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The beliefs in Karma and rebirth as motivation for charitable giving: A theoretical model

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ABSTRACT

This paper proposes a two-period model with consumption/donation choices to explain how religious beliefs in karma and rebirth affect donation behavior. The first period corresponds to the present life, and the second period corresponds to the next life. Solving the model's utility maximization problem shows how an individual allocates income toward donation to receive merit in the next life and how the amount of donation is affected by factors such as incomes, heterogeneity in karmic and rebirth beliefs, heterogeneity in warm-glow preferences, and cost of donation. In addition, this paper considers the role of donation tax allowance incentive in a warm glow model. The results of theoretical models show that charitable organizations can increase donations by (1) emphasizing karma believers (2) enhancing psychological benefits from donations (3) reducing costs associated with making donations and (4) promoting tax-deductibility of the charity.

KEYWORDS: charitable giving, donation, karma, rebirth, warm glow

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1. Introduction

Donation behavior has been a subject of interest in both economics and social sciences. Understanding why individuals and organizations donate, and how economic factors influence their decisions can help government pursue policies and strategies to encourage charitable contributions. As mentioned in Jamal et al. (2019), religious causes are revealed as the most important motivations to donate in the UK. The most widely practiced religion in the world is Christianity, followed by Islam, Hinduism, and Buddhism, respectively. In Buddhism the doctrine of karma is founded on the law of cause and effect. All actions have consequences. One's actions in both current and past lives generate karmic consequences that influence future rebirths. Therefore, making merit and doing good deeds are believed to gain happiness in the present life and in the next life. There are many forms of merit-making in Buddhism society, including donating money, offering food and necessities, as well as dedicating time to public benefit activities.

Explaining an individual's donation behavior seems to be contradictory to the basic principles of economics because donation is a giving without hoping for something in return. It is seen to symbolize *pure altruism*. However, individuals who make merit or donate sometimes have the desire to receive something in return. For example, those who donate money for research and development investment projects hope to gain benefits from the invention in the future, or those who donate money to build hospitals hope to receive good treatment in the future (Andreoni, 2006). This is called *impure altruism*. Later, the concept of *warm glow*, which refers to the positive emotional response experienced by individuals when they engage in charitable giving or altruistic acts, was introduced by Andreoni (1989, 1990). Researchers suggest that people derive intrinsic rewards from their generosity, such as feelings of happiness, fulfillment, or moral satisfaction. This warm glow can motivate individuals to give more if the emotional benefits outweigh the financial costs. Essentially, it highlights the psychological benefits of giving, suggesting that people are not only driven by the desire to help others but also by positive emotions that come along. Buddhist doctrine relates to the beliefs in karma and rebirth, therefore Buddhists' merit making (especially donation) may depend on benefits expected to be received in the next life. Therefore, this study aims to develop a theoretical model of donation behavior that captures the concepts of religious beliefs in karma and rebirth, as well as warm glow, and which can therefore be employed to understand individual's donation decision. To the best of our knowledge this study is one of the first to develop a theoretical model investigating the influence of religious beliefs in karma and rebirth on donation behavior. Besides heterogeneity in karmic and rebirth beliefs, as well as heterogeneity in warm-glow preferences, the models also determine the role of incomes, cost of donation, and donation tax allowance incentive in charitable giving. Thus, the findings offer new insights for charitable organizations and policy makers in relation to benefits and costs associated with monetary donations.

The remainder of this study is organized as follows. Section 2 provides a brief literature review on the theoretical model of donation behavior. Section 3 develops a simple model with consumption/donation choices to examine how religious beliefs in karma and rebirth play a significant role in donation decision. The model then is extended by adding the impact of heterogeneity in warm-glow preferences and cost of donation to a donation decision making. Section 4 combines the warm glow and tax benefits of donating in a single model to explain the charitable giving. The final section presents the discussion.

2. Literature Review

Economic models explaining philanthropy began with the work of Hochman and Rodgers (1969) and Kolm (1969), who observed that *altruism* creates public good. The early simple model stipulates that the public goods generated by donations provide the same utility as economic goods. According to the model, if the government collects lump sum taxes from donors to create public goods, donors will reduce their private donations by the same amount. This is referred to as crowding out. Therefore, it limits the government's role in encouraging donations to increase public goods (Warr, 1982; Roberts, 1984).

Later, the model was developed by taking into account the concept of *warm glow*, meaning that the donor is motivated not only by the interests of others but also by own satisfaction obtained through donation. Humans have a moral sense and a desire to make merit. They also have emotions and feel empathy for others, so giving is something that brings happiness and contentment. A merit variable is therefore added to the utility function to represent satisfaction from making merit. The impure altruism model finds that government's

forced donation policy cannot completely crowd out voluntary donations. According to the warm-glow model developed by Andreoni (1989, 1990), public giving is not a perfect substitute for private giving. Therefore, the crowding out effect of involuntary donation is incomplete. In addition, subsidizing altruistic behavior is more efficient than direct grants due to the egoistic motive for giving (Andreoni, 1990). Andreoni (2006) also showed that as the size of the charity grows, all giving due to altruism will be crowded out, leaving only giving due to warm glow. With the warm-glow motives, Saez (2004) investigated the optimal tax treatment of charitable contributions. Under some conditions where the contribution good is underprovided by the private sector and when the government can complement private contributions with direct funding, the optimal subsidy rate is related to the price response of contributions, the size of crowding out of private contributions by public contributions, and the redistributive tastes of the government. Moreover, several studies focus on price and income elasticities of charitable giving, as well as factors influencing donation behavior. For example, Kang et al. (2016) examined the effect of message characteristics on donation behavior. Their model relates aspect of an appeal, such as the visual portrayal of the need, to the marginal utility of egoistic versus altruistic giving.

At present, there is a wide variety of economic models that are used to describe donation behavior. For example, game theory provides a theoretical framework to morally differentiate purely altruistic givers from warm glow givers. According to previous literature, models of charitable giving usually assume that donors get utility from the act of giving itself in addition to utility from consumption. In addition to the warm glow effect, the tax advantages of charitable contributions reduce the "price" of the donation in the sense that the net cost to the donor is less than the donation amount because of charitable deduction from taxable income. Although there is empirical evidence that relates religion to charitable giving (e.g., Wiepking et al., 2014; Jamal et al., 2019; Oxley, 2020; Chen et al., 2022), none of theoretical models consider the role of religious beliefs on donation behavior. Since religious beliefs, especially beliefs in karma and rebirth, influence donation decision, it is significant to propose an economic model to investigate the influence of heterogeneity in karmic and rebirth beliefs as well as heterogeneity in warm-glow preferences by incorporating them into the model parameters for the donor's utility maximization problem.

3. Warm Glow Model: The Beliefs in Karma and Rebirth

In this section, a two-period model with consumption/donation choices is presented to explain the impact of religious beliefs on donation behavior. Starting with a simple model, an individual maximizes a lifetime utility function that depends on consumption/donation choices in the present life (t) and in the next life (t+1). The influence of religious beliefs in karma and rebirth is taken into consideration by incorporating it as a parameter (α) into budget constraint. The model then is extended to incorporate heterogeneity in warm-glow preferences (γ) and cost of donation (φ) in a donation decision-making.

3.1 A Simple Model of Donation Behavior

Suppose that an individual chooses his/her consumption in the present life (c_t) and in the next life (c_{t+1}) to maximize his/her lifetime utility function defined as follows:

$$u = u(c_t) + \beta u(c_{t+1}), \tag{1}$$

where β is the discount factor or the weight that an individual places on the future relative to today. In addition, β can be expressed as a function of the rate of time preference (ρ), $\beta = \frac{1}{1+\rho}$.

In order to get an explicit solution, a functional form for the utility function is defined as the logarithmic function: $u(c) = \ln c$. Thus, the utility maximization problem can be written as

$$\max\ u = \ln c_t + \beta \ln c_{t+1}. \tag{2}$$

Suppose that as of this moment, an individual receives income that is not derived from work. Therefore, the choice between leisure and work is not considered. Letting d denote donation and y denote income, an individual faces the following two budget constraints:

$$c_t + d_t = y_t . \quad (3)$$
$$c_{t+1} + d_{t+1} = y_{t+1} + \alpha d_t . \quad (4)$$

Both equations show that financial wealth is equal to total spending in two categories: consumption and donation. Equation (3) applies to "the present life", and d_t represents the amount of donation in the present life. Equation (4) applies to "the next life". It is assumed that donation in the present life will be rewarded as monetary benefits in the next life. For example, it is very common to hear Thai people saying that making merits in the present life so that they will be reborn in a better state of life (Khamkhong and Yanatharo, 2022). Therefore, α is a parameter that captures heterogeneity in karma and rebirth beliefs. For example, if α is equal to zero, then an individual does not believe in karma and rebirth. Alternatively, if α is greater than zero, making a donation in the present life leads to some monetary benefits in the next life. Larger value of α indicates a stronger belief in karma and rebirth, and results in higher reward rate. In this case, an individual's next-life wealth is determined not only by the next-life income (y_{t+1}), but also by future reward on the present-life donation (αd_t).

Substituting equation (4) into equation (3), the intertemporal budget constraint is as follows:

$$c_t + \frac{1}{\alpha}(c_{t+1} + d_{t+1}) = y_t + \frac{1}{\alpha} y_{t+1} . \quad (5)$$

Equation (1) is technically an egoistic utility specification in that an individual obtains utility from consumption only. With the warm-glow motive, an individual obtains utility from consumption and a feeling of warm glow, which is affected by the size of donation. Therefore, the utility function in equation (1) becomes

$$u = \left[u(c_t) + u(d_t)\right] + \beta\left[u(c_{t+1}) + u(d_{t+1})\right]. \quad (6)$$

The utility function is defined as a separable utility function, meaning that marginal utility of consumption (donation) does not change due to a change in the amount of monetary donation (consumption). Therefore, with the warm glow effect, an individual chooses his/her consumption/donation choices to maximize a logarithmic utility function subject to the intertemporal budget constraint:

$$\max\ u = \ln c_t + \ln d_t + \beta \ln c_{t+1} + \beta \ln d_{t+1}, \text{ subject to}$$

$$c_t + \frac{1}{\alpha}(c_{t+1} + d_{t+1}) = y_t + \frac{1}{\alpha} y_{t+1} . \quad (7)$$

To solve the utility maximization problem, we substitute the equation (3) into equation (7), and finally obtain the Lagrangian for this utility maximization problem in equation (8).

$$L = \ln c_t + \ln(y_t - c_t) + \beta \ln c_{t+1} + \beta \ln d_{t+1} + \lambda\left[y_t + \frac{1}{\alpha} y_{t+1} - c_t - \frac{1}{\alpha}(c_{t+1} + d_{t+1}) \right], \quad (8)$$

where $\lambda > 0$ is the Lagrange multiplier on the intertemporal budget constraint.

The first order conditions (FOC) associated with constrained utility maximization are:

$$\frac{\partial L}{\partial c_t} = \frac{1}{c_t} - \frac{1}{(y_t - c_t)} - \lambda = 0 \text{ or } \lambda = \frac{1}{c_t} - \frac{1}{(y_t - c_t)} . \quad FOC(1.1)$$

$$\frac{\partial L}{\partial c_{t+1}} = \beta \frac{1}{c_{t+1}} - \frac{\lambda}{\alpha} = 0 \text{ or } \lambda = \beta\alpha \frac{1}{c_{t+1}} . \quad FOC(1.2)$$

$$\frac{\partial L}{\partial d_{t+1}} = \beta \frac{1}{d_{t+1}} - \frac{\lambda}{\alpha} = 0 \text{ or } \lambda = \beta\alpha \frac{1}{d_{t+1}}. \qquad FOC(1.3)$$

$$\frac{\partial L}{\partial \lambda} = y_t + \frac{1}{\alpha} y_{t+1} - c_t - \frac{1}{\alpha}(c_{t+1} + d_{t+1}) = 0 \text{ or } c_{t+1} = \alpha y_t + y_{t+1} - \alpha c_t - d_{t+1}. \qquad FOC(1.4)$$

From *FOC*(1.2) and *FOC*(1.3), we obtain as follows:

$$c_{t+1} = d_{t+1}. \tag{9}$$

Equation (9) means that an individual will consume and donate equally in the next life. It also shows that the marginal utility of the next-life consumption is equal to the marginal utility of the next-life donation due to the model assumption of liberation from samsara after the next life.

Substituting equation (9) into *FOC*(1.4) and rearranging, we see that

$$c_{t+1} = \frac{\alpha y_t + y_{t+1} - \alpha c_t}{2}. \tag{10}$$

From *FOC*(1.1) and *FOC*(1.2), we get

$$\frac{1}{c_t} - \frac{1}{(y_t - c_t)} = \beta\alpha \frac{1}{c_{t+1}}. \tag{11}$$

Substituting equation (10) into equation (11) and rearranging, there exists an implicit function satisfying

$$\frac{1}{c_t} - \frac{1}{(y_t - c_t)} - \frac{2\beta\alpha}{\alpha y_t + y_{t+1} - \alpha c_t} = 0. \tag{12}$$

or, equivalently, by setting $c_t + d_t = y_t$,

$$\frac{1}{(y_t - d_t)} - \frac{1}{d_t} - \frac{2\beta\alpha}{\alpha d_t + y_{t+1}} = 0. \tag{13}$$

Hence, total differentiating equation (13) and doing the comparative static calculation yield

$$\frac{dd_t}{dy_t} = \frac{(y_t - d_t)^{-2}}{(y_t - d_t)^{-2} + d_t^{-2} + 2\beta\alpha^2(\alpha d_t + y_{t+1})^{-2}} > 0 \tag{14}$$

$$\frac{dd_t}{dy_{t+1}} = \frac{-2\beta\alpha(\alpha d_t + y_{t+1})^{-2}}{(y_t - d_t)^{-2} + d_t^{-2} + 2\beta\alpha^2(\alpha d_t + y_{t+1})^{-2}} < 0 \tag{15}$$

$$\frac{dd_t}{d\alpha} = \frac{2\beta y_{t+1}(\alpha d_t + y_{t+1})^{-2}}{(y_t - d_t)^{-2} + (d_t)^{-2} + 2\beta\alpha^2(\alpha d_t + y_{t+1})^{-2}} > 0 \tag{16}$$

$$\frac{dd_t}{d\beta} = \frac{2\alpha(\alpha d_t + y_{t+1})^{-1}}{(y_t - d_t)^{-2} + d_t^{-2} + 2\beta\alpha^2(\alpha d_t + y_{t+1})^{-2}} > 0 \tag{17}$$

Thus, using the implicit function theorem, equation (14) shows that an increase in the present-life income will increase the present-life donation since an individual has more money in his/her budget that he/she can use for donation. Equation (15) shows the negative effect of the next-life income on the present-life donation. For example, an individual who expects to earn a lower next-life income considers himself/herself in need of more merit or donation since it is believed that the good merit received from donating money is beneficial in the present life as the warm glow effect and in the next life as the wealth effect. In addition, equation (16) shows how religious beliefs in karma and rebirth influence an individual's donation behavior. An individual with a strong belief in karma and rebirth makes more monetary donations since the larger the amount of money donated, the wealthier the donor will be in the next life. Finally, equation (17) indicates that an individual with a higher discount factor is more willing to substitute present for future satisfaction, and thus leads to an increase in present-life donation since he/she is more patient and values the satisfaction in the next life more. Therefore, the two-period model shows that the amount of money donated in the present life (d_t) depends not only on the discount factor (β) but also on a range of other factors, including present-life income (y_t), next-life income (y_{t+1}), and heterogeneity in karma and rebirth beliefs (α).

3.2 Extension of the Donation Behavior Model

The goal of the extension is to understand the role of heterogeneity in warm-glow preferences and cost of donation in a donation decision-making. Consider an individual who obtains utility from consumption and a feeling of warm glow, which is affected by the size of donation. However, the main purpose of this model is to investigate the role of heterogeneity in warm-glow preferences and cost of donation (φ) in a donation decision-making. It is possible that an individual with a large degree of heterogeneity in the strength of warm-glow motive receives higher happiness from the money he/she donates than from the money he/she spends on consumption. Let γ capture heterogeneity in warm-glow preferences, $0 < \gamma < 1$. The larger is γ, the more weight is given to donation in determining utility. Therefore, the lifetime utility function can be written as follows:

$$u = \sum_{i=0}^{1} \beta^i \left[(1-\gamma) \ln c_{t+i} + \gamma \ln d_{t+i} \right] \qquad (18)$$

In addition, it is significant to incorporate the role of cost of donation into charitable giving. A donation processing fee is incurred when an individual makes his/her donation to a charitable organization using a third-party payment processor. It covers transaction fee, processing fee, and administrative expense, and can be expressed as either a percentage of the amount of donation or a nominal fee. In addition, the research by Knowles and Servátka (2015) provides evidence of a transaction cost reducing donations. Due to donor complications that may arise during the donation process, the size of this effect depends on the opportunity cost of time. Let's assume that φ is used for cost of donation, and this parameter is expressed as a percentage of the amount of donation. Then, we have the following two budget constraints:

$$c_t + (1+\varphi) d_t = y_t . \qquad (19)$$

$$c_{t+1} + (1+\varphi) d_{t+1} = y_{t+1} + \alpha d_t . \qquad (20)$$

Rearranging equation (20), we get $d_t = \frac{c_{t+1} + (1+\varphi) d_{t+1} - y_{t+1}}{\alpha}$. Substituting $d_t = \frac{c_{t+1} + (1+\varphi) d_{t+1} - y_{t+1}}{\alpha}$ into equation (19) and rearranging, the intertemporal budget constraint is as follows:

$$c_t + \frac{(1+\varphi)}{\alpha} \left[c_{t+1} + (1+\varphi) d_{t+1} \right] = y_t + \frac{(1+\varphi)}{\alpha} y_{t+1} . \qquad (21)$$

Rearranging equation (19), we obtain $d_t = \frac{y_t - c_t}{1+\varphi}$. Using $d_t = \frac{y_t - c_t}{1+\varphi}$ and the intertemporal budget constraint as shown in equation (21), the Lagrangian for this utility maximization problem is

$$L = (1-\gamma)\ln c_t + \gamma \ln(\frac{y_t - c_t}{1+\varphi}) + \beta(1-\gamma)\ln c_{t+1} + \beta\gamma \ln d_{t+1} + \lambda\left[y_t + \frac{(1+\varphi)}{\alpha} y_{t+1} - c_t - \frac{(1+\varphi)}{\alpha}\left[c_{t+1} + (1+\varphi)d_{t+1}\right]\right], \quad (22)$$

where $\lambda > 0$ is the Lagrange multiplier on the intertemporal budget constraint.

The first order conditions (FOC) associated with constrained utility maximization are:

$$\frac{\partial L}{\partial c_t} = (1-\gamma)\frac{1}{c_t} - \gamma\frac{1}{(y_t - c_t)} - \lambda = 0 \text{ or } \lambda = \frac{1-\gamma}{c_t} - \frac{\gamma}{(y_t - c_t)}. \quad FOC(2.1)$$

$$\frac{\partial L}{\partial c_{t+1}} = \beta(1-\gamma)\frac{1}{c_{t+1}} - \lambda\frac{(1+\varphi)}{\alpha} = 0 \text{ or } \lambda = \frac{\alpha}{(1+\varphi)}\frac{\beta(1-\gamma)}{c_{t+1}}. \quad FOC(2.2)$$

$$\frac{\partial L}{\partial d_{t+1}} = \beta\gamma\frac{1}{d_{t+1}} - \lambda\frac{(1+\varphi)^2}{\alpha} = 0 \text{ or } \lambda = \frac{\alpha}{(1+\varphi)^2}\frac{\beta\gamma}{d_{t+1}}. \quad FOC(2.3)$$

$$\frac{\partial L}{\partial \lambda} = y_t + \frac{(1+\varphi)}{\alpha} y_{t+1} - c_t - \frac{(1+\varphi)}{\alpha}\left[c_{t+1} + (1+\varphi)d_{t+1}\right] = 0$$

$$\text{or } y_t + \frac{(1+\varphi)y_{t+1}}{\alpha} - \frac{(1+\varphi)\left[c_{t+1} + (1+\varphi)d_{t+1}\right]}{\alpha} = c_t. \quad FOC(2.4)$$

From *FOC*(2.2) and *FOC*(2.3), we obtain $\frac{\alpha}{(1+\varphi)}\frac{\beta(1-\gamma)}{c_{t+1}} = \frac{\alpha}{(1+\varphi)^2}\frac{\beta\gamma}{d_{t+1}}$

and finally get

$$c_{t+1} = \frac{(1-\gamma)(1+\varphi)d_{t+1}}{\gamma}. \quad (23)$$

Substituting equation (23) into *FOC*(2.4) and rearranging, we get

$$d_{t+1} = \left[y_t + \frac{(1+\varphi)y_{t+1}}{\alpha} - c_t \right]\frac{\alpha\gamma}{(1+\varphi)^2}. \quad (24)$$

FOC(2.1) and *FOC*(2.3) show the following equation:

$$\frac{1-\gamma}{c_t} - \frac{\gamma}{(y_t - c_t)} = \frac{\alpha}{(1+\varphi)^2}\frac{\beta\gamma}{d_{t+1}}. \quad (25)$$

Substituting equation (24) into equation (25) and rearranging, there exists an implicit function satisfying

$$\frac{1-\gamma}{c_t} - \frac{\gamma}{(y_t - c_t)} = \frac{\beta}{y_t + \frac{(1+\varphi)y_{t+1}}{\alpha} - c_t}. \quad (26)$$

or, equivalently, by setting $c_t + (1+\varphi)d_t = y_t$,

$$\frac{1-\gamma}{y_t - (1+\varphi)d_t} - \frac{\gamma}{(1+\varphi)d_t} - \frac{\beta\alpha}{(1+\varphi)(\alpha d_t + y_{t+1})} = 0. \quad (27)$$

Hence, total differentiating equation (27) and doing the comparative static calculation yield

$$\frac{dd_t}{dy_t} = \frac{(1-\gamma)\left[y_t-(1+\varphi)d_t\right]^{-2}}{(1-\gamma)(1+\varphi)\left[y_t-(1+\varphi)d_t\right]^{-2}+\gamma(1+\varphi)^{-1}d_t^{-2}+\beta\alpha^2(1+\varphi)^{-1}(\alpha d_t+y_{t+1})^{-2}} > 0 \qquad (28)$$

$$\frac{dd_t}{dy_{t+1}} = -\frac{\beta\alpha(1+\varphi)^{-1}(\alpha d_t+y_{t+1})^{-2}}{(1-\gamma)(1+\varphi)\left[y_t-(1+\varphi)d_t\right]^{-2}+\gamma(1+\varphi)^{-1}d_t^{-2}+\beta\alpha^2(1+\varphi)^{-1}(\alpha d_t+y_{t+1})^{-2}} < 0 \qquad (29)$$

$$\frac{dd_t}{d\alpha} = \frac{\beta(1+\varphi)^{-1}y_{t+1}(\alpha d_t+y_{t+1})^{-2}}{(1-\gamma)(1+\varphi)\left[y_t-(1+\varphi)d_t\right]^{-2}+\gamma(1+\varphi)^{-1}d_t^{-2}+\beta\alpha^2(1+\varphi)^{-1}(\alpha d_t+y_{t+1})^{-2}} > 0 \qquad (30)$$

$$\frac{dd_t}{d\beta} = \frac{\alpha(1+\varphi)^{-1}(\alpha d_t+y_{t+1})^{-1}}{(1-\gamma)(1+\varphi)\left[y_t-(1+\varphi)d_t\right]^{-2}+\gamma(1+\varphi)^{-1}d_t^{-2}+\beta\alpha^2(1+\varphi)^{-1}(\alpha d_t+y_{t+1})^{-2}} > 0 \qquad (31)$$

$$\frac{dd_t}{d\gamma} = \frac{\left[y_t-(1+\varphi)d_t\right]^{-1}+(1+\varphi)^{-1}d_t^{-1}}{(1-\gamma)(1+\varphi)\left[y_t-(1+\varphi)d_t\right]^{-2}+\gamma(1+\varphi)^{-1}d_t^{-2}+\beta\alpha^2(1+\varphi)^{-1}(\alpha d_t+y_{t+1})^{-2}} > 0 \qquad (32)$$

$$\frac{dd_t}{d\varphi} = -\frac{d_t(1-\gamma)\left[y_t-(1+\varphi)d_t\right]^{-2}+\gamma d_t^{-1}(1+\varphi)^{-2}+\beta\alpha(\alpha d_t+y_{t+1})^{-1}(1+\varphi)^{-2}}{(1-\gamma)(1+\varphi)\left[y_t-(1+\varphi)d_t\right]^{-2}+\gamma(1+\varphi)^{-1}d_t^{-2}+\beta\alpha^2(1+\varphi)^{-1}(\alpha d_t+y_{t+1})^{-2}} < 0 \qquad (33)$$

The outcomes of the extended model are consistent with the ones of the simple model, meaning that an individual's present-life donation (d_t) is positively related to the present-life income (y_t), heterogeneity belief in karma and rebirth (α), and discount factor (β), but negatively related to the next-life income (y_{t+1}). In addition, by incorporating the role of heterogeneity in warm-glow preferences and cost of donation into the warm-glow model, it is found that an individual with a large degree of heterogeneity in the strength of warm-glow motive (γ) increases his/her donation. However, the amount of money donated is negatively influenced by the cost of donation (φ).

4. Warm Glow Model: Donation Tax Allowance Incentive

Here we will consider the role of tax incentive in motivating donation. A donation behavior model is less complex by ignoring religious beliefs in karma and rebirth but incorporating tax incentive variable. It assumes that the donor derives utility from consumption, leisure, and monetary donation. Let θ_l and θ_d denote, respectively, preference heterogeneity in leisure and warm glow, and their value be between 0 and 1. Therefore, a logarithmic utility function is expressed as

$$u = (1-\theta_l-\theta_d)\ln c + \theta_l \ln l + \theta_d \ln d\,, \qquad (34)$$

where c is consumption, l is leisure hours, d is donation, and $(1-\theta_l-\theta_d)$ is the weight placed on consumption. Since tax authorities in most countries encourage donations by offering donation tax allowance incentives, we investigate its impact by using the following budget constraint:

$$c + d = wn - \tau(wn - \kappa d)\,, \qquad (35)$$

where w is the wage per hour worked, n is the number of hours of work, , τ is the individual income tax rate, $0<\tau<1$, and κ is a rate of donation tax allowance, $0<\kappa$. Therefore, the right-hand side of equation (35) is the after-tax income, representing the total disposable income available to spend or donate.

Under a work-leisure constraint presented as $T = n + l$, where T is the amount of time available, and the budget constraint given in equation (35), the Lagrangian for this utility maximization problem is:

$$L = (1-\theta_l-\theta_d)\ln c + \theta_l \ln(T-n) + \theta_d \ln d + \lambda\left[(1-\tau)wn - c - (1-\tau\kappa)d\right], \qquad (36)$$

where $\lambda > 0$ is the Lagrange multiplier on the budget constraint.

The first order conditions (FOC) associated with constrained utility maximization are:

$$\frac{\partial L}{\partial c} = (1-\theta_l-\theta_d)\frac{1}{c} - \lambda = 0 \text{ or } \lambda = \frac{1-\theta_l-\theta_d}{c}. \qquad FOC(3.1)$$

$$\frac{\partial L}{\partial n} = -\theta_l \frac{1}{(T-n)} + \lambda(1-\tau)w = 0 \text{ or } \lambda = \frac{\theta_l}{(T-n)(1-\tau)w}. \qquad FOC(3.2)$$

$$\frac{\partial L}{\partial d} = \theta_d \frac{1}{d} - \lambda(1-\tau\kappa) = 0 \text{ or } \lambda = \frac{\theta_d}{(1-\tau\kappa)d}. \qquad FOC(3.3)$$

$$\frac{\partial L}{\partial \lambda} = (1-\tau)wn - c - (1-\tau\kappa)d = 0 \text{ or } (1-\tau)wn - (1-\tau\kappa)d = c. \qquad FOC(3.4)$$

From $FOC(3.1)$ and $FOC(3.3)$, we obtain $\frac{1-\theta_l-\theta_d}{c} = \frac{\theta_d}{(1-\tau\kappa)d}$ and get

$$c = \frac{(1-\theta_l-\theta_d)(1-\tau\kappa)d}{\theta_d}. \qquad (37)$$

From $FOC(3.2)$ and $FOC(3.3)$, we obtain $\frac{\theta_l}{(T-n)(1-\tau)w} = \frac{\theta_d}{(1-\tau\kappa)d}$ and get

$$n = T - \frac{(1-\tau\kappa)d\theta_l}{(1-\tau)w\theta_d}. \qquad (38)$$

Substituting equation (37) and equation (38) into $FOC(3.4)$ and rearranging, there exists an interior solution to the optimization problem, when $\tau\kappa < 1$, as follows:

$$d = \frac{\theta_d(1-\tau)wT}{(1-\tau\kappa)}. \qquad (39)$$

Except the individual income tax rate (τ), we can easily see from equation (19) that an individual's donation (d) is positively related to the wage per hour worked (w), the amount of time available (T), heterogeneity in warm-glow preferences (θ_d), and the rate of donation tax allowance (κ). An increase in either wage per hour worked or amount of available time motivates an individual to work more and results in more money in his/her budget that he/she can use for donation. Both warm-glow feelings and donation tax allowance are benefits associated with monetary donations. Therefore, donors will contribute more if they can either feel more satisfied with charitable giving or take an increased tax deduction. In addition, the impact of the individual income tax rate (τ) on donation (d) can be analyzed by the concept of partial differentiation as follows:

$$\frac{\partial d}{\partial \tau} = \frac{\theta_d wT\left[-(1-\tau\kappa)+\kappa(1-\tau)\right]}{(1-\tau\kappa)^2} = \frac{\theta_d wT(-1+\kappa)}{(1-\tau\kappa)^2} \quad (40)$$

From equation (40), it is found that an increase in the individual income tax rate will increase donations only when the rate of donation tax allowance is more than 1. For example, people in Thailand are eligible to receive double deductions as allowances for their donations made to educational institutions. In this case, higher-income individuals with higher marginal tax rates save more taxes by giving to charity than lower-income individuals with lower marginal tax rates. Therefore, the higher or additional rate tax bracket induces additional giving.

5. Conclusion

This paper presents an economic analysis of charitable donation by incorporating religious beliefs in karma and rebirth into a warm glow model with two periods, the "present life" period and the "next life" period. In addition, we extend the model by adding cost of donation into budget constraints. The role of donation tax allowance in motivating donation is also analyzed. The results of the theoretical model serve to validate the beliefs in karma and rebirth as well as warm-glow feelings as motivation for charitable giving. As evidenced by Chen et al. (2002), people are willing to donate more when they hold a strong belief in karma. The findings of theoretical models are consistent with previous studies (e.g., Crumpler and Grossman, 2008; Carpenter, 2021), suggesting that the warm glow motivates charitable giving. In addition, there is a negative influence of donation's cost on the amount of donation, which is in line with research by Huang et al. (2021) and Castillo et al. (2023). Consistent with the research on the tax benefits of donating (e.g., Almunia et al., 2020), there exists a positive effect of donation tax allowance incentive on charitable donations.

Therefore, to increase donations, it is important to focus on benefits and costs associated with monetary donations. Charitable organizations should target their donor solicitations to individuals holding a strong belief in karma and rebirth and encourage them to create good karma by making donations. Boosting warm-glow feelings that individuals experience after donations is also a key to help increase donations. In addition, this study proposes supporting charitable donations through an increase in the rate of donation tax allowance. However, to take full advantage of the tax incentives, charitable organizations should automatically provide their donors with a receipt that includes all the required elements, especially information on donation tax allowance received. Since a high donation fee percentage can result in a decrease in the total amount of donation, charitable organizations should encourage their donors to avoid these costs and negotiate with their processing partners for a better rate on the donation processing fee.

References

Almunia, M., Guceri, I., Lockwood, B., & Scharf, K. (2020). "More Giving or More Givers? The Effects of Tax Incentives on Charitable Donations in the UK." *Journal of Public Economics* 183, 104114. DOI: 10.1016/j.jpubeco.2019.104114

Andreoni, J. (1989). "Giving With Impure Altruism: Applications to Charity and Ricardian Equivalence." *Journal of Political Economy* 97(6), 1447–1458. DOI: 10.1086/261662

Andreoni, J. (1990). "Impure Altruism and Donations to Public Goods: A Theory of Warm Glow Giving." *Economic Journal* 100(401), 464–477. DOI: 10.2307/2234133

Andreoni, J. (2006). "Philanthropy." In *Handbook of the Economics of Giving, Altruism and Reciprocity*, ed. S.-C. Kolm and J. M. Ythier, Elsevier, 1201–1269. DOI: 10.1016/S1574-0714(06)02018-5

Carpenter, J. (2021). "The Shape of Warm Glow: Field Experimental Evidence from a Fundraiser." *Journal of Economic Behavior & Organization* 191, 555–574. DOI: 10.1016/j.jebo.2021.09.020

Castillo, M., Petrie, & Wardell, C. (2023). "Barriers to Charitable Giving." *Journal of Public Economics* 224, 104945. DOI: 10.1016/j.jpubeco.2023.104945.

Chen, M., Chu, X.-Y., Lin, C.-H., & Yu, S.-H. (2022). "What Goes Around Comes Around: The Effect of Belief in Karma on Charitable Donation Behavior." *Psychology and Marketing* 39(2), 1065–1077. DOI: 10.1002/mar.21642

Crumpler, H., & Grossman, P. J. (2008). "An Experimental Test of Warm Glow Giving." *Journal of Public Economics* 92(5–6), 1011–1021. DOI: 10.1016/j.jpubeco.2007.12.014

Hochman, H. M., & Rodgers, J. D. (1969). "Pareto Optimal Redistribution." *American Economic Review* 59(4), 542–557. Available online: http://www.jstor.org/stable/1813216

Huang, Z., Wang, Z., & Qu, W. (2021). "Influence of Cost and Self-Control on Individual Donation Behavior: The Promoting Effect of Self-Affirmation." *Psychology Research and Behavior Management* 14, 1339–1358. DOI: 10.2147/PRBM.S325651.

Jamal, A., Yaccob, A., Bartikowski, B., & Slater, S. (2019). "Motivations to Donate: Exploring the Role of Religiousness in Charitable Donations." *Journal of Business Research* 103, 319–327. DOI: 10.1016/j.jbusres.2019.01.064.

Kang, M.Y., Park, B., Lee, S., Kim, J., & Allenby, G.M. (2016). "Economic Analysis of Charitable Donations." *Journal of Marketing and Consumer Behaviour in Emerging Markets* 2(4), 40–57. DOI: 10.7172/2449-6634.jmcbem.2016.2.3

Knowles, S., & Servátka, M. (2015). "Transaction Costs, the Opportunity Cost of Time and Procrastination in Charitable Giving." *Journal of Public Economics* 125, 54–63. DOI: 10.1016/j.jpubeco.2015.03.001

Kolm, S. Ch. (1969). "The Optimal Production of Social Justice." In: Margolis, J., Guitton, H. (Eds.), *Public Economics: An Analysis of Public Production and Consumption and their Relations to the Private Sectors*. London: MacMillian Press, 145–200.

Oxley, J. (2020). "Examining Donor Preference for Charity Religious Affiliation." DOI: 10.2139/ssrn.3513203

Roberts, R. D. (1984). "A Positive Model of Private Charity and Public Transfers." *Journal of Political Economy* 92(1), 136–148. DOI: 10.1086/261212

Saez, E. 2004. "The Optimal Treatment of Tax Expenditures." *Journal of Public Economics* 88(12), 2657–2684. DOI: 10.1016/j.jpubeco.2003.09.004

Warr, P. G. (1982). "Pareto Optimal Redistribution and Private Charity." *Journal of Public Economics* 19(1), 131–138. DOI: 10.1016/0047-2727(82)90056-1

Wiepking, P., Bekkers, R. H. F. P., & Osili, U. O. (2014). "Examining the Association of Religious Context with Giving to Non-Profit Organizations." *European Sociological Review* 30(5), 640–654. DOI: 10.1093/esr/jcu064