Simple Solution, Low Time Cost

Simple Solution, High Time Cost

Difficult Solution

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| **Editor** | | **Responsible Author** |
| **Comment** | **Response/Action** |
| I believe **the figures need attention**. In Figure 6 the curve labelled continuous is a step function and the curve labelled discrete is smooth.  In contrast, in Figure 12 the curves are labeled the other way around. | The legend is reversed between Figure 6 and 12 because of general Murray-based-errors. | Murray  Matlab |
| With respect to Figure 16, I found it **difficult to evaluate the quality of the fit of the model to the data**, given that the scales of the y axes are so different.  It looks to me like **the price distributions for the model predictions sum to more than 1**. Am I reading Figure 16 correctly? | **Figure scale:** The reviewer is correct in that the price model predictions do not sum to 1.  Figure 16 isn’t a probability distribution, it’s a something else that I’ll need to check.  It might have been time pressure but I recall that this was not an easy/direct fix the first time around. | R/Matlab |
| “On the theoretical side, we developed a simple, novel adaptation of Prospect Theory that can account for bidding behaviour in Dutch Auction.” (p. 39).  **Placing your adaption of prospect theory in the context of past work** would help the reader appreciate this contribution. A google search of “prospect theory Dutch auctions” returns many hits. Is any of this work related to your extension of Prospect Theory? Or perhaps there are previous applications of prospect theory to other kinds of auctions that would be relevant. | Marc Adam has sent through some papers to review that include Dutch Auctions and Prospect Theory – Refer to these as a start | Murray  Literature Review |
| I would like to see an **R script (or equivalent) that takes in the raw subject data and produces the analyses, tables and any figures you include in the paper**. Having these R files will help people understand what you have done and increase the chances that they might replicate and build on your results. | Matlab scripts acceptable?  We have an R script for the Prospect Theory Model but everything else was Matlab. | Murray  Matlab/R |
| Given that a major contribution of your paper is the development of a “platform for testing competitive decision making in a simulated Dutch Auction.” (p. 31), I think it is important to **share the code for the experiment in the supplementary materials**. As is the case with the R scripts, making the platform code available would help someone who wants to build on what you have done. | Attach experiment scripts for Fast and Slow in both the Computer and Human conditions.  It would be worth writing a brief doc on how to run each of them  e.g. Nodejs, server access for human conditions. | Murray  Javascript/  NodeJS |
| It is not until the methods section that it became clear to me that these **experiments were not incentivized.** There are many researchers -- especially those in the fields of experimental economics and judgment a decision making -- that would stop reading as soon as they saw on page 13 that subjects only made hypothetical bids, rather than consequential ones.  To accommodate those researchers who believe that consequential incentives are essential, **please add to the abstract that the bids were hypothetical**. I’d also suggest adding a discussion about hypothetical rewards in auction settings. Is there a literature suggesting that behavior in hypothetical auctions reflects behavior in real auctions? | Add “bids were hypothetical” to abstract. | Murray  Overleaf |
| For **future experiments** you might consider comparatively inexpensive ways of **including financial incentives**.  For example, by selecting a few trials from the experiment to be paid out. Even though only a few subjects would end up receiving payment, I believe lotteries like this would satisfy researchers who only pay attention to incentivized experiments. | Thank the reviewer for the feedback and acknowledge that this is a reasonable extension on the research but explain why we didn’t incentivise this time around, or direct reviewer to other comments that have addressed this point (e.g., the next comment) | Murray |
| On a related point about incentives, starting on p.32 you consider a number of differences between your experiment at that of Katok and Kwasnica (2008).  However, you don’t mention that one important difference is that Katok and Kwasnica’s (2008) subjects were financially incentivized: “Participants were paid their total individual earnings from the 21 auctions plus a $10 show-up fee at the end of the session“.  **Based on your reading of Katok and Kwasnica’s (2008) do you think that financial incentives night have changed your results in meaningful ways?** | Allocate introduction space to talk about why we don’t incentivise.  AND/OR  Allocate discussion space to talk about how the results might have changed with dollarydoos. | Ami, Marc, Murray  Overleaf |
| **Reviewer 1** | | **Responsible Author** |
| **Comment** | **Response** |
| Exposition needs to be improved | Exposition improved. | Murray |
| The **abstract misses describing the result of the competitor type** and refers to **price volatility which really is not clear** until you read the manuscript. | Include competitor type results  Clarify price volatility or change term | Murray |
| The introduction feels repetitive. It seems **like the basic mechanism of the auction is explained three or four times,** which is not necessary. | Revise/streamline Introduction | Murray |
| 1. I think it would be better to **spend more time setting up for the model which in general, I think should have played a more central role.** The adjective rudimentary is used a couple of times to describe it, but I didn't think it was that rudimentary and 2. I would have liked to have seen a **more extensive treatment with implications** - especially of the multiple player component of it drawn out more completely. | 1. Link with Editor’s comment to include more Prospect Theory – Dutch Auction literature 2. Discussion section model implications. Again, with the inclusion of more PT-DA content, content for implications of the model will naturally be extended. | Murray, Ami, Scott, Marc, Mark, Rachel |
| Also, while the aim of building a platform to study dutch auctions is laudable, for a journal like CRPI it seems that it would be better to **have the primary aim focused on the behavioural properties of the auctions and in particular the model not the instrumentation issues.** | Change the focus of the paper from the platform to the model. Fair but this might be a balancing act. The author wants experiment and analysis scripts included if we want the focus to be platform, which tells me he’s ok with it being a little bit “platform oriented”.  We have also received comments about developing the discussion and implications of the model, which, when addressed, I think will also be enough to resolve this comment.  I’m sure we can also limit/control discussion on the limitations of the instrumentation in the discussion. | Murray, Ami, Scott, Marc |
| **Why were the starting price and warehouse capacities different** when the participant was playing against human competitors versus computer competitors? | *Reviewer 2 is also concerned about the different money and warehouse status.*  With only 2 competitors in that condition, the participant will still have the same ratio of warehouse space to fill and money to spend as when there are 3 competitors.  Note: This can be included in the text as a justification but I’m not sure that it will resolve the underlying issue of 2 participants in one condition vs 3 in the other. |  |
| Line 437: "Therefore, we examine the data using both of these measures." - **why does a significant negative correlation indicate that you should examine both of these measures**. **It seems like the fact that they are not too high is more the issue.** | Why does a neg correlation indicate that we should examine both? – If they weren’t related then we wouldn’t examine them together?  If you assume that participants bid consistently then the correlation should be stronger. It’s not because of initial and end bids in each block. E.g., last trial, I haven’t won anything so I bid high to use all my money. |  |
| Line 449: I was a bit **confused about the discussion of the KS test**.  Provided you are using the two sample test (incorporating the sqrt((n+m/nm) term), I would have thought everything should have been ok? Especially since you got significant results. The test is conservative. | Clarify/justify use. Q: Is it bad to be conservative? A: only if it isn’t necessary | Murray, Ami |
| Typos  194: Continuous => continues 276; the last couple of sentences of this paragraph could be dropped 349: Numbers at the starts of sentences should be spelt | Ask an educated lay friend to read over the document looking for spelling mistakes.  *Reviewer 2 also did not understand the KS tests.* | Murray |
| **Reviewer 2** | | **Responsible Author** |
| **Comments** | **Response** |
| First, the effects of discrete vs. continuous were null effects, and it simply was **not clear to me how important of a factor this was from the prior literature** - this particular issue did not seem to be strongly motivated to the extent that a null finding is especially noteworthy. | Motivate/Clarify content in discussion section by tying the finding to previous literature in greater detail.  E.g., you might need to describe the previous literature a bit more clearly, rather than just placing a reference. | Murray |
| I had two further questions about the discrete vs. continuous analyses: a) I was **confused how the data was aggregated**. When participants compete in a group, for a given auction only one participant makes a bid, because the first bid ends the auction. So, different participants have different numbers of bids. I can't tell from the statistics how this was handled. Were the bids within a participant averaged? | Bids were averaged across groups. The value you see is the average bid from all three bidders across the whole block.  See figure x for the average participant vs human bid - it is presented as a comparison against the average participant vs computer bid.  Note: Reviewer may want to know why group bids were taken for analysis and not the individual bid. | Murray, Ami, Marc |
| 1. **I did not understand the Kolmogorov-Smirnov tests**, and they were not interpreted for the reader. 2. I worry that **perhaps these tests are sensitive to the fact that the discrete vs. continuous conditions have different numbers of possible outcomes**, so their distributions are inherently different? | *Reviewer 1 also did not understand the KS tests.*   1. Justify why KS tests are used and what they do:   A non-parametric assessment of equality between continuous probability distributions. It quantifies the distance between the ECDF and the CDF and asks if the two come from the same distribution. If significant, reject the null hypothesis that the two distributions are equal.   1. Yes, this is a good point – we try to address this issue by assessing the distributions using different calculations of the steps in the continuous condition (e.g., round up, round down, round). Either see appendix A(?) or we can clarify this in text, or in the related appendix.   *Note*: It looks like there are some KS figures in the appendix that are not on the same scale – this should be fixed, but is not the actual comment raised by the reviewer here. | Murray, Ami |
| Second, one of the topics being investigated was learning. However, the analyses only looked at change over the blocks. These findings were non-significant, and the explanation in the general discussion was useful.  However, **no learning theory was developed or tested,** so I did not get much out of these analyses, and **even if they had been significant** (e.g., bidding price falls or increases over time**), I'm not sure what they would tell us psychologically**. | “Explanation in the discussion was useful” but “I’m not sure what they (significant results) would tell us psychologically”.  *(I’m not quite sure what the comment wants. A justification? See below. Remova of sectionl? But then why say the explanation was useful?)*  Experienced bidders have been shown to bid differently to inexperienced bidders. These results show that this has not occurred (at least at the group level).  We include discussion on the absence of learning in group bidding to justify why we can interpret the rest of the results the way we do. | Marc, Ami |
| Third, there were significant differences in bids when the participants were playing against themselves vs. a computer.  However, **I don't feel that this comparison is fair.** First, participants started out with different amounts of money, and the warehouse capacity was also different across conditions**. Wouldn't it make sense that these factors could impact participants' bids?** | *Editor was also concerned about the different money and warehouse status.*  *Response to the editor:* With only 2 competitors in computer condition, the participant will still have the same ratio of warehouse space to fill and money to spend as when there are 3 competitors.  *Additional response for this comment:*  It is quite likely, yes, that this could impact bids.  *Note:* *You need to convince the reviewer/editor that this difference is not critical.* |  |
| Also**, in the human condition participants were playing against two competitors but in the computer condition they were just playing against one computer**.  It seems to me that a clean comparison would involve something like a 2 (participants actually playing against one human competitor vs. a computer) x 2 (participants told that they were playing against one human competitor vs. a computer).  This way **you could separate out participants' beliefs from the differences in how the human vs. computer competitor produce bids**.  In sum, for the current study I don't think that the comparison is fair. | I don’t recall our justification for this particular human vs computer design.  I’m not convinced that the reviewer has understood the justification for the computer comparison – I’ll see where we can improve this justification. I also see that we need to do some work to acknowledge why there is a mismatch in human and computer conditions.  Thoughts:  I think the reviewer is suggesting that in 1 condition you play against another person and a computer, but you think it’s 2x computers. The other condition is the same but you know you’re playing against the person and a computer? Therefore, you only ever have 2 people and a computer.  So in the first condition you believe that you are bidding exclusively against computers, which I see as equivalent to the present design. The only difference is that the experiment now has a nicer ‘value model’ that the “computer (person)” bids with. Note that this condition design would eliminate the competitive atmosphere/environment because you’d need participants in different rooms to sell the idea that they’re only against computers.  The second condition proposed would have 2x Ps bid against each other and a computer, which I see as simply bidding against the other person, with a nuisance computer bidder. I don’t see this as a group in the way we want it to be, it’s a 1v1, which isn’t really the case in Dutch Auctions – they’re 1 vs everyone. | Ami, Marc, Murray |
| Fourth, an adaption of prospect theory is developed.  However, all that is done is that parameters are found such that the mean bids from the model approximate participants' mean bids.  I don't see how this really provides psychological insight into participants' behavior.  Usually computational models are used so that a prediction is made (e.g., if we change the experiment in a particular way, the model predicts that participant's will change their behavior in a particular way).  This tells us something about why people are behaving a particular way. But just fitting a mean to me does not provide insight like this. | I suppose that’s fair enough. I have no serious reply for this yet.  Is this not what “fitting the model to the data” means?  I worked hard to find those approximate parameters that loosely fit the group averaged data. | Scott |

**General Stylistic Approach for Response/Changes:**

Convey idea that motivation was high despite the monetary compensation

Issue is the value model. If you are a bidder, what is your task – is it to fill the warehouse, fill with minimal money spent, to just beat your opponent? If we were to give money compensation, it would have to have been translated using a different reward function. If we had only said your goal is to fill the warehouse, you get x for participating and y for filling warehouse. Alternatively, we say the goal is to fill the warehouse with least spent, therefore you get x for participating and y for money saved on each trial. This would result in different value models.

If we bypass monetary reward, we bypass selecting a model, which is good overall but the reviewer is correct in that this has flaws, namely - it lacks specificity.

Think about evidence to show motivation was high despite the lack of monetary reward.