can only be established in further experiments.

Limitations and Avenues for Future Work

Although this large-scale, real-world data set offers unique advantages, it also entails inevitable limitations. First, although our empirical results point to specific underlying mechanisms driving the local impasse risk optima, we cannot establish causality without additional experiments. These experiments should causally link round percentage offers, price-precision, and price-ending mimicry to lower impasse risk. Second, besides the reported robustness analyses, we could not account for certain factors external to this field data that may have influenced the findings. For instance, round percentage offers or price-ending mimicry may reduce impasse risks because buyers that use them share common character traits or cultural background that facilitate negotiation agreements (e.g., higher agreeableness or increased empathy; albeit our SOM robustness analyses contrasting U.S. and non-U.S. negotiators speak against this assumption). Nonetheless, laboratory experiments with random assignment should rule out this possibility and replicate the findings in more controlled (yet inevitably less realistic) environments. Such experiments could also investigate anchoring effects on sale price (Schweinsberg et al., 2022a) and examine other negotiation settings (e.g., face-to-face), where different psychological and communicative responses occur than in the present asynchronous, less direct online environment (Swaab et al., 2012; Bolton et al., 2003).

Conclusion

Analyses of over 25 million online negotiations identify 13 local impasse risk optima that occur when buyers make offers consisting of round (e.g., 90.00%) or easily calculable percentages (e.g., 5/6, 2/3) of sellers' list price. These local optima are driven by exactly round (90.00%), not by just-below (89.90%) or just-above percentages (90.10%) of sellers' list prices. Buyers who mimic sellers' precision levels (e.g., $89.95 for a $99.99 list price) or exact price endings ($30.13 for a price of $40.13) also encountered markedly reduced impasse risk.

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