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Who is coming to the artefactual field experiment? Participation bias among Chinese rural migrants

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ABSTRACT

In this paper, we compare participants in an artefactual field experiment in urban China with the survey population of migrants from which they were recruited. The experimental participants were more educated, more likely to lend money to friends, and worked fewer hours than the general population. They differ significantly from non-participants in terms of regression coefficients, such as the effects of wealth and marital status on the probability of being self-employed and distance migrated. We thus find that there was selection into our experiments on the basis of both observable characteristics and on unobserved differences in behavioral relations.

1. Introduction

Choice experiments are increasingly relied on in economics to glean information about subjects' preferences and behavioral traits. A key question about choice experiments, whether in the lab or in the field, is the external validity of the results. This hinges on whether the behavior displayed is natural, and on whether the behavior of subjects who participate in the experiments is representative of larger populations[1]. This paper addresses this second issue by comparing participants in an artefactual field experiment[2] in China with the survey population of migrants from which they were recruited.

Selectivity of experimental subjects is a problem for generalizability if the experimental participants are not representative of the groups of interest and if behavior differs significantly by group: if behavior does not differ by group, selectivity does not matter. We thus look both at the selectivity of participants and at whether their estimated behavioral patterns differ from non-participants; i.e., whether regression coefficients on important variables for outcomes of particular interest vary with participation in the experiment.

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[1] See Harrison and List (2004) for more elaborate details of this criticism and Deaton (2009) for a wider discussion of the limits of what can be learned by experiments. Other papers that also examine related issues include Harrison et al. (2009), Lazear et al. (2012), Levitt and List (2007), von Gaudecker et al. (2012), Cleave et al. (2013), Falk et al. (2013), and Anderson et al. (2013).

[2] In the taxonomy of Harrison and List (2004), artefactual field experiments include a conventional lab experiment but with a nonstandard subject pool.

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Lab experiments conducted in universities are usually done with university students. They are clearly selective in that students who show up for experiments are not representative of the non-student population, and might not even be representative of the general student population. For example, Camerer and Lovallo (1999) find that students' entry into competition games depends on their level of overconfidence and that participating students thus differ from the general student population.

Whether the behavior of participating students differs from other groups in society is an active question in the literature. Anderson et al. (2013) find that students are less pro-social than the general population. In contrast, Falk et al. (2013) find that students behave similarly to the general population in terms of their revealed social preferences, including pro-social behavior and trust.

In the past few years, artefactual field experiments, which recruit subjects outside of universities, have tried to circumvent the problem of the selectivity of students. Yet artefactual field experiments could possibly face worse selection biases in recruitment compared to lab experiments that mainly involve university students. At the university level, both subjects and experimenters often belong to the same institution, making it easy for subjects to verify the authenticity and purpose of the experiment. This creates trust between experimenters and subjects, which would reduce the importance of trust and risk preferences for selection. In an artefactual field experiment, subjects and the experimenters often have little or no contact prior to the experiments, arguably making trust and risk preferences more important for the participation decision.

Also, university students need to go to university anyway for classes, making the marginal travel costs to university computer labs comparable for most potential participants. In the case of artefactual field experiments, however, the location and time costs of the experiment are crucial as they generate differential transaction costs for different populations, potentially worsening selectivity.

Additionally, the objective function of university students may be quite different from the objective function of other subjects. Slonim et al. (2013), for instance, postulate that student participation depends on income, leisure time, intellectual curiosity, and social preferences. These may not reflect the motivations of non-students: the participants in our experiments (rural migrants working in major Chinese cities) nearly all have full-time jobs and might put more weight on income than on intellectual curiosity and leisure time. They probably also face higher opportunity costs compared to university students. Our first objective is then to find out just how representative participation in our artefactual field experiment is. Determining whether the behavior of the participating migrants differs from the non-participating ones in terms of regression coefficients is the second objective of the paper.

The findings of this paper are of particular relevance to artefactual field experiments in developing countries.[3] To our knowledge, our paper is the first to discuss participation bias in artefactual field experiments in a development setting, a literature in which it is not a common practice to report participation rates and hence for which it is largely unknown how bad the potential selectivity is. Our paper aims to serve as a useful benchmark for that literature. It furthermore adds to the existing literature on selectivity into artefactual field experiments (Harrison et al., 2009; von Gaudecker et al., 2012) by having a survey of relatively poor migrants as the base population. It supplements the literature on selectivity in lab experiments with university students (Slonim et al., 2013; Krawczyk, 2011; Falk et al., 2013).

1.1. Preview of results and brief data introduction

The dataset we use as our base is the Urban Migrant Survey (UMS), which includes 5240 migrant households across 15 cities in China in 2009. This survey contains detailed information on many variables, including education, income, wealth, birth order, family size, a general risk preference measure, and general trust measures.

Within months after the survey, we invited all household heads from surveyed households to participate in an artefactual field experiment involving real lotteries. This experiment, which lasted about 2.5 h, elicited particular traits – such as risk preferences, time preferences and trust measures, as well as cognitive ability. The fixed show-up fee was the equivalent of more than half a day's average wage (50 Yuan), and participants earned additional income depending on the outcome of the experiments. Despite our efforts to make the experiment accessible by scheduling multiple sessions in the evenings and on the weekends, and along with the non-negligible compensation, only one-third of the initial survey respondents decided to participate in the experiments.

Using the UMS dataset, we examine the differences in characteristics between experiment participants (EP) and non-experiment participants (NEP). We find that the EPs, on average, are more educated, are more likely to lend money to their friends, have a higher risk tolerance, and work fewer hours. This is in line with what one would expect from the point of view of experimental subjects being more risk-taking. While we expected a lack of trust in the survey agency to play a role, we do not find any consistent pattern in the self-assessed trust measure between EP and NEPs. Nor do we find any difference in hourly wages, meaning that opportunity costs do not provide a robust explanation for the selection. Rather, we seem to select on whether someone is young and adventurous.

We look at whether selectivity matters by checking two commonly examined relations in the field of migration economics, where we look for parameter heterogeneity in the coefficient estimates across EP/NEP groups. If the coefficient estimates for

[3] Our work is most applicable to those papers that recruit subjects from working populations in an urban setting. This includes Dasgupta and Mani (2013), Dulleck et al. (2012), and Carpenter et al. (2004). See Cardenas and Carpenter (2008) for a review of earlier works.