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EXPERIMENTAL ECONOMICS: INTRODUCTION

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Someone trying to organise an experimental economics contribution to the ‘Controversy’ series faces two problems. The first and less troubling problem is the potential scope of the subject. Although there are some aspects of economics that do not appear to be amenable to experimental investigation, many areas of fundamental importance *have* been the subject of experiments. The chapter headings of Kagel and Roth’s (1995) 721-page *Handbook of Experimental Economics* testifies to this: public goods, co-ordination problems, bargaining, a host of market institutions, and individual decision making are all areas which have attracted a substantial amount of experimental attention, the results of which have been deemed significant enough to appear quite regularly in all of the mainstream economics journals, and in many more specialist outlets. However, this problem of scope is relatively easily solved by specifying a more restricted target area. In the case of the current Controversy, the solution has been to focus attention primarily on individual behaviour, either in games against nature or else in games against other individuals. Although experiments examining different market institutions have played a substantial role in the history of experimental economics – and are by no means uncontroversial – the issues they raise are only touched on relatively lightly in the contributions below.

The second problem is a little more difficult to solve. Ideally, a controversy should involve people on different sides of an argument who are more or less equally matched in terms of experience and knowledge about the issues being debated. In longer established subdisciplines, it may not be so hard to find people with those qualifications who take radically different positions. But in the field of experimental economics, there is a paucity of people who have studied experimental work closely and have run good quality experiments themselves but have concluded that the enterprise is in at least some respects seriously flawed. One possible inference that might be drawn from the scarcity of such people is that there are no serious flaws to be detected. An alternative, and more plausible, inference is that because the subdiscipline is still relatively young, and because many of its most experienced members are convinced about the essential value of what they are doing and want to see the basic credentials of experimentation firmly established, there may still be some tendency for them to push certain reservations to the back burner.

The pieces that follow, therefore, are all by researchers who have an impressive track record of publishing experimental studies, and who can generally be regarded as thinking that certain forms of experimental investigation in economics are worthwhile. However, they are also people who consider that there are some potentially awkward questions that merit closer examination.

In his paper, Starmer focuses on decision making under risk, and in particular, on the programme of research stemming from attempts to test how descriptively robust are the various axioms underpinning Expected Utility Theory (EUT), which has constituted the conventional economic wisdom in this area for the last half century. In many ways, it is an area which seems ideal for experimental testing. All of the basic axioms of standard theory can be tested by observing decisions involving seemingly simple gambles offering a small number of money payoffs with precise probabilities rooted in well-specified random devices (roulette wheels, numbered discs or coloured balls drawn from a bag, etc.). Real incentives can be provided by making the earnings of participants dependent upon the way their decisions work out, and the recruitment of participants with above average educational backgrounds (typically university students) can be argued to give models appealing to some principles of individual rational choice nothing less than a fair shot.

And yet, as Starmer points out, there is a mass of evidence to show that all of the basic axioms of EUT are liable to be substantially *and systematically* violated, even under such apparently favourable conditions. He describes how such findings have stimulated a wealth of alternative models attempting to account for the observed patterns of behaviour, how these newer models have also been subjected to experimental testing and how all have been found, to a greater or lesser degree, to have only limited explanatory power. Which brings us to the current position, where EUT appears to be quite clearly descriptively false; but where, as yet, no other model seems capable of organising more than a fraction of the data.

Yet this message seems barely to have been heard by the rest of the economics profession. Starmer asks why this might be. Is it because the data is thought to be generated by naïve participants, insufficiently motivated? Can it be dismissed on the grounds that in the 'real' world, in decisions that *really* matter, where experience brings learning and expertise and/or where the discipline of the market constrains 'irrational' behaviour, such violations will be curbed and play no serious role? Starmer questions such grounds for ignoring the weight of experimental evidence, and argues that further experimentation may help to bring additional insights of considerable relevance to important areas of economic behaviour.

By contrast, in his contribution, Binmore is sceptical about many of the one-off decision experiments and criticises 'those experimentalists whose professed aim is the debunking of economic theory' who, to that end, run experiments where the dice are in some sense loaded against the models being tested. Specifically, he argues that economic theory should only be expected to predict behaviour in the laboratory if the problems presented to participants are reasonably simple and framed in an accessible way, and if there are

adequate incentives and sufficient time to learn from experience and adjust behaviour accordingly. While not denying that real-world environments exist where the conditions are unfavourable to standard optimisation concepts, his argument is that instead of using such cases as a stick to beat standard economic theory in general, experimental economists should examine what constitute the reasonable, adequate and sufficient conditions under which economic theory can be consolidated or, where necessary, revised and improved.

He illustrates his point with reference to the experimental investigation of certain types of games. In the context of two-person zero-sum games, he asserts that the relevant test is not whether participants play minimax from the outset – it is simply unreasonable to expect them to do so – but whether they learn to play this strategy in repeated trials. And in the context of ultimatum games, he claims that the failure of the subgame-perfect equilibrium prediction in the typical experimental design should not so much be taken as a general refutation of backward induction *per se* (although he certainly holds no brief for backward induction), but more as an example of how social norms evolved in the non-experimental world to co-ordinate behaviour in other situations may be inappropriately triggered in the artificial environment of an experimental ultimatum game.

Loewenstein might agree with Binmore about the dangers of constructing experimental environments so stripped of context that participants search desperately for cues about the kind of behaviour that might seem sensible, or that they think the experimenters might be looking for, with the result that they fail to process the tasks as they would do in the richer social environment we may be seeking to model. Loewenstein draws a distinction between behavioural economics and experimental economics, and argues that certain tendencies that have developed in experimental economics, including a (doomed) desire to eliminate context rather than understand its role in shaping economic behaviour, have retarded rather than fostered progress.

However, he parts company with Binmore on the issue of what conditions should be satisfied in order to make an experiment worthwhile. Among other things, he questions what he sees as the growing tendency to suppose that the only behaviour which counts is that exhibited towards the end of a series of rounds where each fresh round has reset the environment to exactly what it was at the start of every previous round, thereby allowing participants to refine their behaviour on the basis of trial-and-error in an otherwise stationary situation. Besides the fact that there are many important areas of economic and social life where people only get to make one, or at most a very small number of decisions, Loewenstein raises doubts about the assumptions about feedback and learning underlying such experimental designs, and points to the limitations they impose on the richness and complexity of the tasks that are amenable to such treatment.

Other articles of faith (at least, as far as certain groups of experimental economists are concerned), such as the importance of the discipline of the market, or the *sine qua non* status of appropriately linked financial incentives,

also come in for scrutiny. His general conclusion is that, applied unthinkingly, a number of the tools and conventions developed by experimental economics with the aim of encouraging rigour and increasing external validity (that is, the extent to which findings obtained in the laboratory generalise to settings outside) may be unduly restrictive and even counterproductive.

Taken together, then, the three contributions draw attention to a number of important and basic issues which experimental economists surely need to debate further. Moreover, they do so in a way that is accessible to any researcher interested in some of the key questions currently being asked in this rapidly expanding field of research.

Finally, one of the rewards of being asked to organise a Controversy section is being given the opportunity to add some of one's own views, under the guise of plugging odd gaps that may have been left by the other contributors or weighing in on any issues where some counterbalancing perspective seems in order. In a short tailpiece, that is what I attempt to do.

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Reference

Kagel, J. H. and Roth, A. E. (1995), *The Handbook of Experimental Economics*, Princeton: Princeton University Press.