

Charitable Giving under Inequality Aversion*

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Abstract

This paper focuses on the relationship between voluntary giving and the degree of inequality aversion. Our model suggests that voluntary giving is increasing in the degree of inequality aversion for individuals of higher than average income; however, the sign of the effect is reversed for individuals that are poorer than the average. We test our theoretical findings using the General Social Survey data on the United States and show that empirical results support our predictions.

Keywords: Inequality Aversion, Charitable Contributions, Private Provision of Public Goods, Tobit, Ordered Logit

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1 Introduction

This paper studies the impact of inequality aversion on voluntary provision of public goods, namely charitable giving. In a theoretical model, Fehr and Schmidt (1999) show that, if people are inequality averse, an equilibrium where people contribute positive amounts to a public good could be sustained as well as the standard “free-riding” equilibrium. In their paper, cooperation is due to the ability of agents to use punishment against non-contributors.

A question that arises is that, can inequality aversion affect charitable giving in large-scale societies such as the US where punishments to non-contributors are not possible.¹ First, we consider a simple theoretical model and show that high-income individuals contribute more to the public good as they get more inequality averse; whereas low-income individuals contribute less to the public good as they get more inequality averse. Then, we test our theoretical predictions using The US General Social Survey (GSS). To our knowledge inequality aversion has not been incorporated in any empirical research on voluntary public goods provision. Consistent with the theoretical predictions, we find that inequality aversion has a significant effect on the level of charitable giving: when we look at the low-income and high-income groups separately, we find a positive (negative) relationship between inequality aversion and charitable giving for high-income (low-income) group. In addition, we show that inequality aversion has no significant impact for voluntary contributions for middle-income group.

2 Model

We assume that there is one private good, one pure public good (charity) and $n > 1$ agents. Each agent i has an exogenous income, w_i , and has to decide on the amount of contribution to the public

¹For detailed surveys on charitable giving literature see Vesterlund (2006), and Clotfelter (2002).

good, g_i . The total amount of public good provision is $G = \sum_{i=1}^n g_i$. Let $G_{-i} = \sum_{j \neq i} g_j$ denotes the sum of the contributions by all individuals except i .

Suppose each individual solves the following problem:

$$\begin{aligned}
 \max_{y_i, g_i} & u(y_i) + v(G) + h(g_i) + f_i(I_i) \\
 \text{s.t.} & y_i + g_i = w_i \\
 & 0 \leq g_i \leq w_i \\
 & I_i = y_i - \bar{y}
 \end{aligned} \tag{1}$$

where $y_i = w_i - g_i$ and \bar{y} is the average net income, $\frac{W-G}{n}$. We assume $u(\cdot)$, $v(\cdot)$, and $h(\cdot)$ to be strictly increasing, concave and twice differentiable functions representing the utility from private consumption, the utility from public good and the utility from individual's own contributions to the public good (warm-glow), respectively.² The term $f_i(I)$ determines the degree of inequality aversion. Agents are assumed to dislike inequality and therefore $f_i(I)$ has a maximum of 0 at $I = 0$ for all individuals i .³ In addition, f_i is twice differentiable and concave in I . Moreover, $f'_i > 0$ for $I < 0$ and $f'_i < 0$ for $I > 0$.

Assuming an interior equilibrium, the first order condition is:

$$v'(G) + h'(g_i) - \left(\frac{n-1}{n}\right)f'_i(I_i) = u'(y_i) \tag{2}$$

Each individual contributes to public good until the benefits of contributing is equal to the marginal benefit of an extra consumption.

²Andreoni (1989, 1990) argues that people are impure altruists; that is, they enjoy contributing to charities.

³The first models of inequality aversion were introduced by Fehr and Schmidt (1999) and Bolton and Ockenfels (2000).

Definition: *Agent i is more inequality averse than agent j if $f_i(I) < f_j(I)$ for all $I \in R - \{0\}$.*

Note that, this also implies $|f'_i(I)| > |f'_j(I)|$ for $I \in R - \{0\}$. Next we show that a person's egalitarianism is positively correlated with their voluntary contributions when net income is above the average. However, it is negatively correlated with voluntary contributions when their net income is below the average.

Proposition 1. *Suppose $w_i = w_j$ and i is more egalitarian than j . Then in equilibrium the following holds:*

- i) If $y_j > \bar{y}$ in the equilibrium, then $g_i > g_j$ and $y_j > y_i > \bar{y}$.*
- ii) If $y_j < \bar{y}$ in the equilibrium, then $g_i < g_j$ and $y_j < y_i < \bar{y}$.*

For proofs and extensions of these results, see Derin and Uler (2008).⁴

3 Data and Estimation

We use the General Social Survey (GSS) data for 1996 in the United States to test our theoretical results since charitable giving in dollar terms is only available for 1996 in this data set. We use contributions to charities (CONTRIBUTE) - the respondent's estimated dollar value contributed including both cash contributions and the cash-value of property - as the dependent variable. We divide the whole sample into three groups (high-income, middle-income and low-income) according to the income of the individual relative to the average income. Since the actual average net income cannot be derived from the data set, people that consider themselves above or far above the average are classified as high-income (rich); on average are classified as middle-income; below average and far below average are classified as low-income (poor).

⁴Our results continue to hold even when we use a different measure - that resembles a Gini coefficient - for inequality aversion.

We use a proxy for inequality aversion: *INEQUAL* is a multinomial variable from 1 to 5 that shows whether individuals think there are large income differences in the US. We believe that people who think that there are large income differences in US are more inequality averse.

The regression equation can be written as follows:

$$CONTRIBUTE_i = \max [0, \alpha INEQUAL_i + \Lambda PERSONAL_i + \varepsilon_i] \quad (3)$$

where *CONTRIBUTE_i* is the private charitable contributions of individual *i*. *INEQUAL_i* is the variable of interest and denotes the degree of inequality aversion of individual *i*. *PERSONAL_i* is the vector of other personal characteristics that might affect the public good provision like income level, gender, number of children, age, education level, being religious. We also include region dummies to capture the total public good provision in the area lived.

Using Tobit estimations, we find that inequality aversion has significant effects on charitable contributions. Table 1 shows that voluntary giving is increasing in the degree of inequality aversion for individuals that are wealthier than the average; however, the sign of the effect is reversed for individuals that are poorer than the average. Derin and Uler (2008) provides a detailed analysis of the results presented in this paper as well as robustness checks.

We provide a summary of partial effects: Conditional on charitable contributions being positive a one point increase in the perception of income inequality in US will increase the contributions by 20% for rich individuals and will decrease the contributions by 20% to 22% for poor. When we consider all income levels we find that a one point increase in a person's perception that income inequality in the US is too large will increase their contributions by 11% to 20% generally. This implies that if perceptions of individuals are changed towards being more inequality averse (for

Table 1: Tobit Estimation for Private Voluntary Contributions under Inequality Aversion (1996)						
<i>Dependent variable: Total Private Charitable Contributions (\$): CONTRIBUTE^a</i>						
	(1) Total		(2) Low Income		(3) High Income	
Inequality Aversion:	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error
<i>INEQUAL</i> ^b	0.165**	0.079	-0.256**	0.117	0.242**	0.112
Personal Characteristics:						
<i>Female</i> ^c	-0.011	0.274	-0.950*	0.558	0.885*	0.480
<i>Age</i> ^d	3.289***	1.210	1.547	2.347	0.728	2.446
<i>Income</i> ^d	1.329***	0.195	0.961***	0.319	1.524***	0.376
<i>Being Religious</i> ^b	0.873***	0.145	1.708***	0.280	0.923***	0.270
<i>Ethnicity</i>						
<i>Black</i> ^c	-1.023**	0.465	-1.925**	0.808	-1.152	1.333
<i>Other</i> ^c	-1.038	0.695	0.412	1.211	-2.592**	1.291
<i>Education</i> ^b	0.289***	0.053	0.350***	0.113	0.182*	0.102
<i>Number of Children</i> ^a	-0.221	0.293	0.688	0.600	-0.540	0.584
<i>Marital Status</i>						
<i>Married</i> ^c	1.192***	0.450	-1.197	0.923	0.674	0.828
<i>Separated</i> ^c	0.687	0.792	-1.045	1.181	1.667	1.717
<i>Divorced</i> ^c	0.326	0.502	-0.980	0.895	0.224	0.900
<i>Widowed</i> ^c	0.353	0.736	0.113	1.404	0.556	2.022
<i>Region Dummies</i> ^c	Yes		Yes		Yes	
Number of Observations	828		261		172	
Wald Chi2	262.01		105.86		86.35	
Prob>Chi2	0.000		0.000		0.000	
Log-Pseudo Likelihood	-1713.077		-475.258		-382.983	

^a Measured as natural logarithm plus one, ^b Multinomial Variable, ^c Dummy Variable, ^d Measured as natural logarithm
Robust standard errors are used.

*Significant at 10%, **significant at 5%, ***significant at 1%

example, through education), then total charitable giving will increase. We also test the theoretical prediction that the degree of inequality aversion should not matter for the middle-income class. We find that a point rise in inequality aversion (*INEQUAL*) increases contributions by 18%. However, the effect is not significant ($p = 0.11$).

We find that income, education and strength of religious affiliation have significant and positive effect on charitable giving. Being female does not have a significant effect on giving in general. Surprisingly, the effect of being female is negative and significant for people below average income

but significant and positive for people above the average: women become more generous in voluntary giving only when their income is above average. Being black has a negative and significant effect on charitable giving in general, and for the poor. It has a negative but insignificant effect for rich individuals. Among rich people the individuals that are neither white nor black contribute significantly less.

At this junction, it is important to note that being left wing and being inequality averse are different concepts, although they are correlated. In GSS people are also asked about their political ideology. The correlation between our proxy for inequality aversion and being liberal is 0.18. We find that people who identify themselves as liberals tend to give less to the charities. This effect is always significantly negative regardless of their income levels, i.e, effect is negative even if we look at individuals with incomes higher than average.

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