Reliable willingness-to-pay estimates for food premiums using an online hypothetical survey while accounting for heterogeneous strategic behaviours

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Context

Knowledge of market demand and premiums paid for food products with social and environmental attributes (locally produced, animal welfare, sustainable production systems) is important to assure agricultural policies satisfy consumer demands and that the productivity constraints placed on farmers are economically sustainable.

Objective

Obtain a reliable measure of willingness-to-pay (WTP) for food premiums using a low-cost approach.

Non-Hypothetical Experimental Auctions (NHEA) are a reliable approach to estimate WTP premiums, however they are costly to execute and cannot be used for all types of goods

Hypothetical Stated Preferences surveys are easy to execute, are not expensive and provide flexibility making them suitable for most types of goods, however abundant research exist showing that WTP estimate are biased **(hypothetical bias)** and unreliable.

Hypothesis

Respondents do not answer hypothetical survey question truthfully, but answer strategically to maximize their utility, creating a bias in estimates.[1]

WTP estimates in hypothetical settings can be corrected by identifying and measuring the strategic behaviour of respondents.

The respondent's perception of how the survey will be used by policy makers determines the type of strategic behaviour[2,3]:

Perceived use of survey	Strategic behaviour
To inform policy makers	Policy signalling : Over bid to influence the policy
To determine prices	Price discounting : Under bid to favor lower prices

Methodology

Values are elicited using an internet survey with two treatments:

- Non-hypothetical experimental auction (n = 122)
- Hypothetical, open ended elicitation question (n = 128).

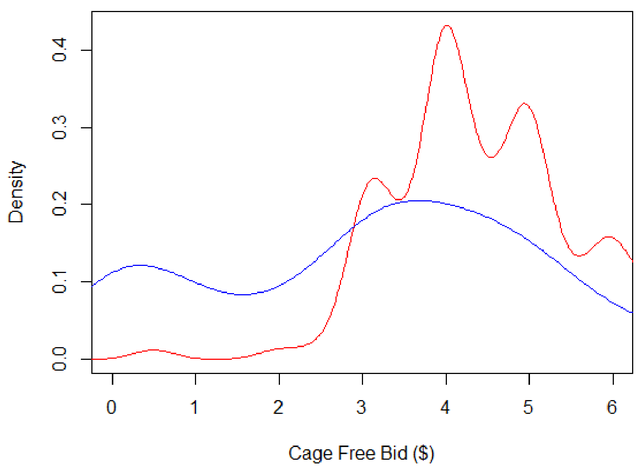
The inclusion of a follow-up question on the perceived use of the survey provides information to identify different strategic behaviours to be included in the econometric model.

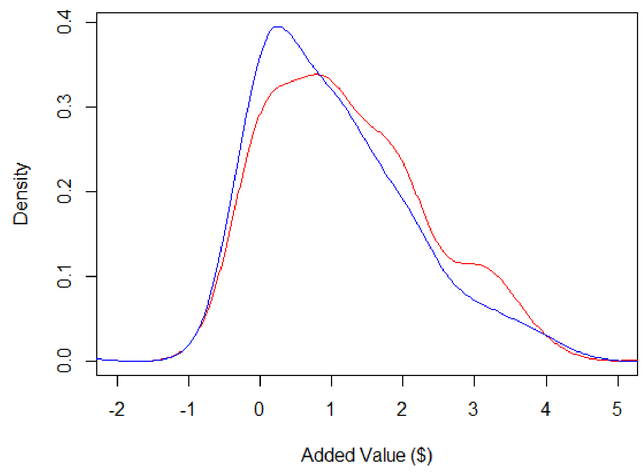
Results

Statistically significant strategic behaviour from censored regression models

	Regular	Cage Free	Premiums
Hypothetical survey	Price discounting	Price discounting	Policy signalling
NHEA	No strategic behaviour		

Distribution of bids from hypothetical stated preference survey (red) and non-hypothetical experimental auctions (blue)





The distribution of bids reveals the following.

- The cage free eggs bidding distribution for the hypothetical treatment is noisy, a sign of heterogeneous bidding behaviour, while the bids from NHEA are much more homogeneous.
- Market participation is much higher in the hypothetical bidding, with many zero, or near zero, bids in the NHEA
- The added value bids (the difference between the cage free eggs bid and the regular egg bids at individual levels) are similar between treatments, suggesting that the heterogeneous behaviour are consistent and cancel out when differences are calculated.

Conclusion

Online hypothetical surveys are a low cost and flexible solution to calculate food premiums. They can produce reliable WTP, cancelling heterogeneous behavior when estimates calculate the difference between the added-value product bids and the regular product bids. Policy signaling may remain in the WTP for premiums related to food products with strong social opinion (i.e. GMO). The bias from this behavior (policy signaling) can be corrected by the identification and measurement of strategic behaviours in the econometric models.

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