Effects of Charity on Social Welfare: A Theoretical Analysis

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Using a social welfare function approach, this study theoretically demonstrates that charity and selfless service contribute positively to the welfare of the society without reducing welfare of any individual and thus they invariably lead to Pareto-improvement in social welfare. In other words, a society, regardless of its current level of development, can attain a higher level of subjective wellbeing if the affluent class voluntarily undertakes the service activities that benefit the needy.

Keywords: Social Wefare Function, Charity, Selfless Giving, Pareto Improvement

Introduction

Giving to the needy and donating to charitable organizations are common practices in many societies of the world today. In all religions and cultures, giving is considered as a meritorious deed. Following the social welfare function approach of Arrow (1963) and Sen (1970, 1986), this study formally demonstrates that charitable behavior of the members of the society enhances the welfare of not only the donor, but also the society as a whole without reducing the welfare of any individual. The next section presents a theoretical model showing the positive effects of charitable donations on the social welfare function. Section 3 extends this analysis to selfless giving and the final section summarizes the conclusions and examines their empirical implications.

A Model of Charity

For the sake of simplicity, assume that the society contains two groups of people: rich and poor. Rich people have more than what they need for their consumption and poor have less. The utility of each group increases as they consume more of goods and services. Among the rich, there are two groups of people: those who enjoy giving their surplus wealth to the poor (donors = D) and those who don't (non-donors = ND). Defining group 1 as rich, group 2 as poor and q as quantities of goods and services (in $), we can write the utility functions of all three groups just mentioned as follows:

$$U_1^D = U_1\left(q_{11}^D, q_{12}^D\right), \tag{1}$$

$$U_1^{ND} = U_1\left(q_{11}^{ND}, q_{12}^{ND}\right), \tag{2}$$

$$U_2 = U_2\left(q_{21}, q_{22}\right). \tag{3}$$

Note that the utility of each group depends on the quantity of goods and services (qs). The first subscript denotes the group and the second subscript denotes either consumption or surplus/donation. For example, q_{11} and q_{12} in Equations (1) and (2) denote respectively the dollar values of actual consumption and surplus for the rich. The superscripts D and ND distinguish rich

donors from rich non-donors. Similarly, q_{21} and q_{22} respectively denote the dollar values of actual consumption and donations received by the poor from the rich donor. The quantity q_{22} thus is related to q_{12} by the following equation:

$$q_{22} = kq_{12}^D, \ 0 < k < 1, \tag{4}$$

where k is the fraction of the surplus income of the rich donor that he/she donates to the poor.

Assume that the utility derived by an individual is positively related to the quantity of goods and services consumed. Thus,

$$\frac{\partial U_1^D}{\partial q_{11}^D} > 0, \frac{\partial U_1^{ND}}{\partial q_{11}^{ND}} > 0, \frac{\partial U_2}{\partial q_{21}} > 0, \frac{\partial U_2}{\partial q_{22}} > 0 \tag{5}$$

Assume further that for a donor, utility increases with the increase in donation from his/her surplus income. Since q_{12}^D is fixed during a given time period, this assumption suggests that the utility of the rich donor rises as the size of q_{12}^D becomes smaller due to donation. Thus, for $k < 1$,

$$\frac{\partial U_1^D}{\partial q_{12}^D} < 0 \tag{6}$$

From this assumption, it follows that

$$\frac{\partial U_1^D}{\partial k} = \frac{\partial U_1^D}{\partial q_{12}^D} \times \frac{\partial q_{12}^D}{\partial k} = \frac{\partial U_1^D}{\partial q_{12}^D} \times \left(\frac{-q_{22}}{k^2}\right) > 0 \quad [1] \tag{7}$$

In other words, the utility of the rich donor rises as the fraction of his/her surplus income donated to the poor increases. For a non-donor, however, utility rises with the increase in surplus hoarding and remains unaffected by whether or not the donor donates to the poor. Thus,

$$\frac{\partial U_1^{ND}}{\partial q_{12}^{ND}} > 0, \frac{\partial U_1^{ND}}{\partial q_{12}^D} = 0 \tag{8}$$

In this framework of three groups of individuals, the social welfare function in its simplest form can be written as

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[1]By Equation (6), the first partial derivative after the last equality sign is negative. By Equation (4), $\frac{\partial q_{12}^D}{\partial k} = \left(\frac{-q_{22}}{k^2}\right) < 0$.

$$W = U_1^D\left(q_{11}^D, q_{12}^D\right) + U_1^{ND}\left(q_{11}^{ND}, q_{12}^{ND}\right) + U_2\left(q_{21}, kq_{12}^D\right) \quad (9)$$

To see the effect of an increase in the rate of donation k by the rich donor on the welfare of the society, it is necessary to evaluate the sign of $\partial W/\partial k$. Under the assumption that the utility function of the rich non-donors remains unaffected by the changes in k, this partial derivative reduces to

$$
\begin{aligned}
\frac{\partial W}{\partial k} &= \frac{\partial U_1^D}{\partial q_{12}^D} \times \frac{\partial q_{12}^D}{\partial k} + \frac{\partial U_2}{\partial q_{22}} \times \frac{\partial q_{22}}{\partial k} \\
&= \frac{\partial U_1^D}{\partial q_{12}^D} \times \left(\frac{-q_{22}}{k^2}\right) + \frac{\partial U_2}{\partial q_{22}} \times q_{12}^D
\end{aligned}
\quad (10)
$$

Note that by Equations (5) and (6), both terms after the second equality are positive, and consequently, $\partial W/\partial k > 0$. This confirms that with a rise in the rate of donation k, the utility of rich donors as well as the utility of the poor receiving charitable help rise, and consequently, the social welfare rises without reducing the welfare of rich non-donors. Clearly, this is a Pareto-improvement which further justifies charitable donation as a means of enhancing social welfare.[2]

Selfless Giving

The charity model outlined above can be easily extended to a model of selfless giving. In a model of charity, the donation is given out of the surplus income q_{12} only, whereas in a model of selfless giving, the donor goes a step further to donate not only the entire surplus income (*i.e.*, $k = 1$), but also a part of the income kept aside for his/her own consumption q_{11} if necessary. The desire to sacrifice in this model is so strong that the donor does not hesitate even to forego a part of his/her own consumption. In this model, the total income of the rich donor is fixed at q_1^0, but unlike the charity model, the part of the income kept aside for donation q_{12}^D is variable which exactly equals the donation received by the poor. Thus,

$$q_{12}^D + q_{11}^D = q_1^0, \quad q_{12}^D = q_{22} \quad (11)$$

Due to the variable nature of the surplus income q_{12}^D earmarked for donation and more intense desire of the donor to help the poor, the partial derivatives of the donor's utility function, unlike those in charity model, assume the following signs:

$$\partial U_1^D / \partial q_{12}^D > 0 \quad (12)$$

and

$$\partial U_1^D / \partial q_{11}^D = \left(\partial U_1^D / \partial q_{12}^D\right)\left(\partial q_{12}^D / \partial q_{11}^D\right) = -\partial U_1^D / \partial q_{12}^D < 0 \quad (13)$$

by Equations (11) and (12).

The social welfare function in this model can be rewritten as

$$
\begin{aligned}
W = U_1^D\left(q_1^0 - q_{12}^D, q_{12}^D\right) + U_1^{ND}\left(q_{11}^{ND}, q_{12}^{ND}\right) \\
+ U_2\left(q_{21}, q_{22} = q_{12}^D\right)
\end{aligned}
\quad (14)
$$

and the effect of selfless giving on social welfare can be evalu-

ated from the following equation:

$$
\begin{aligned}
\frac{\partial W}{\partial q_{12}^D} &= \frac{\partial U_1^D}{\partial q_{11}^D} \times \frac{\partial q_{11}^D}{\partial q_{12}^D} + \frac{\partial U_1^D}{\partial q_{12}^D} + \frac{\partial U_2}{\partial q_{22}} \times \frac{\partial q_{22}}{\partial q_{12}^D} \\
&= -\frac{\partial U_1^D}{\partial q_{11}^D} + \frac{\partial U_1^D}{\partial q_{12}^D} + \frac{\partial U_2}{\partial q_{22}}.
\end{aligned}
\quad (15)
$$

The three terms after the last equality in Equation (15) are positive respectively by Equations (13), (12) and (5), and consequently, $\partial W/\partial q_{12}^D > 0$. Thus in a model of selfless giving, where the donor does not hesitate even to cut down his/her own consumption to help the poor, the social welfare rises as the amount of donation by the rich donors increases because it increases the welfare of not only the poor (indicated by the positive 3rd term after the last equality in Equation (15)), but also the rich donor (first and second terms after the last equality in Equation (15) are positive) without reducing the welfare of the rich non-donors. Selfless giving thus leads to a Pareto improvement in social welfare.

Summary and Discussion

Following a social welfare function approach and assuming a positive relationship between charitable donation and donor's utility, this study demonstrates theoretically that giving to the needy from one's surplus income increases the welfare of not only those who receive the donaion, but also those who donate, leading thus to an increase in the aggregate social welfare. Extending this analysis to selfless giving, the study further shows that helping the needy at the cost of one's own consumption also increases social welfare without reducing the welfare of any individual. Charitable donation and selfless giving thus lead invariably to a Pareto improvement in social welfare.

This study has important empirical implications, especially when the government fails to provide adequate public goods necessary for enhancing the welfare of its citizens. In every society, there are large numbers of rich citizens with abundant surplus income along with numerous poor people lacking even the basic necessities of life. If the rich voluntarily comes forward to help the poor, it will not only solve numerous economic problems facing the society, but also augment the aggregate social welfare, leading to a more prosperous and happier society. This is not a new finding. The generous efforts by numerous service organizations, such as Red Cross, Habitat for Humanity, Feed the Children, Salvation Army, Sathya Sai Service Organization etc. all over the world, provide ample testimony to the beneficial effects of giving for worthy causes.[3] The study simply reinforces the fact that even an economically developed society can attain a still higher level of subjective wellbeing if the affluent class voluntarily undertakes the service activities that benefit the needy.

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[2]Pareto optimality in standard welfare economics refers to a state in which no one can be made better off without making someone worse off. A Pareto improvement, on the other hands, indicates a scenario where at least one individual is better off when no one else is worse off (Varian, 1993, Chs. 21, 22; Mas-Colell *et al.*, 1995, Chs. 16, 21).

[3]While providing free super-specialty medical care to the needy, free education even at the university level to all students, and free drinking water to numerous villages and cities of India, the Sathya Sai Service Organization has recently extended its operation to several countries outside India. See "Sai Institutions & Service Projects" under the international Sai Organization website, http://www.sathyasai.org.

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