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Are 'True' Preferences Revealed in Repeated Markets? An Experimental Demonstration of Context-dependent Valuations

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Are 'True' Preferences Revealed in Repeated Markets?

An Experimental Demonstration of Context-dependent Valuations

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Abstract

This paper reports a new and significant experimental demonstration that market participants adjust their bids towards the price observed in previous market periods when – by design – individuals' values should not be affiliated with the market price. This demonstration implies that market prices may not adjust as standard comparative statics predicts and emphasizes the significance of social aspects even in market contexts. Hence, the present study shows that market behaviour is not anomaly-free. Indeed, market behaviour does not reveal the underlying *true* preferences but rather *context-dependent* preferences.

J.E.L. classification numbers: C92; D01; D44

Keywords: Repeated markets; Economic principles; Anomalies; Experiment; Social interactions

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1. Introduction

In recent decades, experimental evidence has accumulated that individual behaviour sharply contrasts with standard economic theory and its underlying theory of preference (see Camerer, 1995; Starmer, 2000). This evidence of anomalous behaviour has weakened the positive value of several economic models. It has also drawn increasing academic attention and is enlivening an interdisciplinary scientific debate not least because of its implications for welfare economics and policy-making (e.g., Bernheim and Rangel, 2007; Camerer et al., 2003; Thaler and Sunstein, 2003; Glaeser, 2006). Simultaneously, however, several empirical demonstrations have shown that repeated market trials can lead to anomaly-free outcomes under a number of lab and field conditions (e.g., List, 2003). In contrast, a few experimental studies (Knetsch et al. 2001; Loomes et al. 2003) have found that market participants adjust their bids towards the price observed in previous market periods when – by design – individuals' values should not be affiliated with the market price. Those studies show that market behaviour does not reveal the underlying *true* preferences but rather *context-dependent* preferences. Still, those findings are not definitive and the evidence so far is rather weak[1]. But, because the theoretical implications of an anomalous price affiliation are potentially profound and far-reaching, it is important to clarify whether this price affiliation is real and significant.

This paper contributes to this ongoing research by generating new data and reporting a novel and significant experimental demonstration that the bids and, consequently, the revealed preferences of market participants are context-dependent since the bids are biased toward the market price previously observed. This demonstration relies fundamentally on a statistical test based on the analysis of bids' variances within and between markets.

[1] For instance, in a recent experimental investigation, Braga et al. (forthcoming) did not find any significant evidence of anomalous price affiliation.

The structure of the paper is as follows. In Section 2, following the paths traced by Plott (1996) and by Loomes et al. (2003), two alternative hypotheses of individual behaviour in repeated markets are presented. In Section 3, the experimental design is introduced, while in Section 4 the implementation of the experiment is described. In Section 5, the analysis of the results and the related econometrics are given. In Section 6, a few concluding remarks are provided.

2. Discovered preference and shaping hypotheses

The first of the two alternative hypotheses under consideration has been advanced as an observational theory in the 'discovered preference hypothesis' by Plott (1996). This hypothesis suggests that 'attitude[s] like expectations, beliefs, risk-aversion and the like, are *discovered* as are other elements of the environment'. Indeed, Plott adds that individuals 'acquire an understanding of what they want through a process of reflection and practice' (Plott, 1996, p. 227). This hypothesis catches the intuition that individuals who already have well-defined preferences might also exploit the market mechanism to discover their true preferences by trial and error. Hence, if preferences satisfy standard theoretical requirements, the discovered preference hypothesis would imply that anomalies are the results of individuals' errors, which will be reduced by market experience. According to this hypothesis, only later market trials should reveal the true preferences of subjects. Moreover, if this hypothesis is valid then subjects' errors may be either symmetric or asymmetric.

To understand the implications of the discovered preference hypothesis for the present experimental context, suppose that there are several markets for an unfamiliar good that are

run for some periods with random assigned participants. Moreover, assume that in those markets (*i*) individuals' values are not correlated and (*ii*) there is no possibility to buy back auctioned goods. In such a context, if there are symmetric errors affecting individual bids, the mean of bids within a market is unaffected. On the other hand, if errors are asymmetric (e.g. a tendency to overask in selling auctions), the mean of bids does shift. However, in this latter case, if several markets involving different participants are compared then the relations among the means of bids remains unchanged. Note that these considerations hold even after the discovery of subjects' true preferences and its consequent reduction of errors. Thus, assuming that market participants are randomly assigned, the discovered preference hypothesis implies an equality of mean bids among markets and across periods. Furthermore, within markets, the effects of an error reduction on the variances of subjects' bids depend upon the specific pattern of erroneous behaviour. For instance, a decrease in the variances within markets might be consistent with the discovered preference hypothesis in the case of symmetric errors. Therefore, according to the discovered preference hypothesis, the variances within markets might vary in any direction whereas those between markets should not increase as a consequence of the implied equality of means across markets and periods.

The second hypothesis under consideration is the 'shaping hypothesis' as formulated by Loomes et al. (2003). This hypothesis captures the idea that once individuals have ex-ante vague preferences then they would refer to the market price to completely define their preferences. The shaping hypothesis states that market participants adjust their bids towards the price observed in previous market periods when – by design – individuals' values should not be affiliated with the market price. To comprehend the implications of the shaping hypothesis for the present experiment, consider the aforementioned market context. If period

by period the bids converge towards the market price, then shaping is at work[2]. Shaping implies a path dependency of the market bids, leading to market-specific patterns of individual bids. That is, the market bids tend to converge towards the market price and, therefore, towards a certain mean which – in later periods – might even differ from the means emerging in other similar markets. In other words, as result of the random assignment of participants, shaping implies an equality of the means of bids between markets in the initial period. It may, however, lead to a difference in the means of bids between markets in later periods as a consequence of market-specific patterns of individual bids. Similarly, period after period, shaping leads to a reduction of the bids variance within markets as well as to a possible increase of the bids' variance between markets. An unsophisticated form of the shaping hypothesis would be the partial adjustment model $b_{i,t} = b_{i,t-1} + \theta\,(p_{i,t-1} - b_{i,t-1})$, where $0 \leq \theta \leq 1$, $b_{i,t}$ represents the bid of individual i in period t and $p_{i,t-1}$ indicates the price observed by individual i in the period $t-1$, respectively.

In synthesis, the implications of the two hypotheses to be submitted to formal tests can be restated as follows. First, both hypotheses imply an equality of mean bids between markets in the initial period as the result of random assignment. Second, the shaping hypothesis does not imply an equality of mean bids between markets in later periods, while the discovered preference hypothesis does. Third, according to the shaping hypothesis, the variances between markets may increase, whereas those within markets should decrease; by contrast, according to the discovered preference hypothesis, the variances between markets should not increase whereas those within markets may vary in either direction.

[2] In other contexts, however, evidence of convergence of bids toward the market price may be rational and, therefore, explained by factors other than shaping. For instance, consider two different market contexts: in the first, an individual is trying to speculate by selling a certain good with the intention of buying it back later on; in the second, another individual is uncertain about the utility to be gained from the consumption of a certain good and he believes that his utility is correlated with the utilities of other participants. Then, in both contexts, an observed price can be significant for individuals' values by providing information about others' willingness to accept. Those and similar contexts are not the object of the present experimental study.

3. Experimental Design

Subjects took part in a series of six market periods for an unpleasant tasting liquid (a mixture composed in equal parts of vinegar and Lucozade). The choice of this mixture was made for several reasons. Firstly, it was necessary for the experimental purpose to use an unfamiliar 'good' such that subjects could not rely for their valuations on real market prices. Moreover, because this was a private-value good there were no reason to expect a correlation of values across subjects. Secondly, it was a harmless drink that permitted consumption on the spot, making re-sale impossible. Thirdly, given the intrinsic characteristics of this mixture, it was possible to use only small quantities for experimental purpose, minimizing the possibility that subjects would become saturated. Finally, a similar mixture (vinegar and Gatorade) was already adopted in Ariely et al. (2003) thereby providing a safely tested tool for the experiment. It is also worth noting that the experiment provided an instant consumption experience of the unpleasant liquid also to help the discovery of preferences by offering an immediate occasion of 'practice and reflection' (Plott, 1996, p. 227).

What was being offered in this experimental market was a payment of money in return for drinking 60 ml of this mixture. Each market was composed of five ($n=5$) or seven ($n=7$) randomly assigned participants[3]. There were six market periods in each market. The first market period in the series of six will be referred to as Period 1, the second one as Period 2 and so on through Period 6. The market price was set according to the median auction mechanism, which is a particular case of a Vickrey auction. Subjects' bids were obtained through forms with several questions on a range of prices. Note that the label 'bid' stands for the highest price at which participants were *not* willing to trade. Thus, all participants stated their bids, market by market, expressing their willingness-to-accept money for drinking the

[3] The mix of 5 and 7 in the composition of the markets was used to cope with 'no-show' participants.

unpleasant tasting liquid. After ranking subjects' bids, the middle value of these bids was set as the market price. All subjects in the auction with bids lower than the market price 'traded'; that is, they were asked to drink 60 ml of the unpleasant tasting liquid and received in exchange the market price as payment in cash at the end of the experiment. In this experiment, therefore, the price approximately reflects the bid of the median participant. Before running the first market period, subjects were asked to drink a 30 ml sample of the mixture. However, there was only one auctioned quantity of 60 ml.

The experiment was designed to generate new data in order to allow for a test of the discovered preference hypothesis versus the shaping hypothesis based on the analysis of bids' variances within and between markets. To enhance the possibility that statistical tests could reveal shaping effects if at work, experimental markets were set up that was likely to provide genuine systematic differences in price feedbacks across treatments. To this end, following Ariely et al. (2003), participants were assigned to two different treatments and exposed to various anchor prices to manipulate indirectly their initial valuations and, consequently, their bids[4]. However, this manipulation had no significant effect and, therefore, the two treatments can be regarded as a unique treatment with a number of markets[5]. Hence, the eventual experimental environment turned out to be a much more difficult context – with respect to what was planned – in which to test for shaping. Thus, a possible finding supporting shaping would result in more robust evidence of context-dependent preferences.

[4] Note that subjects were exposed to the anchor through a simple question (see Appendix A for details). The anchor prices were equal to £ 0.05 (low anchor), to £ 0.25 (medium anchor) and to £ 1.25 (high anchor). There were two treatments: T1 and T2. In T1, the participant majority in a market (i.e., *(n+1)/2*) was exposed to the low anchor whereas the minority (i.e., *(n-1)/2*) to the medium anchor; conversely, in T2, the majority was exposed to the high anchor whereas the minority to the medium anchor. In this way, through the median auction mechanism, the price feedback in the two treatments had to be different if anchoring was at work.

[5] Note that up to Period 1 the only relevant difference with respect to Ariely et al.'s (2003) experimental design was the elicitation method. Specifically, binary-choice questions were utilized rather than the open-ended ones used by Ariely et al. (2003). Thus, there are good reasons – which may be even coherent with the 'compatibility hypothesis' by Slovic et al. (2002) – to think that the non-existence of anchoring effects in the present experiment is due to the adopted elicitation method.

4. Implementation of the Experiment

Two hundred subjects took part in the experiment at the University of East Anglia (UEA) in Norwich (UK). Participants were subjects drawn from the entire population of UEA students and were recruited via e-mail (approximately two-thirds were postgraduate students and the rest were undergraduate students); the subject pool was divided almost evenly between men and women. The experiment lasted on average 45 minutes and was paper-based. All subjects were paid £ 3.00 in cash as a participation fee, plus earnings from the experiment as explained above. Thus, the mean of total payments was £ 5.56 (Std. Deviation of £ 2.62) with a minimum of £ 3.00 and maximum of £ 16.60. In each session two markets were run at the same time but in different rooms. Before being randomly assigned to a certain room, all subjects were informed that in order to understand what the experiment entailed they would have had to drink a 30 ml sample of mixture composed of equal parts of vinegar and Lucozade. At the same time, this mixture was shown to each subject together with bottles of vinegar and Lucozade as those used in the experiment. In this way all participants were made fully aware of the unpleasant experience of drinking the mixture. Only subjects who expressed their willingness to drink a sample were allowed to participate in the experiment. Moreover, while subjects were receiving instructions, it was highlighted that they would not be required to drink any more than that sample; if they drank any more it was only because they chose to do so, and they would be paid for this. At this stage, subjects were randomly assigned to each room (or market) and then allocated a desk. On entering the room, each participant found on her desk a booklet that provided the experimental instructions and market forms[6]. Participants were then instructed about the experimental procedures by experimenters who read the instructions as printed in the booklets and guided

[6] All experimental material is reprinted in the Appendix A.

all participants through the experiment step-by-step. During the instruction phase, subjects were shown an illustration of the form they would have to fill in while taking part in the market. Each form had a series of thirty binary-choice questions as exemplified in Table 1.

Table 1

A Generic Example of a Binary-choice Question

	Accept to Trade	Reject to Trade
If the market price is £ '*x*'	□	□

The actual value of '*x*' was, of course, different across binary-choice questions. Its range went from £ 0.01 up to £ 3.00 with a geometric-like progression up to a maximum step of £ 0.20. Participants were informed about the three possible ways to consistently complete the form also by visual examples. It was emphasized that they had to answer in one of these ways or the experimenters would ask them to change their answers. There was, however, little evidence of misunderstanding: in fact, only about 6% of the subjects needed to review their own form in the first market, and none of them did so later. In addition, the instructions stressed that the market price was always the price at which the person with the middle valuation was not willing to trade and that no one could manipulate the price to her own advantage.

After all subjects were given instructions, the main part of the experiment was started. At this stage, all participants were asked to drink the 30 ml sample of the liquid. Then, Period 1 started. Subjects were asked to answer all thirty questions and reported their highest rejected price at the bottom of the market form[7]. Once they did so, all 'highest rejected prices' were collected by experimenters and ranked on the blackboard, from the lowest to the highest. The

[7] The only exception to this procedure was when a subject, who accepted to trade for every price, was required to tick the box 'Accept all' at the bottom of the market form.

experimenters then picked the middle value which was set as the market price. Hence, each subject who traded in the auction was to immediately drink 60 ml of the liquid. Subsequent market periods were implemented in an analogous fashion until Period 6. Then, the respective earnings were calculated and paid to subjects who left the experiment. All mixtures served to subjects were prepared by experimenters in full view of participants by using graduated cylinders and funnels observing the highest standards of hygiene.

5. Data analysis

Both the shaping and the discovered preference hypotheses imply the equality of market means in Period 1 as an obvious result of a correct randomisation of subjects[8]. However, the shaping hypothesis might lead to differences in means of bids among markets in Period 6 as evidence of market-specific patterns. Conversely, the discovered preference hypothesis implies the equality of means of bids among markets also in Period 6 (see Section 2).

A test for equality of means between markets in Period 1 shows that there is no statistically significant difference among means of bids in Period 1 ($F(31, 168) = 1.114$; $p = 0.324$), which confirms a correct randomization. By contrast, an analogous test for Period 6 displays a statistically significant difference among the means of bids in Period 6 ($F(31, 168) = 7.093$; $p = 0.000$). Moreover, note that from Period 1 to Period 6 both the sum of squares between markets and those within markets vary but in opposite directions. Specifically, the sum of squares between markets increases (from 26.260 in Period 1 to 78.338 in Period 6), whereas that within markets decreases (from 127.751 in Period 1 to 59.851 Period 6). In

[8] In fact, a correct randomization implies that the assignment to a given market of individuals with certain preferences or tastes can be equally probable. Therefore, on average, there should be the same distribution of tastes and, consequently, of bids across markets.

other words, the total variation explained by the variation between markets passes from an $R^2 = 0.171$ in Period 1 to an $R^2 = 0.567$ in Period 6. Thus, there is strong evidence supporting the shaping hypothesis.

In Fig. 1, the market means of bids with data from Period 1 and from Period 6 are plotted. That is each point of the set scattered in Fig. 1a (1b) represents the mean of bids for a given market in Period 1 (Period 6). Note that every set of points has been plotted with a zero mean in order to facilitate the comparison across periods. This has been done by subtracting from every point the overall mean of its set. It is evident that the variability between means increases from Fig. 1a to 1b. This is a qualitative clue of market-specific patterns and, consequently, of shaping.

[Figure 1a about here] | [Figure 1b about here]

Fig.1. Comparing market means of bids across periods

These findings demonstrate shaping effects in detail by highlighting the convergence of bids in each market around its individual mean as evidence of a market-specific pattern.

As a further test of the shaping effect it is useful to estimate econometrically the partial adjustment model introduced in Section 2. Note that the data collected is a sample of 200 subjects, whose behaviour is observed in six different periods. Therefore, the panel data consist in a total of 1200 observations and is balanced: firstly, a 'pooled OLS' estimation was implemented; secondly, a fixed-effects regression was run; finally, a random-effects model was estimated. A test of joint restrictions such that all individual intercepts are equal to zero unsurprisingly indicates that the F test offers strong evidence against the pooled model and in support of the fixed-effects model ($F(199,799) = 2.29$; $Prob > F = 0.000$). Furthermore, the results of the Hausman test ($H = 307.34$; $Prob > \chi^2 = 0.000$) demonstrate

that the fixed-effects model should be used, provided that the random-effects model is biased.

Table 2 reports the fixed-effect estimation of the partial adjustment model after a trivial algebraic step. As shown, the coefficient $\theta = 0.771$ (Std. Err. = 0.032) is strongly significant ($t = 23.82$; $p = 0.000$) and has the correct sign. Furthermore, θ is larger than zero but lower than one as required by the present specification of the partial adjustment model. In this instance, the hypothesis of no explanatory power is significantly rejected ($F(1,799) = 567.34$; Prob > F = 0.000). Indeed, the proportion of variation in the dependent variable explained by the explanatory variable in the model is equal to 41.5% ($R^2 = 0.415$). Taken with the evidence provided in Table 2, the shaping hypothesis has found further support.

Table 2

Fixed-effects Estimation of the Partial Adjustment Model

Dependent Variable: $(b_{i,t} - b_{i,t-1})$		
Independent Variables		
$(p_{i,t-1} - b_{i,t-1})$	0.771***	(0.032)
Constant	0.073***	(0.013)
# Observations	1000	
R-squared	0.415	

*** Indicates statistically significance at the 1% level.

6. Conclusion

In the context of repeated markets, empirical evidence shows that in several cases individual choices approach the predictions of standard economic theory. In other cases, however, contrasting evidence attests that individual choices in repeated markets often diverge from the theory's predictions by exhibiting several anomalies. In these cases, the preferences revealed by individuals' choices do not reflect their 'true' preferences. The present experimental study attempts to expand knowledge about the relationship between revealed preferences and anomalies in the context of repeated markets. In fact, the experiment and the related tests were implemented to discriminate between discovered preference and shaping hypotheses as underlying causes of market dynamics in a particular case of a Vickrey auction, namely the median price auction.

Strong evidence was obtained that is consistent only with the shaping hypothesis and incompatible with discovered preference hypothesis. This strong support for shaping calls for a rigorous reconsideration of the several demonstrations of erosion of anomalies realized in an experimental setting without controlling for shaping effects. It also questions the idea that in general repeated markets reveal anomaly-free preferences. Indeed, if shaping effects are at work, then market participation affects values which are biased towards market prices. This implies that market prices may not adjust to exogenous shocks, changes in parameter values, etc. as standard comparative statics predicts. Moreover, the relevance of market participation emphasizes the significance of social aspects even in market contexts and makes it possible to draw connections between the present contribution and the research on social heuristics (e.g., Marsh, 2002), conformism (e.g., Goeree and Yariv, 2007) and social interactions (e.g., Durlauf, 2004; Cooper and Rege, 2008) that might lead to promising avenues for future research.

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Appendix A. Subjects' Booklet

I report as follows a copy of a subject booklet like those used in running the experiment. Because of space limits, I have indicated by (***) a formal page break and have omitted four market forms (i.e., the market forms from Period 2 to Period 5), provided that all market forms are identical except for the number that identifies the specific market period.

***

General Instructions

This is an experiment in the economics of market decision making. The instructions are simple, and if you follow them carefully you might earn a considerable amount of money

which will be paid to you in cash after the experiment. You will be given opportunities to earn money by drinking small amounts of an unpleasant tasting but harmless liquid composed of equal parts of vinegar and Lucozade. At the start of the experiment you will be asked to taste a 30 ml sample of this drink. You will not be required to drink any more then this sample. If you drink any more it will only be because you have chosen to do so, and you will be being paid for this.

We are interested in your choices as individuals. Therefore, there must be no talking during the experiment unless you want to ask us a question - in which case, simply raise your hand - and you must not look at what other people are doing.

When we ask you to enter information on sheets provided, do only what we have asked then wait for instructions from us before you turn over any page. This is very important so please wait for us to prompt you, do not try to look ahead, and do not worry about being left behind.

Please keep to these simple rules because anyone breaking them may be asked to leave the experiment without any reward.

***

Subject consent form

Confirmation by Experimenter

I have volunteered to participate in this experiment.

I understand the experimental instructions in detail.

I understand that the experiment requires my presence for about half an hour.

I may have earned from my participation.

I understand that the reports of this experiment will not identify me.

I understand that my participation in the experiment will not affect my academic standing at the University.

I understand that I can ask for a copy of this consent form and keep it.

Name _____ (as shown on your campus card)

Registration Number _____ (as shown on your campus card)

Signed _____ Date _____

***

This is an illustration of the form you will fill in when you take part in the market. You should not fill this in… it's just an illustration.

[Figure 2 about here]

Look at top row… It asks you whether you would drink the liquid if you were paid £ 3 for doing so. You would tick "accept" if you were willing to drink the liquid at that price, and "reject" if you were not.

Then when you had done this for all the prices on the list, this will produce: a column of 'accept', 'accept'… following by a column of 'reject', 'reject'; or you will accept every one

or you will reject every one. Suppose you are willing to drink the liquid for £ 3, and not willing to drink it for £ 0.01, your form will look like this:

[Figure 3 about here]

Then you will put in the bottom box the highest price that you would reject according to your choices.

Or, you might not be willing to drink the liquid even for £ 3. Then your form would look like this:

[Figure 4 about here]

Or, you might be willing to drink the liquid even for £ 0.01. Then your form would look like this:

[Figure 5 about here]

In this case, you would tick the box marked 'Accept all'. You must answer in one of these ways: if you answer in any other way we'll have to ask you to change your answer.

When everyone has filled in the form, the market price will be set. It will be one of the prices that appears on the form. So we will be able to look at your form and find out whether you chose to drink at this price or not. If you chose to drink, we will ask you to drink the liquid straight away and you will be paid the price at the end of the experiment. If you chose not to drink, you won't have to drink and you won't be paid anything.

Now we'll explain how the market price will be set.

We'll look at the "highest rejected price" at the bottom of the market form for each of you. We'll rank them in order from lowest to highest on the blackboard and pick the middle value. This will be the market price.

Now, please look at the following Table. This is an example of a market with hypothetical values, just to help you understand how the process works.

Think about a market in which five people have recorded their willingness to accept money for drinking an unpleasant-tasting liquid they have been asked to consider the prices £ 5, £ 10, £15 and so on. Suppose we ranked them according to how much they had chosen and suppose that person 1 said they were willing to accept £ 15 but not £ 10; person 2 said they were willing to accept £ 25 but not £ 20; and so on down to person number 5 who said they would accept £ 55 but not £ 50. The 'Reject' column here shows the highest price at which each person would not be willing to trade. So, person 1 would not want to drink if the price were £ 10 and so on. The market rule is to take the middle value of these "Reject"s and set this as the market price. So the market price is always that price at which the person with the middle valuation is not willing to trade.

So, in this case, the market price would be £ 30: persons 1 and 2 will trade, because they are willing to accept this much, but persons 3, 4 and 5 will not trade because the market price is less than any of them are willing to accept.

Person	**The Lowest Accepted Price**	**The Highest Rejected Price**	**Trade**
1	£ 15	£ 10	x

2	£ 25	£ 20	x
3	£ 35	*£ 30*	-
4	£ 45	£ 40	-
5	£ 55	£ 50	-

This rule is our attempt to simulate the way that prices get determined in real markets. In any market the price is determined by the valuations of the people who are participating in it. In this experiment the price approximately reflects the valuation of the average participant. Another feature of our rule is that no one can manipulate the price to their own advantage. To illustrate this, look again at the table. Only persons 1 and 2 are trading at the market price. Now it might occur to one of them that it would be better for them if the market price were higher so that they could receive more for drinking. However, the only way that they could affect the price is by stating a valuation higher than the current market price: but then, they would end up being one of the participants who did not trade, so if they succeeded in increasing the price, they would not benefit from it because they would no longer trade! Now that probably sounds horribly complicated! But don't worry about it. We suggest that your best policy is just to think about this like an ordinary price. You can't manipulate the price to your advantage, so we ask you to take our word for it that the best thing to do is to just respond honestly to the questions posed to you.

When you are asked if you would like to drink the unpleasant-tasting liquid at such and such a price, just say "yes" if you would, and "no" if not.

Please, do not turn over until you are told to do so by the Experimenter

***

Would you be willing to repeat the same experience for a payment of £ 0.05?

(Please, tick one answer)

□ Yes □ No

Please, do not turn over until you are told to do so by the Experimenter

***

[Figure 6 about here]

[Figure 7 about here]

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Figure 1a

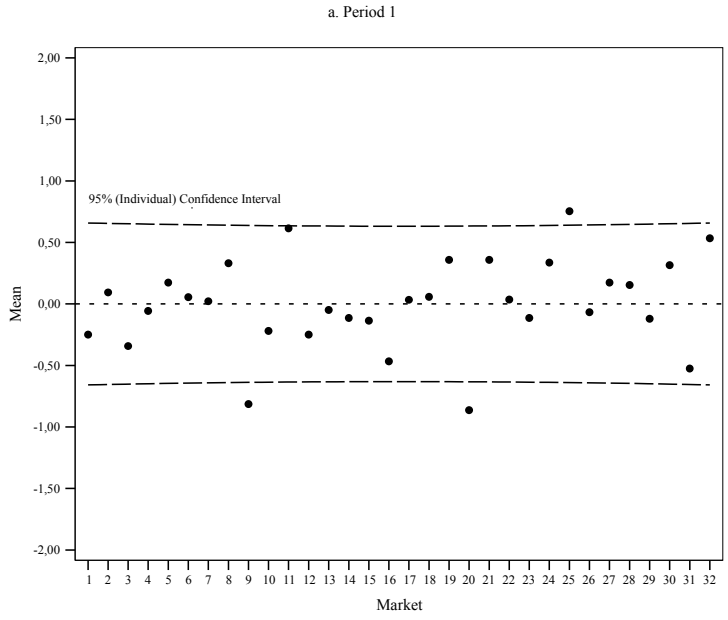

Figure 1b

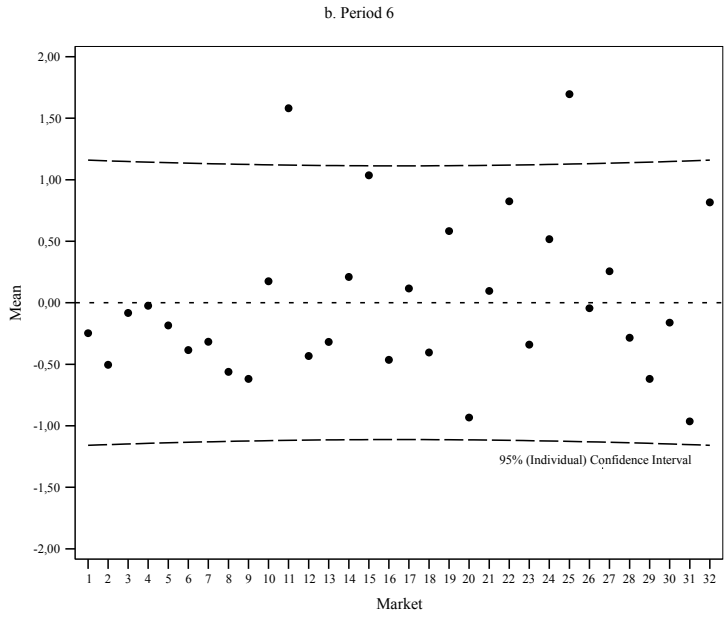

Figure 2

Market 1 (for 60 ml of a liquid composed of equal parts of vinegar and Lucozade)

(Please, tick one per each row)

	Accept to Trade	Reject to Trade
If the market price is £ 3.00	☐	☐
If the market price is £ 2.80	☐	☐
If the market price is £ 2.60	☐	☐
If the market price is £ 2.40	☐	☐
If the market price is £ 2.20	☐	☐
If the market price is £ 2.00	☐	☐
If the market price is £ 1.80	☐	☐
If the market price is £ 1.60	☐	☐
If the market price is £ 1.50	☐	☐
If the market price is £ 1.40	☐	☐
If the market price is £ 1.30	☐	☐
If the market price is £ 1.20	☐	☐
If the market price is £ 1.10	☐	☐
If the market price is £ 1.00	☐	☐
If the market price is £ 0.90	☐	☐
If the market price is £ 0.80	☐	☐
If the market price is £ 0.70	☐	☐
If the market price is £ 0.60	☐	☐
If the market price is £ 0.55	☐	☐
If the market price is £ 0.50	☐	☐
If the market price is £ 0.45	☐	☐
If the market price is £ 0.40	☐	☐
If the market price is £ 0.35	☐	☐
If the market price is £ 0.30	☐	☐
If the market price is £ 0.25	☐	☐
If the market price is £ 0.20	☐	☐
If the market price is £ 0.15	☐	☐
If the market price is £ 0.10	☐	☐
If the market price is £ 0.05	☐	☐
If the market price is £ 0.01	☐	☐

'Accept all' ☐ My 'highest rejected price' is ____

Figure 3

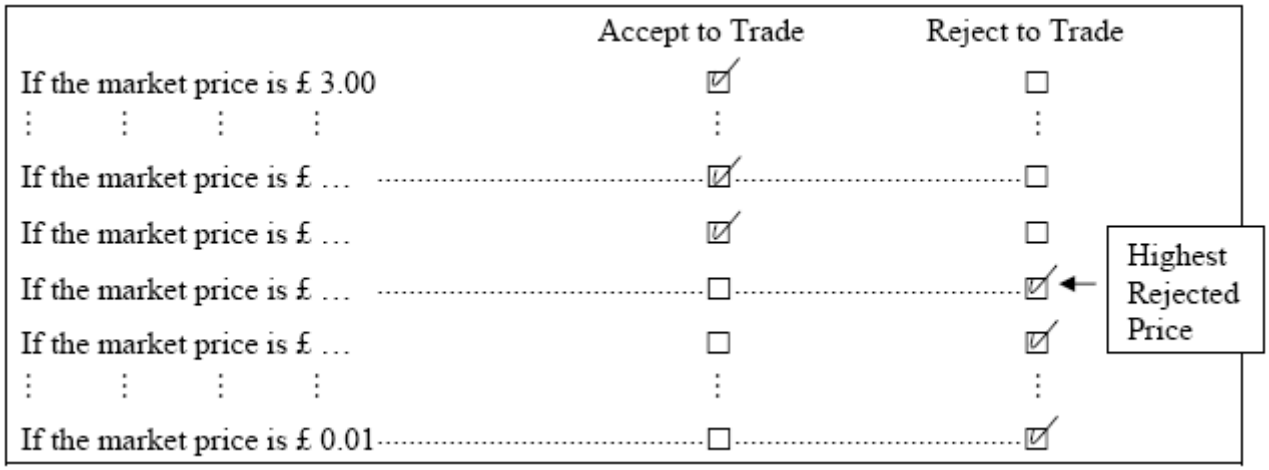

Figure 4

Figure 5

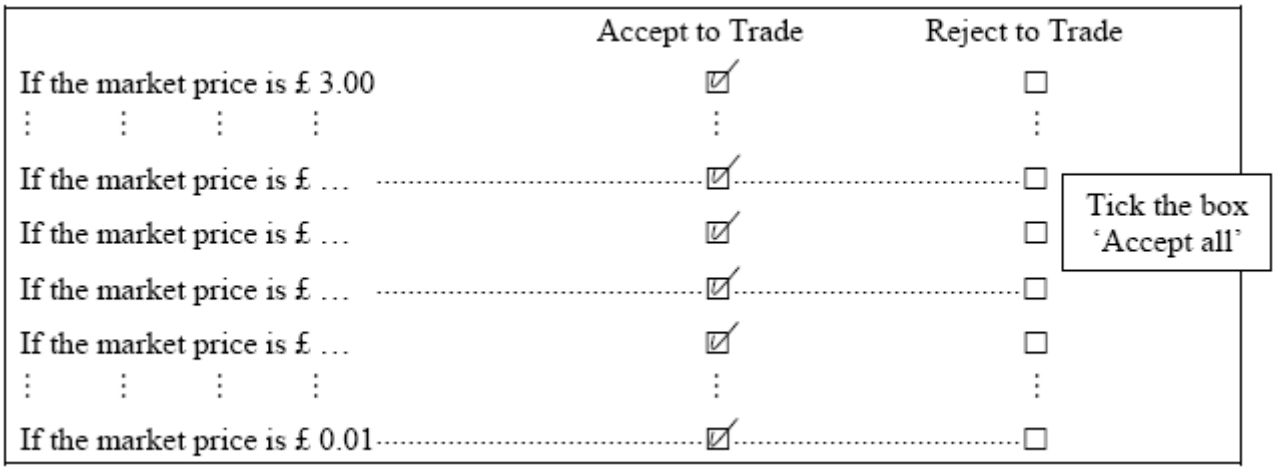

Figure 6

Market 1 (for 60 ml of a liquid composed of equal parts of vinegar and Lucozade)

(Please, tick one per each row)

	Accept to Trade	Reject to Trade
If the market price is £ 3.00	☐	☐
If the market price is £ 2.80	☐	☐
If the market price is £ 2.60	☐	☐
If the market price is £ 2.40	☐	☐
If the market price is £ 2.20	☐	☐
If the market price is £ 2.00	☐	☐
If the market price is £ 1.80	☐	☐
If the market price is £ 1.60	☐	☐
If the market price is £ 1.50	☐	☐
If the market price is £ 1.40	☐	☐
If the market price is £ 1.30	☐	☐
If the market price is £ 1.20	☐	☐
If the market price is £ 1.10	☐	☐
If the market price is £ 1.00	☐	☐
If the market price is £ 0.90	☐	☐
If the market price is £ 0.80	☐	☐
If the market price is £ 0.70	☐	☐
If the market price is £ 0.60	☐	☐
If the market price is £ 0.55	☐	☐
If the market price is £ 0.50	☐	☐
If the market price is £ 0.45	☐	☐
If the market price is £ 0.40	☐	☐
If the market price is £ 0.35	☐	☐
If the market price is £ 0.30	☐	☐
If the market price is £ 0.25	☐	☐
If the market price is £ 0.20	☐	☐
If the market price is £ 0.15	☐	☐
If the market price is £ 0.10	☐	☐
If the market price is £ 0.05	☐	☐
If the market price is £ 0.01	☐	☐

'Accept all' ☐ My 'highest rejected price' is ____

Figure 7

Market 6 (for 60 ml of a liquid composed of equal parts of vinegar and Lucozade)

(Please, tick one per each row)

	Accept to Trade	Reject to Trade
If the market price is £ 3.00	☐	☐
If the market price is £ 2.80	☐	☐
If the market price is £ 2.60	☐	☐
If the market price is £ 2.40	☐	☐
If the market price is £ 2.20	☐	☐
If the market price is £ 2.00	☐	☐
If the market price is £ 1.80	☐	☐
If the market price is £ 1.60	☐	☐
If the market price is £ 1.50	☐	☐
If the market price is £ 1.40	☐	☐
If the market price is £ 1.30	☐	☐
If the market price is £ 1.20	☐	☐
If the market price is £ 1.10	☐	☐
If the market price is £ 1.00	☐	☐
If the market price is £ 0.90	☐	☐
If the market price is £ 0.80	☐	☐
If the market price is £ 0.70	☐	☐
If the market price is £ 0.60	☐	☐
If the market price is £ 0.55	☐	☐
If the market price is £ 0.50	☐	☐
If the market price is £ 0.45	☐	☐
If the market price is £ 0.40	☐	☐
If the market price is £ 0.35	☐	☐
If the market price is £ 0.30	☐	☐
If the market price is £ 0.25	☐	☐
If the market price is £ 0.20	☐	☐
If the market price is £ 0.15	☐	☐
If the market price is £ 0.10	☐	☐
If the market price is £ 0.05	☐	☐
If the market price is £ 0.01	☐	☐

'Accept all' ☐ My 'highest rejected price' is ☐