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The power of asking in volunteering: Evidence from a matched sample ☆

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Abstract

This paper investigates the effect of personal solicitations on the propensity to volunteer. Propensity score matching methods are employed to control for the endogeneity problem, which arises due to non-random solicitation of potential volunteers. The results suggest that the effect of personal solicitations on the propensity to volunteer is considerable, yet is much less than conventional wisdom, once the endogeneity is controlled for.

Keywords: Non-profit sector; Propensity score matching; Treatment effects; Volunteering

JEL classification: C21; J18; L30

1. Introduction

Recent studies have concluded that being asked to volunteer is the most important reason why people volunteer their time.[1] For example, Freeman (1997) suggests that standard labor supply explanations of volunteering account for only a minor part of volunteering activity in the United States, and that many people volunteer only when they are requested to do so. Using a linear probability analysis, he finds that people who are asked to volunteer are 49% more likely to be a volunteer, holding other observable covariates constant. In a recent study, Bryant et al. (2003) find a similar result. Using simple tabulations from Independent Sector Survey on Giving and Volunteering (1994), they show that people who are asked to volunteer are 52% more likely to become volunteers compared with those who volunteered without being asked. However, both of these studies share a common underlying hypothesis prevalent in the literature, that charitable organizations randomly solicit individuals to volunteer.

This is the first paper, which recognizes that the selection of potential volunteers is non-random. I hypothesize that there are at least three reasons to believe that one's probability of being asked to volunteer is subject to a selection problem. First, people who actively participate in an organization are more likely to be invited to become volunteers.[2] Second, people who have peer relationship with a volunteer of an organization are more likely to be solicited by that particular organization. Finally, people who have done a volunteer work for an organization before are more likely to be asked to volunteer again. Hence, one must take into account the possible endogeneity problem when estimating the causal effects of being asked to volunteer on the propensity to volunteer.

This paper employs various propensity score matching techniques to control for the endogeneity of the selection of potential volunteers. I document that being asked to volunteer increases the propensity to volunteer around 29% for those who are actually asked to volunteer, which is considerably large, however it is much less compared with the findings of earlier studies. Furthermore, this effect is robust to the selection of different matching estimators, regression methods, and control variables.

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[1] Similar results prevail for the relationship between personal solicitations and charitable giving. See, for example, Andreoni (2006) and Yörük (2006).

[2] Schervish and Havens (1997) provide a detailed discussion of this social participation effect.

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2. Data and control variables

This paper uses the Survey of Giving and Volunteering in the United States (2001) conducted for Independent Sector by Westat Inc. with a representative sample of 4216 adults, 21 years of age and older. This survey provides the most recent and comprehensive assessment of volunteer activity in the United States and enables one to control a large set of observable characteristics of the sample.

A unique feature of this data set is that it contains a question on whether the respondent is asked to volunteer. The question is worded as follows:

> (Asked to all respondents) 'Were you personally asked to volunteer in the past 12 months?'

Simple tabulations of responses to this question reveals that among 4178 respondents, 50.15% of those were asked to volunteer and among them, 62.74% volunteered. In contrast, 49.85% of the respondents were not asked to volunteer and among them, only 25.30% volunteered. These raw numbers imply that there exists a 38% difference in the propensity to volunteer which can be attributed to being asked to volunteer. The magnitude of this effect is slightly smaller than but similar to the findings of earlier studies.

The estimating strategy in this paper relies on the methods assuming selection on observables. The basic idea is that if one can observe enough information on strictly exogenous independent variables that determine the treatment (being asked to volunteer), then the propensity to volunteer might be mean independent of the treatment conditional on observable characteristics. In this case, the effect of the treatment on the outcome can be consistently estimated. This requires a large set of strictly exogenous control variables. The following variables are used as controls[3]: household income, age, family size, binary indicators for gender, race, ethnicity, marital status, and educational attainment of the respondent, whether the respondent is student, employed or retired, regularly attends religious services, is a member of religious or non-religious organization, was born in USA, and owns her primary residence, whether her parents previously engage in volunteer activity, and whether the respondent resides in a metropolitan statistical area. After selecting the respondents based on these criteria and excluding the missing data yields a sub-sample of 4099 adults.

3. Empirical specification

Let Y_{1i} and Y_{0i} be the propensity to volunteer for a random person i in the two counterfactual situations of treatment ($T_i=1$) and non-treatment ($T_i=0$), where the treatment is whether person i was being asked to volunteer and let X_i be the set of observable covariates. Traditional matching estimators match each treatment unit to a fixed number of control units (those who were not asked to volunteer). The application of conventional methods is impractical to implement when the set of control variables gets large. Following Rosenbaum and Rubin (1983), one can use propensity score estimator to deal with the dimensionality problem. Let $P(X_i)$ be the propensity score, which is defined as $P(X_i)\equiv \Pr(T_i=1|X_i)$. Then, two parameters that are of primary interest are defined as:

$$\begin{aligned}\text{ATE} &\equiv E\{E[Y_{1i}-Y_{0i}, P(X_i)]\}\\ &= E\{E[Y_{1i}|T_i=1, P(X_i)] - E[Y_{0i}|T_i=0, P(X_i)]\}\end{aligned} \tag{1}$$

and

$$\begin{aligned}\text{ATT} &\equiv E\{E[Y_{1i}-Y_{0i}|T_i=1, P(X_i)]\}\\ &= E\{E[Y_{1i}|T_i=1, P(X_i)] - E[Y_{0i}|T_i=0, P(X_i)]|T_i=1\}.\end{aligned} \tag{2}$$

Here, ATE is the average treatment effect, which is defined as the average difference between the two possible outcomes for a randomly drawn individual from the sample and ATT is the average treatment effect on the treated, which is the average effect of being asked on those who actually are asked to volunteer.

Formally, in order to derive Eqs. (1) and (2), balancing and unconfoundedness properties should be satisfied.[4] Balancing property states that for a given propensity score, exposure to treatment is random, hence treated and control units should be on average identical ($T_i \perp X_i|P(X_i)$). On the other hand, unconfoundedness property guarantees that the treatment is random conditional on set of observable characteristics, which allows for selection on observables (Y_{0i}, $Y_{1i} \perp T_i|P(X_i)$). In principle, one cannot observe two units with exactly the same value of $P(X_i)$, since propensity score is a continuous variable. Therefore, an estimate of $P(X_i)$ is not sufficient to estimate Eqs. (1) and (2). In order to overcome this problem, I employ various propensity score matching methods following Dehejia and Wahba (2002), namely nearest neighborhood matching (NM) with and without replacement, radius matching (RM) with different calipers, and kernel matching (KM).

Rosenbaum (1995) argues that in NM without replacement, the results can be sensitive to the order in which treatment units and control units are matched. Hence, 'low-to-high' and 'high-to-low' matching is considered. In these methods, the treatment units are ranked according to their propensity score in ascending or descending order. The highest ranked treatment unit is first matched to a control unit then that particular unit is removed from matching algorithm. In NM with replacement however, matching algorithm minimizes the propensity score distance between the matched control units and reduces bias since each treatment unit can be matched to the nearest control unit even a control unit is used many times. RM sets a neighborhood in

[3] A data appendix with summary statistics of all variables used in this study and exact wording of questions from which the variables are generated are available from the author upon request.

[4] Here, I also naturally assume that matching assumption is satisfied such that $\Pr(T_i=1|P(X_i)) \in (0, 1)$. This assumption ensures that for each value of $P(X_i)$, there are both treated and untreated individuals.