

# Introduction to field experiments in economics with applications to the economics of charity

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**Abstract** This special issue highlights an empirical approach that has increasingly grown in prominence in the last decade—field experiments. While field experiments can be used quite generally in economics—to test theories’ predictions, to measure key parameters, and to provide insights into the generalizability of empirical results—this special issue focuses on using field experiments to explore questions within the economics of charity. The issue contains six distinct field experimental studies that investigate various aspects associated with the economics of charitable giving. The issue also includes a fitting tribute to one of the earliest experimenters to depart from traditional lab methods, Peter Bohm, who curiously has not received deep credit or broad acclaim. Hopefully this issue will begin to rectify this oversight.

**Keywords** Field experiment · Economics of charity

**JEL Classification** C93 · H

## 1 Introduction

The power of the experimental approach in scientific inquiry can be traced to the 16th century (Yates 1975). Since the Renaissance, fundamental advances making use of the experimental method in the physical and biological sciences have been fast and furious (see List and Reiley 2007, for some examples). Within economics, the usage of lab experiments has steadily increased since the pioneers began to explore important economic phenomena in the lab more than a half century ago.

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While laboratory experiments have dominated the experimental landscape in economics, the past decade has witnessed a significant surge in studies that gather data via field experiments. Field experiments in economics occupy an important middling ground between laboratory experiments and naturally occurring field data. The underlying idea behind most field experiments is to make use of randomization in an environment that captures important characteristics of the real world.

The central goals of this introduction are first to provide a brief overview to field experiments more generally and second to provide a summary of the field experiments that are contained in this special issue. In this sense, this short opening is by no means comprehensive in its detailing of what, and how, field experiments have contributed to the economics literature to date. Rather, it should be viewed as a run-down of a select portion of the literature. Nonetheless, a few key components are clear. First, field experiments represent an important methodological innovation, as they bridge laboratory data and naturally-occurring data. This is convenient since on the one hand economic theory is inspired by behavior in the field, so we would like to know if results from the laboratory domain are transferable to field environments. Alternatively, since it is often necessary to make strict assumptions to achieve identification using naturally-occurring data, we wonder whether such causal effects can be found from data generating processes that have fundamentally different identification assumptions.

Second, in complementary cases, field experiments can play an important role in the discovery process by allowing us to make stronger inference than can be achieved from lab or uncontrolled data alone. Similar to the spirit in which astronomy draws on the insights from particle physics and classical mechanics to make sharper insights, field experiments can help to provide the necessary insights to permit sharper inference from laboratory or naturally-occurring data. Alternatively, field experiments can help to determine whether lab or field results should be reinterpreted or defined more narrowly than first believed. In other cases, field experiments might help to uncover the causes and underlying conditions necessary to produce data patterns observed in the lab or the field.

The remainder of this study proceeds as follows. The next section provides a discussion and brief overview of field experiments. Section 3 summarizes studies that have used field experiments to explore the economics of charity, including the contributions in this current volume. This section is meant to be illustrative, rather than exhaustive. Section 4 concludes.

## 2 Would I know a field experiment if I saw it?

There are certainly many different ways to define field experiments. The fact that little consensus existed induced Harrison and List (2004) to introduce a classification scheme for field experiments. Figure 1 represents that classification.

In the Westernmost portion of Fig. 1 is the class of work that generates data via laboratory experiments. By construction, the *ideal* laboratory experimental environment represents the ‘cleanest test tube’ case. Some might view sterility as a detraction, but it can serve an important purpose: in an ideal laboratory experiment, this

Controlled data				Modeling naturally-occurring data
LAB	AFE	FFE	NFE	NE, PSM, IV, STR
Where:				
• LAB:	Lab experiment			
• AFE:	Artefactual field experiment			
• FFE:	Framed field experiment			
• NFE:	Natural field experiment			
• NE:	Natural experiment			
• PSM:	Propensity score matching			
• IV:	Instrumental variables estimation			
• STR:	Structural modeling			

**Fig. 1** A field experiment bridge

very sterility allows an uncompromising glimpse at the effects of exogenous treatments on behavior in the lab. Of course, making generalizations outside of the lab domain might prove difficult in some cases, but to obtain the effect of treatment in this particular domain the only assumption necessary is appropriate randomization (with meaningful sample sizes). The Easternmost part of the empirical spectrum in Fig. 1 includes examples of econometric models that make necessary assumptions to identify treatment effects from naturally-occurring data.

Between lab data and empirical models using naturally occurring data are field experiments. In my own work, I have defined field experiments in much the same manner as The *Oxford English Dictionary (Second Edition)* defines the word “field”: “Used attributively to denote an investigation, study, etc., carried out in the natural environment of a given material, language, animal, etc., and not in the laboratory, study, or office.” Similar to laboratory experiments, field experiments use randomization to achieve identification. Different from laboratory experiments, however, field experiments occur in the *natural environment* of the agent being observed and cannot be reasonably distinguished from the tasks the agent has entered the marketplace to complete.

Harrison and List (2004) propose six factors that can be used to determine the field context of an experiment: the nature of the subject pool, the nature of the information that the subjects bring to the task, the nature of the commodity, the nature of the task or trading rules applied, the nature of the stakes, and the environment in which the subjects operate (see also Carpenter et al. 2005). Using these factors, they discuss a classification scheme that helps to organize one’s thoughts about the factors that might be important when moving from the lab to the field.

As Fig. 1 illustrates, a first useful departure from laboratory experiments using student subjects is simply to use ‘non-standard’ subjects, or experimental participants from the market of interest. Harrison and List (2004) adopt the term ‘artefactual’ field experiment to denote such studies—to denote “synthetic” or “artificial” field experiments. While one might argue that such studies are not ‘field’ in any meaningful way, for consistency of discussion I denote such experiments as artefactual field experiments, since they do depart in a potentially important manner from typical laboratory studies. This type of controlled experiment represents a potentially useful type of exploration beyond traditional laboratory studies.

Moving closer to how naturally occurring data are generated, Harrison and List (2004) denote a ‘framed field experiment’ as the same as an artefactual field experiment but with field context in the commodity, task, stakes, or information set of the subjects. This type of experiment is important in the sense that a myriad of factors might influence behavior, and by progressing slowly towards the environment of ultimate interest one can learn about whether, and to what extent, such factors influence behavior in a case-by-case basis. In addition, by designing or manipulating real world markets, interesting economic phenomena can be explored.

Finally, a ‘natural field experiment’ is the same as a framed field experiment but where the environment is one where the subjects naturally undertake these tasks and where the subjects do not know that they are participants in an experiment. Such an exercise represents an approach that combines the most attractive elements of the laboratory and naturally occurring data—randomization and realism. In this sense, comparing behavior across natural and framed field experiments provides some insights into whether the experimental proclamation, in and of itself, influences behavior.

Clearly any simple field experimental taxonomy leaves gaps, and certain field experiments might not fall neatly into such a classification scheme, but such an organization provides some hints into what is necessary in terms of scientific discovery to link controlled experimentation in the lab to naturally-occurring data. In this spirit, generalizability of results has recently been discussed in the literature (see, e.g., Levitt and List 2007). Experimentalists and non-experimentalists alike cannot reasonably begin to discuss issues of the day concerning generalizability of results from one domain to another before completely filling the knowledge gaps in the bridge contained in Fig. 1. This process has gained momentum recently, and we have continued to learn about the robustness of laboratory results.

Before proceeding to the discussion of field experiments in the economics of charity, I would be remiss not to mention Peter Bohm, for whom Martin Dufwenberg and Glenn Harrison have scribed a touching tribute. Peter was the first to depart from the typical lab experimental approach. An excellent example of an early contribution is Bohm’s (1972) seminal artefactual field experiment, which compared bids in hypothetical and actual markets that had subjects’ state their value to sneak preview a Swedish television show. Given that reported calibration factors (ratio of hypothetical to actual values) were quite intriguing, Bohm’s (1972) results provided both policymakers and academics with an interesting new puzzle. Subsequent lab and field research has generally supported Bohm’s findings.

While his work touched off an interesting stream of research within environmental and resource economics, for a reason that I cannot quite put my finger on, the broader economics literature did not quickly follow Bohm’s lead to pursue research outside of the typical lab experiment. This has only happened in the past decade, but I suspect that if Bohm had not laid these important early tracks, the growth we are observing today would not have been as sharply focused, as deeply penetrating, and as influential. We have Peter to thank for this, and the tribute was a long time coming.

### 3 Field experiments in the economics of charity

The charitable marketplace represents an interesting set of actors, which might be usefully parsed into three distinct types (Andreoni 2007). First, are the donors, who are on the ‘supply’ side: they provide the resources to produce public goods. Within this literature are rich theoretical and empirical studies that explore what motivates individual giving (see Andreoni 2006, for an excellent overview). Second, is the Government, which decides on tax treatment of contributions and the level of grants to charities. Within this broad literature are studies that explore crowding out (see, e.g., Andreoni and Payne 2007) and measures of how responsive giving is to price changes. The final set of actors is charitable organizations, which are on the ‘demand’ side—developing strategies to attract resources to produce public goods.

Even though the stakes are clearly high, until the past several years even the most primitive facts concerning how these three sets of actors interact in the market for charity was largely unknown.<sup>1</sup> Recently, a set of field experiments have lent some insights into charitable fundraising. Two distinct approaches are worthy of further mention. First, is the set of studies that focus on the ask strategy—what information the solicitor presents to the donor. This research necessarily has its roots in the psychology literature (see, e.g., Festinger 1954), yet a recent set of innovative natural field experiments by Rachel Croson and Jen Shang has provided the basis of a nice research agenda in the economics literature.

The Croson and Shang research is in the spirit of Frey and Meier’s (2004) clever natural field experiment in that it explores the influence of social information on charitable behavior. Croson and Shang (2005) is of particular interest because they examine the extensive margin by working with phone banks that receive inbound calls from public radio campaigns. Thus, they have a sample of individuals who have already decided to give during the current round of soliciting, and they then examine what social information alters the amount the individual chooses to give. Their results are quite intriguing in that they report that contributions from ‘recent donors’ matter greatly, particularly when the recent donor is more similar to the caller (of the same gender).

While Croson and Shang (2005) focus on estimating the effect of upward social information, their paper in this special issue (Croson and Shang 2008) examines the impact of downward social information, which to my knowledge has not been explored in this type of natural field experimental setting. This study shows that providing a low social comparison amount has a downward effect on the contribution, and this downward effect is twice as large in magnitude as the upward effect of providing a high social comparison amount. Furthermore, the effect seems very similar in both the telephone and the direct-mail drives.<sup>2</sup>

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<sup>1</sup>The papers in the special issue draw a very clear picture that this industry is vibrant and important. For example, the American Association of Fundraising Counsel estimates that total contributions to American philanthropic organizations in the year 2000 exceeded 2 percent of GDP. Recent figures published by Giving USA show that in the U.S. charitable gifts of money have been 2% or more of GDP since 1998.

<sup>2</sup>The interested reader might also wish to read Breman (2007), who presents a novel idea of combining insights from behavioral economics to fundraising in a natural field experiment. Relatedly, Landry et al. (2006) explore solicitee and mechanism effects in a charitable natural field experiment.

A second strand of related field experimental research explores the comparative static effects of varying prices directly. One provocative example is the large scale natural field experiment in this special issue due to Eckel and Grossman (2008). The paper reports key results from a fundraising drive run by Minnesota National Public Radio (MPR). The central objective of the paper is to present an apples-to-apples comparison of how theoretically equivalent price changes—rebates and matching grants—affect donor behavior. The rebate subsidy is one whereby a donor pledging \$1 to MPR later receives a partial refund (e.g., \$0.20) from the authors of the study. The matching subsidy works as follows: a donor pledge of \$1.00 is matched by an additional donation (e.g. \$0.25) to MPR by the researchers. In the experimental test, the donors are randomly allocated into one of five treatment groups; (1) control groups with no subsidy; (2) matching 25%, (3) matching 33 1/3%, (4) rebate 20% and (5) rebate 25%.

The authors find that matching grants have a larger impact on donations than rebates. Indeed, matching subsidies result in larger total contributions to the charity and price elasticities are roughly one and one-half to three times as large as for the rebate subsidy. These results have clear implications in both a positive and normative sense (the interested reader should also see Eckel and Grossman 2003, and Davis et al. 2005, for lab studies in this area).

A related study in the special issue is Rondeau and List (2008), who explore the effect of matching and seed money on donor behavior.<sup>3</sup> They make use of a natural field experiment by dividing 3000 direct mail solicitations to Sierra Club supporters into four treatments and asking solicitees to support the expansion of a K-12 environmental education program. They find that announcement of seed money increases the participation rate of potential donors by 23% and total dollar contributions by 18%, compared to an identical campaign in which no announcement of leadership gift is made.<sup>4</sup>

One interesting methodological aspect that both of these studies share is that they provide a comparison between behavior in the lab and field. In the Eckel and Grossman (2008) study, the comparison can be made between matching versus rebates in lab and field experiments. As the authors note, since this study extends their previous work in the lab (Eckel and Grossman 2003) to the field, a meaningful methodological point can be made. Overall, the lab and field data match well qualitatively, but quantitatively they are quite distinct.

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<sup>3</sup>The interested reader should also see Karlan and List (2007), who use a natural field experiment to explore the effects of ‘price’ changes on charitable giving by soliciting contributions from more than 50,000 supporters of a liberal organization. They randomize subjects into several different groups to explore whether solicitees respond to upfront monies used as matching funds. They find that simply announcing that a match is available considerably increases the revenue per solicitation—by 19 per cent. In addition, the match offer significantly increases the probability that an individual donates—by 22 per cent. Yet, while the match treatments relative to a control group increase the probability of donating, larger match ratios—3:1 dollars (that is, 3 dollars match for every 1 dollar donated) and 2:1 dollar—relative to smaller match ratios (1:1 dollar) have no additional impact.

<sup>4</sup>One early natural field experiment in the economics literature that is related to this line of inquiry is summarized in List and Lucking-Reiley (2002), who examined how seed money and refunds influenced charitable gifts to a start-up research center (Center for Environmental Policy Analysis (CEPA)) at the University of Central Florida (UCF). Falk (2007) presents a related natural field experiment that is quite clever.

The Rondeau and List study provides a similar methodological comparison by executing a parallel laboratory experiment to match their field study on some of the key parameters of interest. Their results are broadly consonant with Eckel and Grossman (2008): there is a close correspondence between the relative rankings of mechanism performance across the lab and field, but the quantitative impacts are strikingly different. In addition, while the field results show that donors respond strongly to the change in the cost of the program, the laboratory treatments offer mixed evidence on the extent of this effect.

A related study in the special issue volume that permits a novel test of generalizability of results across domains is Benz and Meier (2008). The study takes advantage of a naturally-occurring situation at the University of Zurich, where students are asked to give money towards two social funds. The authors undertook a framed field experiment by setting up donation experiments in the lab that present students with the identical field task of giving to two social funds, but wherein they know that they are taking part in an experiment (and their endowment is provided by the experimenter). The authors are therefore able to construct a unique data set by using panel information on charitable giving by individuals both in a laboratory setting and in the field. In this respect, different from Eckel and Grossman (2008) and Rondeau and List (2008), Benz and Meier are able to change the properties of the situation without changing the population.

In making comparisons across these decision environments, Benz and Meier (2008) find important evidence of positive correlation across situations, but ultimately find that giving in the lab experiment should be considered an upper bound estimate of giving in the field: subjects who have never contributed in the past to the charities gave 75 percent of their endowment to the charity in the lab experiment. Similarly, those who never gave to the charities subsequent to the lab experiment gave more than 50 percent of their experimental endowment to the charities in the lab experiment.

Carpenter et al. (2008), also contained in this special issue, extend this line of inquiry along an interesting dimension by beginning with the observation that economic experiments often make inferences about real world implications on the basis of experiments using student subjects and context-free decision environments. The question they pose is whether these two design decisions affect point predictions of allocations in dictator games. To carry out this task, they follow the general design of Eckel and Grossman (1996) who compare how much money is split between a student subject and another student subject and between a student subject and the Red Cross.

Carpenter et al. (2008), however, compare subjects splitting \$100 between themselves and a charity, where their subjects are either students at Middlebury College or residents of Vermont. Thus, they conduct an artefactual field experiment. Their experiment proceeds in two stages. First, subjects are told they will be given \$100 to split between themselves and a charity (one in ten people execute their decision for real stakes). Then, subjects are asked to choose the charity with which they will split the money. Second, subjects are asked to decide how much of the \$100 to send to the charity.

The paper reports that context matters, and also that non-students tend to allocate less money to themselves than students. Indeed, many more residents send the entire \$100 compared to students. They also find that older people are more generous, consonant with the previous literature (see, e.g., List 2004). This is interesting, because it



begins to discover what might be causing observed differences between lab and field data. In this manner, exploring the effects of the population is invaluable.

A paper that is linked to dictator game allocations is the clever experiment of Alpizar et al. (2008). The experiment concerns contributions of visiting international tourists to the Poas National Park (PNP) in Costa Rica. The study uses a  $2 \times 2 \times 4$  design that crosses treatments that elicit hypothetical or actual contributions with two different levels of social isolation (anonymous and non-anonymous) and four different levels of a reference contribution. In this manner, it contains insights on hypothetical bias (see Cummings et al. 1997), anonymity (see Hoffman et al. 1996) and reference contributions of others (see Croson and Shang above).

Of course, there is ample evidence suggesting that context influences economic decisions and statements of value, but it remains an open empirical question as to whether such influences are enhanced when decisions are posited as hypothetical (rather than actual) choices. This paper helps address this issue by examining the influence of social isolation (anonymity) and information on the behavior (contribution levels) of others on both hypothetical and actual contributions. Further, the paper extends the comparison of information across hypothetical and actual treatments in List et al. (2004) to a natural field setting. In addition, it is amongst the first to examine the effect of information regarding others' contribution decisions on stated preferences.

The authors find that while there are large and statistically significant differences between actual and stated contributions, there are not statistically different differences in the effect of context. Thus, as the authors note, treatments that involve actual monetary payments are also vulnerable to framing effects, which calls such tests into question. This result provides a unique measure, or 'relative price' of changes in these domains. A second interesting result is that the degree of anonymity has some influence on contributions in the hypothesized direction. Though, interestingly, the effect seems to be smaller and less precise than the measured contextual effects. Importantly, both of these contributions have direct implications for evaluating the validity and implementation of stated preference surveys.

These results, as well as those of Eckel and Grossman (2008), Rondeau and List (2008), Benz and Meier (2008), and Carpenter et al. (2008) are in accord with the simple framework presented in Levitt and List (2007). In that study Levitt and I marshal a century of evidence from psychology and combine it with recent field experimental results to build a construct that is based on properties of the situation and aspects of participant selection rules. We argue, for example, that since the properties of the situation are potentially quite different across these domains one should not expect the quantitative insights to be congruent. Rather, it is comparative statics that are more reliably transferred across domains. An interesting avenue for future research is a determination of the important variables that vary between the two domains and a quantification of how such factors influence behavior.

#### 4 Concluding thoughts

Field experiments represent a unique manner in which to obtain data because they force the researcher to understand everyday phenomena, many of which we stumble



upon frequently. Merely grasping the interrelationships of factors in such settings is not enough, however, as the scholar must then seek to understand more distant phenomena that have the same underlying structure. Until then, one cannot reap the true rewards of field experimentation. Such an approach requires a firm understanding of the economic and psychological similarities and dissimilarities between domains that theory predicts will have some import.

This study attempts a brief introduction to field experiments in economics. Undoubtedly, the field is growing quickly, and if I wait another month I will be missing some important studies. For this reason, I have not attempted to canvass the entire spectrum of field experimental work. Rather, I have summarized the studies in this special issue on Field Experiments in charitable fundraising and have attempted to weave them into the existing fabric of field experiments. Field experiments take many shapes and forms, and all might not fit neatly into the guideposts herein. Yet, I hope that the guideposts advocated herein permit a more informative discussion of how field experiments can be used to yield a deeper understanding of economic science. I trust that the papers in this special issue will play an integral role in this regard.

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