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The Effect of the Source of Inheritance on Bequest Attitudes: Evidence from Japan

Mengyuan Zhou

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Institute for Economic Studies, Keio University
2-15-45 Mita, Minato-ku, Tokyo 108-8345, Japan
ies-office@adst.keio.ac.jp
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Mengyuan Zhou

Graduate School of Economics, Keio University

2-15-45, Mita, Minato-ku, Tokyo 108-8345, Japan

campanula.syuu@keio.jp

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Abstract

A better understanding of the reasons for bequests can be pivotal for the effectiveness of fiscal policy and wealth inequality management as the different bequest motives underlying bequest behavior have different implications. This study examines community-based indirect reciprocity in bequest attitudes over three generations. The theoretical model, called community-based family tradition, suggests that the source of the inheritance impacts the amount of the bequest left to one's children or one's spouse. The study empirically analyzes survey data from the 2009 wave of the Preference Parameters Study for Japan. The results suggest that with some socio-economics characteristics controlled, those who have received an inheritance from their parents are more likely to intend to bequest as much as possible to their children, while those who have received an inheritance from their spouse's parents are more likely to intend to bequest as much as possible to both their children and their spouse. Hence, the source of inheritance does affect bequest attitudes, which suggests that there is community-based indirect reciprocity in bequest attitudes. The empirical results from gender comparison suggest that the taxation on inheritance is less functional for females than for males.

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[1] Graduate School of Economics, Keio University, 2-15-45, Mita, Minato-ku, Tokyo, 108-8345, Japan. Tel.: +81-80-3759-7950. E-mail: campanula.syuu@keio.jp

1. Introduction

A better understanding of the reasons for bequests can be pivotal for the effectiveness of fiscal policy and wealth inequality management as the different bequest motives underlying bequest behavior have divergent implications. For example, Ricardian equivalence will not hold if bequests are driven by self-interest motives, but will hold if they are driven by altruistic motives (Horioka, 2002, 2014). Moreover, family tradition in bequeathing behavior may moderate the effectiveness of the inheritance/estate tax (Stark and Nicinska, 2015), while wealth inequality could grow due to voluntary bequests (De Nardi, 2004).

The reasons why individuals leave bequests have been examined extensively in the literature and the motives, which involve two generations, have been categorized largely into self-interest and altruism. However, the extant empirical results have been mixed. Some studies support the self-interest bequest motive (Bernheim et al., 1985; Cox, 1987; Hurd, 1997) while others support the altruistic one (Page, 2003; Tomes, 1981).

Another similar research stream has focused on intended bequest behavior involving three generations, which provides a new perspective concerning "family tradition" (Arrondel and Grange, 2014; Cox and Stark, 2005; DeBoer and Hoang, 2017; Niimi and Horioka, 2018; Stark and Nicinska, 2015). These studies demonstrate that intended bequest behavior is positively associated with retrospective inheritance experience, and provide evidence of indirect reciprocity in financial transfer behavior within the family (Arrondel and Masson, 2001; Bethencourt and Kunze, 2019).

These studies concerning family tradition examine the retrospective inheritance experience as a whole irrespective of the source of the inheritance. However, mental accounting theory suggests that the source matters, as the principle of fungibility is violated across mental accounts (Thaler, 1985). Further, laboratory experiments of the one-shot dictator game confirm the salience of the source (Cherry, 2001; Cherry et al., 2002). This study fills this gap in the literature by taking the inheritance source into consideration.

This study aims to examine if there is community-based indirect reciprocity in the bequest attitude (hereafter "BA") involving three generations. Community is identified by consanguineal kinship within the family (see Figure 1). The first community involves the respondent's parents, the respondent, and the child(ren) (hereafter "P-R-C community"); the second community involves the respondent's spouse's parents, the respondent's spouse, and the child(ren) (hereafter "SP-S-C community"). Community-based indirect reciprocity is identified through the different effects of the source of the inheritance, for example, the experience of receiving a bequest from either the respondent's parents or spouse's parents, on an individual's BA toward children or spouse.

Figure 1 Here

According to the self-interest model, the experience of inheritance will not increase the respondent's positive BA toward children or spouse when income and wealth are controlled; neither will the source of the inheritance, since the utilities from other family members will not enter the exclusively self-interested individual's utility function. According to the altruistic model, the experience of inheritance may augment positive BA toward children and/or spouse when the expected utility gains from other family members exceed the expected disutility of the individual due to bequests since the utility from children and/or spouse directly enters the individual's utility function. However, the source of the inheritance is irrelevant to the BA in the altruistic model since "altruism is a form of unconditional kindness" (Fehr & Gächter, 2000b, p.160) and altruistic behavior is not a reaction to others' behavior. Hence, BA toward children and spouse are unaffected by the source of the inheritance.[2]

This study provides a theoretical model, called the community-based family tradition model, considering community-based indirect reciprocity by extending the "family tradition" model of Stark and Nicinska (2015). The community-based family tradition model suggests that the source of inheritance has a different impact on bequeathing.

It then uses survey data from the 2009 wave of the Preference Parameters Study of Osaka University in Japan for empirical analysis. The BA is measured by respondent agreement or disagreement with the statements concerning leaving children/spouse as much inheritance as possible. The empirical results suggest that those who have received an inheritance from their parents tend to have a higher BA toward children, while those who have received an inheritance from their spouse's parents tend to have a higher BA toward both their children and spouse.

This study contributes to the theoretical and empirical evidence by showing that the source of the inheritance has a different impact on BA toward children and spouse, which cannot be observed as well in the either altruistic or joy of giving model. This study considers community-based indirect reciprocity in terms of BA to enhance our understanding of what motivates people to leave a bequest.

The paper is organized as follows. Section 2 reviews the literature. Section 3 develops the theoretical models, followed by the data and sample selection criteria in Section 4. Section 5 and

[2] For simplicity, this study does not consider the tough love (Bhatt and Ogaki, 2012) reason for the unwillingness of bequeathing as much as possible to children and/or spouse; for example, leaving too much may sabotage self-development. Moreover, the empirical results suggest that the proportion of "tough love" is relatively limited (Horioka, 2014).

Section 6 provide the empirical framework and results. Section 7 interprets the results in terms of the community-based family tradition model. Section 8 concludes with a discussion of the study.

2. Literature Review

2.1 Intergenerational Transfers Involving Two Generations

Theoretical and empirical studies involving two generations reveal two paramount motives: self-interest and altruism. Under the self-interest motive hypothesis, some literature suggests that individuals have no bequest motives but leave accidental bequests due to lifetime uncertainty (Abel, 1985; Davies, 1981; Hurd, 1997; Laitner, 2002; Yaari, 1965). However, other literature suggests these bequests are intentional (Gale and Scholz, 1994; Page, 2003). Some studies also suggest that individuals use bequests to wield influence on children's behavior, such as to gain the attention of their children and/or pay for services provided by their children, called the "Strategic bequest motive" (Bernheim et al., 1985). The empirical results on this are mixed as some evidence supports the strategic bequest motive (Angelini, 2007; Bernheim et al., 1985; Cox, 1987; Cox and Rank, 1992; Horioka et al., 2018; Kotlikoff and Morris, 1989; Yamada, 2006); while some does not (Arrondel and Masson, 2001; Perozek, 1998; Sloan et al., 1997; Tomes, 1981).

Under the altruistic motive hypothesis, some literature suggests impure altruistic individual utility is driven by the size of the bequest, called the "Joy of giving" (Abel and Warshawsky, 1988; Laitner, 2002), also called the egoistic model (Laitner and Ohlsson, 2001), or warm-glow giving (Andreoni, 1990). Others have suggested that post-mortem intergenerational transfers are motivated by altruism where a benevolent parent cares about family members' utilities (Barro, 1974; Becker, 1974). Some empirical literature supports the altruistic reason (MacDonald and Koh, 2003; Tomes, 1981), but others find little evidence to support such an idea (Wilhelm, 1996). Thus, the reasons why parents leave bequests to their children have not reached a consensus among scholars as current studies provide mixed empirical results.

2.2 Intergenerational Transfers Involving Three Generations

Some studies have investigated the family tradition in bequest behavior involving three generations, showing the positive effects of an inheritance from previous generations on the intention to leave bequests to children. For example, using data from the U.S. Health and Retirement Survey, Cox and Stark (2005) find that both intention to bequeath and the probability of making a bequest of USD 100,000 or more correlate positively with the experience of receiving an inheritance and the experience of receiving an inheritance of USD 100,000 or more, respectively.

Arrondel and Grange (2014) study the inheritance–bequest relation using data from 19th century western France. They investigate whether the expected value of the bequest positively correlates with the inheritance amount received.

Stark and Nicinska (2015) examine data from the Survey on Health, Ageing and Retirement in Europe. Their empirical results, based on European survey data, confirm a positive effect of the experience of inheriting on the intention to bequeath.

DeBoer and Hoang (2017), using 1998 to 2010 waves of triennial data from the Survey of Consumer Finance collecting information from U.S. families, show similar results that those who have received an inheritance are more likely to expect to leave a bequest. However, Kao et al., (1997), who use the 1998 wave of the Survey of Consumer Finance, and regress the probability of expecting to leave an inheritance in terms of "yes," "possibly," and "no" on the amount of inheritance received, do not find a significant result between these two variables.

Niimi and Horioka (2018) analyze the expectation of leaving an inheritance using the 2010 wave Preference Parameters Study of Osaka University for the US and Japan and show that the receipt of intergenerational transfer increases the probability of bequeathing in these countries. Thus, such family traditions have been verified in most of the literature and provide us with another explanation of bequests aside from self-interest and/or altruistic reasons.

2.3 Fairness and Indirect Reciprocity

Fairness consideration has been documented substantially in the literature (Fehr and Gächter, 2000b; Fehr and Schmidt, 1999; Kahneman et al., 1986; Rees, 1993). In addition, evidence from experiments, such as the ultimate game, the public goods game, and the trust game, suggest that an individual's behavior may be affected by fairness considerations (Fahr and Irlenbusch, 2000; Falk et al., 2003; Fehr and Fischbacher, 2003; Fehr and Gächter, 2000a). According to fairness considerations, positive or negative reciprocal behavior is motivated by how nice or mean someone is to you (Falk et al., 2003; Fehr and Gächter, 2000b).

Direct reciprocity is an interaction between the same two individuals while indirect reciprocity involves more than two (Nowak and Sigmund, 2005). Indirect reciprocity has been categorized into downstream reciprocity and upstream reciprocity. Downstream reciprocity can be observed in many experiments where a third-party rewards (punishes) a player who has been benign (hostile) to another (Engelmann and Fischbacher, 2009; Seinen and Schram, 2006). According to Nowak and Sigmund (2005), upstream reciprocity is based on a previous experience where an individual receives help from a person and then passes on the benevolence to someone else.

Hence, the family tradition of bequeathing can be labeled upstream reciprocity, where parents leave a bequest to individuals, and incentivize the individuals to leave a bequest to their children and/or spouse. Considering that the inheritance from the individuals' own parents and their spouse's parents may trigger different routes of upstream reciprocity, this study provides a unique contribution to the literature by analyzing the correlation between the source of the inheritance and the intended bequest.

3. Theoretical Model

The study's theoretical model concerning "Family tradition" connected with community-based indirect reciprocity is identified by consanguineal kinship within the family. Stark and Nicinska (2015) propose a "family tradition" bequest model where an individual's utility depends positively on personal consumption, child consumption, and continuing the family tradition to bequeath. This model predicts that individuals with a family tradition plan to bequest more than those without a family tradition.

Considering the theory of mental accounting (Thaler, 1985, 1990, 1999), monies received from a respondent's parents and a spouse's parents are assumed to be placed into respective accounts. Community-based indirect reciprocity, in accordance with the fairness consideration, presumes that once the respondent has received an inheritance from his/her own (spouse's) parents, he/she is more willing to leave an adequate bequest to his/her child (child and spouse), who are in the P-R-C (SP-S-C) community.

The individual's utility U depends positively on: personal consumption $y_i + h_p + h_{sp} - b_c - b_s$; on the consumption of the child $y_c + b_c$; on the consumption of the spouse $y_s + b_s$; and on the family tradition of bequeathing $b_c - \theta \times h_p - \gamma_c \times h_{sp}$ and $b_s - \gamma_s \times h_{sp}$; where y represents income; h represents the inheritance received; p and sp denote the source of inheritance from the individual's parents and spouse's parents, respectively; b represents the bequest; and c and s denote child and spouse, respectively.

This captures that the child is the first line in the bequests in the P-R-C community and second line in the SP-S-C community, and the spouse is not in the P-R-C community but is the first line in the SP-S-C community.

Here, the general utility function for each individual is given as:

$$\begin{aligned} U(b_c, b_s) = (1 - \alpha_c - \alpha_s) \times Log\left(y_i + h_p + h_{sp} - b_c - b_s\right) \\ + \alpha_c \times Log(y_c + b_c) + \beta_c \times Log(b_c - \theta \times h_p - \gamma_c \times h_{sp}) \\ + \alpha_s \times Log(y_s + b_s) + \beta_s \times Log(b_s - \gamma_s \times h_{sp}) \end{aligned}$$

The higher the b to the child and/or spouse, the higher the BA is. The parameters are $\alpha_c, \alpha_s \geq 0$ and $(1 - \alpha_c - \alpha_s) > 0$. The $\beta_c, \beta_s \geq 0$ measures family tradition. $0 \leq \theta, \gamma_c, \gamma_s \leq 1$ and $\gamma_c + \gamma_s \leq 1$ where θ and γ_c measure the weights assigned to the child in the P-R-C and SP-S-C communities, and γ_s measures the weight assigned to the spouse in the SP-S-C community. For simplicity, the general model is separated into three cases: a pure altruistic model, a pure joy of giving model, and a pure community-based family tradition (hereafter "CBFT") model.

3.1 Pure Altruistic Model

In the case of pure altruism $(\beta_c = \beta_s = 0)$, $\alpha_c, \alpha_s,$ and $(1 - \alpha_c - \alpha_s) > 0$, an individual considers choosing the amount of bequest for child and spouse to maximize the utility function, given as,

$$U(b_c, b_s) = (1 - \alpha_c - \alpha_s) \times Log\left(y_i + h_p + h_{sp} - b_c - b_s\right) + \alpha_c \times Log(y_c + b_c) + \alpha_s \times Log(y_s + b_s) \ ;$$

then, utility $U(b_c, b_s)$ will reach its maximum (See proof in Appendix 1A) when

$$\begin{aligned} b_c{}^* &= -y_c + (h_p + h_{sp} + y_c + y_i + y_s)\alpha_c \\ b_s{}^* &= -y_s + (h_p + h_{sp} + y_c + y_i + y_s)\alpha_s \end{aligned}$$

If the inheritance from the respondent's parents increases by Δ, the optimal bequests to the child and spouse are $b^*_{c,h_p+\Delta}$ and $b^*_{s,h_p+\Delta}$, respectively; then, the bequest to the child and spouse increases respectively by

$$\begin{aligned} b^*_{c,h_p+\Delta} - b^*_c &= \alpha_c \Delta \\ b^*_{s,h_p+\Delta} - b^*_s &= \alpha_s \Delta \end{aligned}$$

If inheritance from the spouse's parents increases by Δ, the optimal bequests to the child and spouse are $b^*_{c,h_{sp}+\Delta}$ *and* $b^*_{s,h_{sp}+\Delta}$, respectively; then, the bequest to the child and spouse increases respectively by

$$\begin{aligned} b^*_{c,h_{sp}+\Delta} - b^*_c &= \alpha_c \Delta \\ b^*_{s,h_{sp}+\Delta} - b^*_s &= \alpha_s \Delta \end{aligned}$$

The differences in the bequests with respect to the difference in the source of the inheritance are

$$\begin{aligned} \left[b^*_{c,h_p+\Delta} - b^*_c\right] - \left[b^*_{c,h_{sp}+\Delta} - b^*_c\right] &= \alpha_c \Delta - \alpha_c \Delta &= 0 \\ \left[b^*_{s,h_p+\Delta} - b^*_s\right] - \left[b^*_{s,h_{sp}+\Delta} - b^*_s\right] &= \alpha_s \Delta - \alpha_s \Delta &= 0 \end{aligned}$$

Hence, in the case of pure altruism, the source of inheritance does not affect an individual's bequests.

3.2 Pure Joy of Giving Model

In the case of the pure joy of giving $(\alpha_c = \alpha_s = 0)$, $\theta, \gamma_c, \gamma_s = 0,$ and $\beta_c, \beta_s > 0.$ $Log(b_c)$ *and* $Log(b_s)$ are motivated by "warm-glow giving" (Andreoni, 1990). An individual considers choosing the amount of the bequests to the child and spouse to maximize the utility function, given as:

$$U(b_c, b_s) = Log(y_i + h_p + h_{sp} - b_c - b_s) + \beta_c \times Log(b_c) + \beta_s \times Log(b_s);$$

then, the utility $U(b_c, b_s)$ will reach its maximum (see proof in Appendix 1B) when

$$b_c^* = \frac{(h_p + h_{\mathrm{sp}} + y_i)\beta_c}{1 + \beta_c + \beta_s}$$

$$b_s^* = \frac{(h_p + h_{\mathrm{sp}} + y_i)\beta_s}{1 + \beta_c + \beta_s}$$

If the inheritance from the respondent's parents increases by Δ, then, the bequest to the child and spouse increases respectively by

$$b^*_{c,h_p+\Delta} - b^*_c = \frac{\beta_c \Delta}{1 + \beta_c + \beta_s}$$

$$b^*_{s,h_p+\Delta} - b^*_s = \frac{\beta_s \Delta}{1 + \beta_c + \beta_s}$$

If the inheritance from the spouse's parents increases by Δ, then, the bequest to the child and spouse increases respectively by

$$b^*_{c,h_{sp}+\Delta} - b^*_c = \frac{\beta_c \Delta}{1 + \beta_c + \beta_s}$$

$$b^*_{s,h_{sp}+\Delta} - b^*_s = \frac{\beta_s \Delta}{1 + \beta_c + \beta_s}$$

The differences in the bequest with respect to the difference in the source of inheritance are:

$$\left[b^*_{c,h_p+\Delta} - b^*_c\right] - \left[b^*_{c,h_{sp}+\Delta} - b^*_c\right] = \frac{\beta_c \Delta}{1 + \beta_c + \beta_s} - \frac{\beta_c \Delta}{1 + \beta_c + \beta_s} = 0$$

$$\left[b^*_{s,h_p+\Delta} - b^*_s\right] - \left[b^*_{s,h_{sp}+\Delta} - b^*_s\right] = \frac{\beta_s \Delta}{1 + \beta_c + \beta_s} - \frac{\beta_s \Delta}{1 + \beta_c + \beta_s} = 0$$

Hence, in the case of the pure joy of giving, the source of inheritance does not affect the individual's bequests.

3.3 Pure CBFT Model

In the case of the pure CBFT $(\alpha_c = \alpha_s = 0)$, $\beta_c, \beta_s > 0$, $0 < \gamma_s \leq 1$, $|\theta| + |\gamma_c| \neq 0$, $0 \leq \theta, \gamma_c \leq 1$, and $\gamma_c + \gamma_s \leq 1$. An individual considers choosing the amount of the bequest to the child and spouse to maximize the utility function, given as:

$$U(b_c, b_s) = Log(y_i + h_p + h_{sp} - b_c - b_s) + \beta_c \times Log(b_c - \theta \times h_p - \gamma_c \times h_{sp}) + \beta_s \times Log(b_s - \gamma_s \times h_{sp});$$

then, the utility $U(b_c, b_s)$ will reach its maximum (see proof in Appendix 1C) when

$$
\begin{aligned}
b_c^* &= \frac{y_i\beta_c}{1+\beta_c+\beta_s} + \frac{h_p(\theta+\beta_c+\theta\beta_s)}{1+\beta_c+\beta_s} + \frac{h_{\mathrm{sp}}((1+\beta_s)\gamma_c+\beta_c(1-\gamma_s))}{1+\beta_c+\beta_s} \\
b_s^* &= \frac{y_i\beta_s}{1+\beta_c+\beta_s} + \frac{h_p(1-\theta)\beta_s}{1+\beta_c+\beta_s} + \frac{h_{\mathrm{sp}}((1+\beta_c)\gamma_s+\beta_s(1-\gamma_c))}{1+\beta_c+\beta_s}
\end{aligned}
$$

If the inheritance from the respondent's parents increases by Δ, then, the bequest to the child and spouse increases respectively by

$$
\begin{aligned}
b_{c,h_p+\Delta}^* - b_c^* &= \frac{\theta+\beta_c+\theta\beta_s}{1+\beta_c+\beta_s}\Delta \quad (1) \\
b_{s,h_p+\Delta}^* - b_s^* &= \frac{(1-\theta)\beta_s}{1+\beta_c+\beta_s}\Delta \quad (2)
\end{aligned}
$$

If the inheritance from the spouse's parents increases by Δ, then, the bequest to the child and spouse increases respectively by

$$
\begin{aligned}
b_{c,h_{sp}+\Delta}^* - b_c^* &= \frac{(1+\beta_s)\gamma_c+\beta_c(1-\gamma_s)}{1+\beta_c+\beta_s}\Delta \quad (3) \\
b_{s,h_{sp}+\Delta}^* - b_s^* &= \frac{\beta_s(1-\gamma_c)+(1+\beta_c)\gamma_s}{1+\beta_c+\beta_s}\Delta \quad (4)
\end{aligned}
$$

The differences in the increase in the bequests with respect to the difference in the source of inheritance are

$$
\begin{aligned}
\left[b_{c,h_p+\Delta}^* - b_c^*\right] - \left[b_{c,h_{sp}+\Delta}^* - b_c^*\right] &= \frac{(1+\beta_s)(\theta-\gamma_c)+\beta_c\gamma_s}{1+\beta_c+\beta_s}\Delta \quad (5) \\
\left[b_{s,h_p+\Delta}^* - b_s^*\right] - \left[b_{s,h_{sp}+\Delta}^* - b_s^*\right] &= \frac{-\beta_s(\theta-\gamma_c)-(1+\beta_c)\gamma_s}{1+\beta_c+\beta_s}\Delta \quad (6)
\end{aligned}
$$

Proposition 1a. In the pure CBFT model, where $\beta_c, \beta_s > 0$, $0 < \gamma_s \leq 1$, $|\theta| + |\gamma_c| \neq 0$, $0 \leq \theta, \gamma_c \leq 1$, $\gamma_c + \gamma_s \leq 1$, and the inheritance from the individuals' parents and from their spouse's parents increases by the same amount Δ, *ceteris paribus*, the difference in the increase in the bequest to the child with respect to the source of inheritance (equation (5)) is larger than zero when $(\gamma_c - \theta) < \frac{\beta_c\gamma_s}{1+\beta_s}$; equals zero when $(\gamma_c - \theta) = \frac{\beta_c\gamma_s}{1+\beta_s}$; and is less than zero when $(\gamma_c - \theta) > \frac{\beta_c\gamma_s}{1+\beta_s}$.

Proposition 1b. In the pure CBFT model, where $\beta_c, \beta_s > 0$, $0 < \gamma_s \leq 1$, $|\theta| + |\gamma_c| \neq 0$, $0 \leq \theta, \gamma_c \leq 1$, $\gamma_c + \gamma_s \leq 1$, and the inheritance from the individuals' parents and from their spouse's parents increases by the same amount Δ, *ceteris paribus*, the differences in the increase in the bequest to the spouse with respect to the source of inheritance (equation (6)) is larger than zero when $(\gamma_c - \theta) > \frac{(1+\beta_c)\gamma_s}{\beta_s}$; equals zero when $(\gamma_c - \theta) = \frac{(1+\beta_c)\gamma_s}{\beta_s}$; and is less than zero when $(\gamma_c - \theta) < \frac{(1+\beta_c)\gamma_s}{\beta_s}$.

Only when $\gamma_c = \theta$ and $\gamma_s = 0$ do both equations (5) and (6) equal zero, and the source of inheritance does not affect the individual's bequests to either the child or the spouse. However, in this case, this becomes a mixed model, as a CBFT to the child and a joy of giving to the spouse, rather than a pure CBFT model that assumes that the γ_s is larger than zero. For simplicity, this mixed type of model is not considered. Hence, in the case of the pure CBFT, the increase in the bequest to the child or the spouse varies according to the source of inheritance.

4. Data and Sample Selection

Data from the Preference Parameters Study (PPS) of Osaka University are used as the basis of the analysis in this study. This panel survey, which employs two-stage stratified random sampling, has been conducted in Japan since 2003. In the first stage, all the cities are placed into 10 regions: Hokkaido, Tohoku, Kanto, Koshinetsu, Hokuriku, Tokai, Kinki, Chugoku, Shikoku, and Kyushu. In the second stage, in each region, the cities are categorized into four types according to size, ordinance designation, population of 100,000 or more, population less than 100,000, and towns and villages. In total, there are 40 strata. In each stratum, men and women aged 20–69 years are drawn from the population.

The data used in this study are from wave 2009, which includes two predominant variables concerning respondents' BA toward children and spouses: "I want to leave my children as much of my inheritance as possible" (hereafter "TO_CHILD") and "I want to leave my spouse as much of my inheritance as possible" (hereafter "TO_SPOUSE"). The wave 2009 was conducted from February to March of 2009 with fresh samples selected and added.

There are 6,181 observations in the wave 2009. Excluding those who did not answer the BA question, there are 6,060 observations. Since this study focuses on the respondent's BA toward children and spouse, the sample is restricted to those who are married (those who report that "I have a spouse [husband or wife, including common-law marriage]" in the survey) and have at least one child. We then had 4,466 observations. Excluding the observations with missing values, left us with 3,634 observations overall.

5. The Empirical Framework

5.1 Methodology

The BA is captured as an ordered response. Hence, this study uses the ordered response model. The latent BA will be estimated as follows:

$$BA_i^* \quad = \quad \boldsymbol{X_i \beta} + \varepsilon$$

where BA represents TO_CHILD and TO_SPOUSE. Let $\boldsymbol{X}$ denote a vector of socio-economics characteristics, $\boldsymbol{\beta}$ denote a $K \times 1$ vector of parameters, and ε denote the error term.
Let ω_j be the thresholds, where $j = 1,2,3,4$. Define the values of BA as follows:

$$
\begin{aligned}
BA &= 1 \quad if \quad BA^* \le \omega_1 \\
BA &= 2 \quad if \quad \omega_1 < BA^* \le \omega_2 \\
BA &= 3 \quad if \quad \omega_2 < BA^* \le \omega_3 \\
BA &= 4 \quad if \quad \omega_3 < BA^* \le \omega_4 \\
BA &= 5 \quad if \quad BA^* > \omega_4
\end{aligned}
$$

The generalized ordered logit model (Williams, 2006) is written as

$$P(BA_i > j) \;=\; P_{ij} \;=\; \frac{\exp\,(\alpha_j + X_i\beta_j)}{1 + \exp\,(\alpha_j + X_i\beta_j)}, \qquad j = 1,2,3,4$$

When all the coefficients β_j are identical across j $(\beta_j = \beta)$, the model is the ordered logit model, which satisfies the parallel regression assumption (Wooldridge, 2010); when some but not all coefficients are identical across j, the model is the partial proportional odds model (Williams, 2006, 2016) as follows:

$$P(BA_i > j) \;=\; P_{ij} \;=\; \frac{\exp\,(\alpha_j + \sum_{k=1}^{t-1} X_{k,i} \times \beta_k + \sum_{k=t}^{K} X_{k,i} \times \beta_{k,j})}{1 + \exp\,(\alpha_j + \sum_{k=1}^{t-1} X_{k,i} \times \beta_k + \sum_{k=t}^{K} X_{k,i} \times \beta_{k,j})}, \qquad j = 1,2,3,4$$

where β_k is identical for $X_{k,i}$ $(k = 1,2, \dots t-1)$, and $\beta_{k,j}$ for $X_{k,i}$ $(k = t, \dots K)$ can differ across j.

5.2 Dependent Variables

The survey questions concerning BA are "I want to leave my children as much of my inheritance as possible"(TO_CHILD) and "I want to leave my spouse as much of my inheritance as possible" (TO_SPOUSE), measured on a five-point Likert scale and coded as 1, "Doesn't hold true at all for me" and 5, "Particularly true for me."[3]

Table 1 shows the cross table for those who answered both questions. About 43% and 42% of the respondents chose "3" for "TO_CHILD" and "TO_SPOUSE," respectively. Among Japanese women, 28% chose "4" or "5" for "TO_CHILD," while 31% of Japanese men followed suit. Only 16% of Japanese women chose "4" or "5" for "TO_SPOUSE," while 43% of the Japanese men chose those rankings. Japanese women were inclined to choose a lower triangular portion, while Japanese men were inclined to choose a upper triangular portion, indicating that Japanese women were more likely to leave as much inheritance as possible to their children rather than to their spouses, while Japanese men were more likely to leave as much as possible to their spouses than their children.

[3] The original coding in the questionnaire is 1, "Particularly true for me" and 5, "Doesn't hold true at all for me."

Table 1 Here

5.3 Independent Variables

The predominant independent variable used in this study is "Have you received any inheritance (or transfers of wealth before death) from your parents or your spouse's parents in the past?" The variable equals 1 if the respondent has received transfers from his/her own parents (spouse's parents) and 0 if he/she has not. This question captured the source of inheritance.[4] If the respondent has received an inheritance from his/her own parents (INH_P), the BA toward children would be expected to be positive. If the respondent has received an inheritance from the spouse's parents (INH_SP), the BA toward the spouse (and children) would be expected to be positive.

The survey also contains a question about whether the respondent expects to receive any wealth transfers, that is, "Do you expect that you will receive any inheritance (or transfers of wealth before death) from your parents or your spouse's parents in the future?" This variable is controlled in the regression separately as a dummy for expecting to receive an inheritance from parents (EXPINH_P) and from spouse's parents (EXPINH_SP). The expectation to receive wealth transfers does not increase the respondent's wealth. Thus, this seems less likely to open a new mental account for each source of expected transfers. However, considering the attribution of the fairness intention (Falk et al., 2003) and empirical results from previous literature, the signs of expected inheritance dummies are predicted as positive.

Other independent variables include socio-economic characteristics such as a female dummy, household income, number of children in the family, faith in religion, life expectancy and its square, and educational attainment. The sign of the female dummy is expected to be negative in terms of BA since previous literature finds the female dummy negatively correlated with the expectation of bequeathing.

The question "Approximately how much was the annual earned income before taxes and with bonuses included for your entire household for 2008?" is used to estimate annual household income; the answers are reported in 12 categories. This study uses the mid-point of each income category and assigns a value of half of the upper bound for the lowest category (500,000 JPY) and 1.5 times the lower bound for the highest category (30,000,000 JPY). The household income is taken as a natural logarithm in the analysis. The sign is expected to be positively correlated with BA. The sign of the number of children in the family is expected to be negative. The more

[4] Due to data limitations, it is hard to say if the money transfer is from inheritance or inter vivos wealth transfer. For simplicity, this variable is regarded as the source of inheritance here. In section 6.3, the information about parents' survival is used to separate inheritance from inter vivos transfers.

children the respondent has, the more support needed, and the less ability to save for intentional bequests, given the budget constraint.

Faith in religion is captured by the statement that “I am deeply religious,” which is measured on a five-point Likert scale and coded as 1, “Doesn’t hold true at all for me” and 5, “Particularly true for me.” The sign is expected to be positive.[5]

The reason this study uses life expectancy rather than respondent’s age is that women outlive men, in general. Data for 2005 to 2009 show that the five-year average effective ages of retirement for men and women are 69.5 and 66.7 years, respectively.[6] Life expectancy at 70 years old for men and 67 years old for women was 15.10 and 22.21 years in 2009, respectively.[7] Thus, the length of retirement for women is much longer than for men. Since women have to prepare for a longer retirement than men do, it is plausible to use life expectancy at each age in the analysis. The sign of life expectancy and its square are difficult to anticipate. Those who have longer life expectancy may have optimistic bequest plans, and can achieve their goal of leaving as much as possible by saving more and/or working harder. Those who have shorter life expectancy may also have a higher BA since they have tried to do their best to leave adequate bequests.

Educational attainment is categorized into three groups; those that did not finish high school, those that graduated from high school but not from college, and those that graduated from college or above. Well-educated respondents may care more about children and spouse utilities. Therefore, the sign will be positive if the respondent has higher educational attainment. However, if well-educated respondents are more likely to invest in children’s human capital, the trade-off between human capital transfer now and bequeathing later may lead the sign to TO_CHILD to be negative.

Table 2 presents the summary statistics of the dependent and independent variables (and respondent’s age for reference) in the regression. The means of TO_CHILD and TO_SPOUSE are 2.99 and 2.94, respectively, and the difference is significant at the 1% level. Of the respondents, 24% and 16% reported inheritance from their own parents and spouse’s parents, respectively. The corresponding expectations of inheritance were 33% and 25%. Table 3 presents the means of each variable across different levels of BA.

Table 2 Here

Table 3 Here

6. Empirical Results

[5] The original coding in the questionnaire is 1, “Particularly true for me” and 5, “Doesn’t hold true at all for me.”

[6] The data were downloaded from the OECD “Ageing and Employment Policies - Statistics on average effective age of retirement” from http://www.oecd.org/els/emp/average-effective-age-of-retirement.htm, retrieved on September 19, 2018.

[7] The Japanese data were obtained from the Ministry of Health, Labour, and Welfare, retrieved on September 13, 2018.

In the analysis, the predominant independent variables are simply inheritance received/expected in total. In the robustness check, the information about parent survival is used to identify whether the bequest is from inheritance or inter vivos transfer.

6.1 Partial Proportional Odds Model

This study uses the partial proportional odds model (PPO) because the Brant test shows that some variables violate the parallel regression assumption in the ordered logistic regression.[8] Table 4 presents the estimated results of the PPO for TO_CHILD and TO_SPOUSE. The panel J shows the result when the dependent variable BA equals 1 through J compared with BA equals $J+1$ through 5.

Table 4 Here

Concerning TO_CHILD, the positive sign of the constrained variables INH_P, INH_SP, and EXPINH_P suggest that those who have received an inheritance from their own parents and their spouse's parents, and expect to receive an inheritance from their own parents are more likely to agree to leaving as much bequest as possible to their children. Females and families with many children tend to be less supportive, while rich families and those who have finished high school have more supportive BAs toward children. The positive sign in Panel 2 and the negative sign in Panel 3 of FAITH indicate that pious people are more likely to choose $\text{BA} = 3,4,5$ over $\text{BA} = 1,2$, but are less likely to choose $\text{BA} = 4,5$ over $\text{BA} = 1,2,3$. The positive sign in Panel 2 of LIFEEXP suggests that the longer life expectancy is, the more likely the respondent is to choose $\text{BA} = 3,4,5$ over $\text{BA} = 1,2$. The positive signs in Panel 2 and 3 for squared LIFEEXP suggests that the longer life expectancy is, the stronger the effect of having a higher BA. Less-educated respondents (NOHIGH) are more likely to choose the highest level BA=5.

Concerning TO_SPOUSE, the positive sign of the constrained variables INH_SP and EXPINH_P suggest that those who have received an inheritance from their spouse's parents, and expect to receive an inheritance from their own parents are more likely to agree with leaving as much bequest as possible to their spouse. The constrained variables HHINC and CHILDNUM, and the variables violating the parallel regression assumption, FAITH, LIFEEXP and its squared term, and NOHIGH show similar effects as on TO_CHILD. The negative signs of FEMALE over four panels suggest that females are more likely to choose lower BAs over higher BAs than males; specifically, females tend to choose the lowest level BA=1.

Table 5 Here

To examine how the predicted probabilities of BA change as the independent variable changes, Table 5 presents the marginal effects at the means reported by the PPO for different levels of BA.

[8] This study uses the Stata program from Williams (2006) and autofit uses the .05 level of significance by default.

The TO_CHILD panel shows that the probability of a higher BA is greater: when INH_P, INH_SP, and EXPINH_P equal one, among those who have higher household income, longer life expectancy, and lower educational attainment. The probability of a lower BA is greater when the respondents are female and have a larger number of children. The TO_SPOUSE panel shows similar results as the TO_CHILD panel; there is a greater probability of a higher BA: when INH_SP and EXPINH_P equal one, among those who have higher household income, and longer life expectancy. There is a greater probability of a lower BA when the respondents are female and have a larger number of children.

In sum, those who have an inheritance from their own parents are more likely to leave as much bequest as possible to their children. Those who have an inheritance from their spouse's parents are more likely to leave as much bequest as possible to both their children and spouse.

6.2 Gender Comparison

Applying the same empirical framework as in the previous subsections, gender differences associated with the source of inheritance are considered by analyzing the subsamples. Table 2 presents the summary statistics separately for Japanese females and males. P-values summarized with asterisks represent the mean differences between females and males for each variable. The BA toward children and spouses is much higher among male respondents than female. More males have received/expect an inheritance from their own parents than females, while more females have received/expect an inheritance from their spouse's parents. This implies that a son's family is more likely to (expect to) receive wealth transfer than a daughter's family, which is consistent with other study results (Niimi and Horioka, 2018).

There are no significant gender differences in household income, number of children, and religious faith. Male respondents in the sample are older than female counterparts, and male corresponding life expectancy is much lower than that of a female. Concerning educational attainment, more males graduated from college or above than females.

Table 6 Here

Table 7 Here

Table 6 presents the estimated results of the PPO for females and males, using the same default setting as Table 4. For brevity, the table only shows the variables, INH_P, INH_SP, EXPINH_P, and EXPINH_SP, which are constrained over all panels (full specifications are presented in Appendix 2). Table 7 shows the corresponding marginal effects (full specifications are presented in Appendix 3). Those results suggest that females who have received INH_P are more likely to have a higher BA rather than a lower BA TO_CHILD, and those who have received INH_SP are more likely to have a higher BA rather than a lower BA both TO_CHILD and TO_SPOUSE. The results suggest that males who have received INH_P are more likely to have higher BAs rather than lower BAs TO_CHILD, and those who have received INH_SP are less likely to have lower BAs TO_SPOUSE.

6.3 Inheritance and Inter Vivos Transfers

One of our data limitations is that we cannot identify whether INH_P, INH_SP, EXPINH_P, and EXPINH_SP as inheritance or inter vivos transfers. For a robustness check, we use parent survival information to classify each of the four variables into three categories: inter vivos transfer, inheritance from either mother or father or both, and nothing (Table 8). The assumptions are that if both parents are alive, money transfers are probably inter vivos transfers (defined as "TRANS_PR" from the respondent's parents and "TRANS_SPR" from the spouse's parents); if one or both of the parents are deceased, the money transfers are probably inheritance (defined as "INH_PR" from the respondent's parents and "INH_SPR" from the spouse's parents). In terms of the expectation of money transfers, suppose that respondents expect to receive inter vivos transfers first (defined as "EXPTRANS_PR" from the respondent's parents and "EXPTRANS_SPR" from spouse's parents) when both parents are alive; once one of the parents die, the respondents expect to receive an inheritance (defined as "EXPINH_PR" from respondent's parents and "EXPINH_SPR" from spouse's parents).

<u>Table 8 Here</u>

Two hypothetical questions concerning altruism toward children and reciprocity toward parents are included, captured by "For the purpose of this question, please assume that you have a child and that your child does not live with you. Suppose that your child had only one-third as much family income per person to live on as you do. How much of your own family income per month would you be willing to give to your child to help out until things changed (possibly a few years)?" (hereafter "GIVE_C"); and, "For the purpose of this question, please assume that your parents are both living and that you do not live with them. Suppose that your parents had only one-third as much family income per person to live on as you do. How much of your own family income per month would you be willing to give to your parents to help them out until things changed (possibly a few years)?" (hereafter "GIVE_P")[9]. The more the respondents were willing to give to help their children, the more altruistic they were considered to be toward children, predicted to be positively associated with a higher BA. The GIVE_P was used to capture the level of reciprocity as parents raised the respondents and GIVE_P captured how much the respondents were willing to help out

[9] Available choices were coded as "1. No help at all; 2. Up to 2% of your family income per month; 3. Up to 5% of your family income per month; 4. Up to 10% of your family income per month; 5. Up to 20% of your family income per month."

if their parents were in worse financial situations; the higher the amount given to help their parents, the more reciprocal they were considered to be. Supposing that the reciprocity level toward spouse corresponded with the reciprocity level toward parents, therefore, a higher level GIVE_P is predicted to be positively associated with a higher level BA TO_SPOUSE.

Table 9 presents the marginal effects of the means reported by the PPO for different levels of BA controlling the other socio-economic characteristics listed (summary statistics and full specifications are presented in Appendix 4). The results confirm the evidence that those who received INH_PR tend to have higher BAs TO_CHILD, and those who have received INH_SPR tend to have higher BAs TO_CHILD and TO_SPOUSE. EXPTRANS_PR and EXPINH_PR show that those who expect to receive money transfers, regardless of inheritance or inter vivos transfers, tend to have higher BAs TO_CHILD.

Table 9 Here

The probability of the lowest level BA=1 TO_CHILD increases from 0.0474 to 0.1106 percentage points, while the probability of higher levels TO_CHILD increase from 0.0562 to 0.1522 (BA=4) and from 0.0149 to 0.0395 (BA=5) percentage points when the level of GIVE_C rises. This suggests that the more altruistic the respondents are toward their children, the higher the BA TO_CHILD will be. Interestingly, the probability of lower BA levels TO_SPOUSE decrease from 0.0421 to 0.0384 (BA=1) and from 0.0608 to 0.0546 (BA=2) percentage points, while the probability of higher BAs TO_SPOUSE decreases from 0.0684 to 0.0604 (BA=4) and from 0.0139 to 0.0121 (BA=5) percentage points when the level of GIVE_C rises. This suggests that the more altruistic the respondents are toward children, the higher the BAs TO_SPOUSE will be; but the probability of lower BAs increases and higher BAs decreases. The probability of higher BAs TO_SPOUSE is higher for GIVE_P, which suggests that those who are reciprocal are more likely to have higher BAs TO_SPOUSE.

6.4 Empirical Results Summary

In the empirical analysis of the full sample and the female subsample, the positive significant effect of INH_P on TO_CHILD and positive significant effects of INH_SP on TO_CHILD and TO_SPOUSE indicate that those who have received an inheritance from their parents are more likely to intend to leave as much as possible to their children, and those who have received an inheritance from their spouse’s parents are more likely to intend to leave as much as possible to both their children and their spouse.

For the male subsample, the positive significant effect of INH_P on TO_CHILD and some significant effects of INH_SP on TO_SPOUSE indicate that those who have received an inheritance from their parents are more likely to intend to leave as much as possible to their children, and those who have received an inheritance from their spouse's parents are less likely to disagree to leave as much of bequest as possible

7. Empirical Result: Pure CBFT Model

There are two ways to interpret the insignificant coefficients of the empirical results. One is that the increase in an inheritance leads to a zero increase in bequests. The other is that the increase in an inheritance leads to a tiny increase in bequests, but is too small to be significant in terms of BA. In other words, the insignificant signs of INH_P and INH_SP on BA do not imply that an individual intends to leave nothing.

7.1 No Increase in Bequests

The insignificant effects of INH_P on TO_SPOUSE in the full sample, the female, and the male subsamples imply that equation (2) equals zero. As it is assumed that $\beta_s, \beta_c > 0$ in the pure CBFT model, $\theta = 1$ in this case, which means that the weight assigned to the child in the P-R-C community equals one. This suggests that once an individual has received an inheritance from his/her own parents, he/she will pass the full amount of the transfer to his/her child in terms of a bequest ($b^*_{c,h_p+\Delta} - b^*_c = \Delta$ in equation (1)).

The insignificant effect of INH_SP on TO_CHILD in the male subsample implies that equation (3) equals zero. We assume that $\beta_c, \beta_s > 0$, $0 < \gamma_s \leq 1, 0 \leq \gamma_c \leq 1$, and $\gamma_c + \gamma_s \leq 1$ in the pure CBFT model, in this case, $\gamma_c = 0$ and $\gamma_s = 1$, which implies that the weight assigned to the child in the SP-S-C community equals zero and the weight assigned to the spouse in the SP-S-C community equals one. This suggests that once a Japanese male has received an inheritance from a spouse's parents, he will pass the full amount of the transfer on to his spouse in terms of a bequest ($b^*_{s,h_{sp}+\Delta} - b^*_s = \Delta$ in equation (4)). The pure CBFT model is sufficient to explain the empirical results.

7.2 Small Increase in Bequests

In this case, the insignificant effects of the inheritance on BA do not imply that the respondents intend to leave no bequest. Significant coefficients represent more bequest than insignificant coefficients. The empirical results are interpreted in horizontal and vertical comparisons.

In the horizontal comparison, both the effects of INH_P on TO_CHILD and TO_SPOUSE, and INH_SP on TO_CHILD and TO_SPOUSE, the differences between the bequests to child and to spouse with respect to the source of inheritance, are compared:

$$\left[b^*_{c,h_p+\Delta} - b^*_c\right] - \left[b^*_{s,h_p+\Delta} - b^*_s\right] = \frac{\theta + \beta_c + (2\theta - 1)\beta_s}{1 + \beta_c + \beta_s}\Delta \quad (7)$$

$$\left[b^*_{c,h_{sp}+\Delta} - b^*_c\right] - \left[b^*_{s,h_{sp}+\Delta} - b^*_s\right] = \frac{\gamma_c - \gamma_s + \beta_s(2\gamma_c - 1) + \beta_c(1 - 2\gamma_s)}{1 + \beta_c + \beta_s}\Delta \quad (8)$$

Proposition 2a. In the pure CBFT model, where $\beta_c, \beta_s > 0$, $0 < \gamma_s \leq 1$, $|\theta| + |\gamma_c| \neq 0$, $0 \leq \theta, \gamma_c \leq 1$, $\gamma_c + \gamma_s \leq 1$, and the inheritance from one's own parents increases by Δ, *ceteris paribus*, the difference between the increase in bequest to child and to spouse (equation (7)) is larger than zero when $\theta > \frac{\beta_s - \beta_c}{1 + 2\beta_s}$; equals zero when $\theta = \frac{\beta_s - \beta_c}{1 + 2\beta_s}$; and is less than zero when $\theta < \frac{\beta_s - \beta_c}{1 + 2\beta_s}$.

Proposition 2b. In the pure CBFT model, where $\beta_c, \beta_s > 0$, $0 < \gamma_s \leq 1$, $|\theta| + |\gamma_c| \neq 0$, $0 \leq \theta, \gamma_c \leq 1$, $\gamma_c + \gamma_s \leq 1$, and the inheritance from one's spouse's parents increases by Δ, *ceteris paribus*, the difference between the increase in bequest to child and to spouse (equation (8)) is larger than zero when $\gamma_c > \frac{(1 + 2\beta_c)\gamma_s + \beta_s - \beta_c}{1 + 2\beta_s}$; equals zero when $\gamma_c = \frac{(1 + 2\beta_c)\gamma_s + \beta_s - \beta_c}{1 + 2\beta_s}$; and is less than zero when $\gamma_c < \frac{(1 + 2\beta_c)\gamma_s + \beta_s - \beta_c}{1 + 2\beta_s}$.

The significant effects of INH_P on TO_CHILD and the insignificant effect of INH_P on TO_SPOUSE in the full sample, the female, and the male subsamples imply that equation (7) is larger than zero. In the pure CBFT model, $\theta > \frac{\beta_s - \beta_c}{1 + 2\beta_s}$, in this case.

The insignificant effect of INH_SP on TO_CHILD and some significant effects on TO_SPOUSE in the male subsample imply that equation (8) is less than zero. In the pure CBFT model, $\gamma_c < \frac{(1 + 2\beta_c)\gamma_s + \beta_s - \beta_c}{1 + 2\beta_s}$ in this case.

The vertical comparison assesses the effects of INH_P and INH_SP on TO_CHILD, and the effects of INH_P and INH_SP on TO_SPOUSE. The significant effect of INH_P on TO_CHILD and the insignificant effect of INH_SP on TO_CHILD in the male subsample imply that equation (5) is larger than zero. In the pure CBFT model, $(\gamma_c - \theta) < \frac{\beta_c \gamma_s}{1 + \beta_s}$, in this case.

The insignificant effects of INH_P on TO_SPOUSE, and (some) significant effects of INH_SP on TO_SPOUSE in the full sample and the female (male) subsample imply that equation (6) is less than zero. In the pure CBFT model, $(\gamma_c - \theta) < \frac{(1 + \beta_c)\gamma_s}{\beta_s}$, in this case. The pure CBFT model is sufficient to explain the empirical results.

7.3 Gender analysis

The main differences in the gender comparison are the positive significant effects of INH_SP on TO_CHILD and on TO_SPOUSE in the female subsample, compared with the insignificant effect and some significant effects in the male subsample. Suppose significant coefficients represent more bequest, under the pure CBFT model, this difference implies that $\left\{b^*_{c,h_{sp}+\Delta} - b^*_c\Big|_{female}\right\} > \left\{b^*_{c,h_{sp}+\Delta} - b^*_c\Big|_{male}\right\}$ and $\left\{b^*_{s,h_{sp}+\Delta} - b^*_s\Big|_{female}\right\} > \left\{b^*_{s,h_{sp}+\Delta} - b^*_s\Big|_{male}\right\}$.

Situation 1: Suppose $\beta_{cf} = \beta_{cm} = \beta_c$ and $\beta_{sf} = \beta_{sm} = \beta_s$

$$\begin{cases} \dfrac{(1+\beta_s)\gamma_{cf} + \beta_c(1-\gamma_{sf})}{1+\beta_c+\beta_s}\Delta - \dfrac{(1+\beta_s)\gamma_{cm} + \beta_c(1-\gamma_{sm})}{1+\beta_c+\beta_s}\Delta & = \dfrac{(1+\beta_s)(\gamma_{cf}-\gamma_{cm}) - \beta_c(\gamma_{sf}-\gamma_{sm})}{1+\beta_c+\beta_s}\Delta > 0 \\ \dfrac{\beta_s(1-\gamma_{cf}) + (1+\beta_c)\gamma_{sf}}{1+\beta_c+\beta_s}\Delta - \dfrac{\beta_s(1-\gamma_{cm}) + (1+\beta_c)\gamma_{sm}}{1+\beta_c+\beta_s}\Delta & = \dfrac{-\beta_s(\gamma_{cf}-\gamma_{cm}) + (1+\beta_c)(\gamma_{sf}-\gamma_{sm})}{1+\beta_c+\beta_s}\Delta > 0 \end{cases}$$

Then, it is equivalent to $\frac{\beta_c}{(1+\beta_s)}(\gamma_{sf}-\gamma_{sm}) < (\gamma_{cf}-\gamma_{cm}) < \frac{(1+\beta_c)}{\beta_s}(\gamma_{sf}-\gamma_{sm})$. Because $0 < \frac{\beta_c}{(1+\beta_s)} < \frac{(1+\beta_c)}{\beta_s}$, then, the necessary condition $\gamma_{sf} > \gamma_{sm}$ and $\gamma_{cf} > \gamma_{cm}$ implies that females care more about the weights assigned to the child and the spouse in the SP-S-C community than males do.

Situation 2: Suppose $\gamma_{cf} = \gamma_{cm} = \gamma_c$ and $\gamma_{sf} = \gamma_{sm} = \gamma_s$

$$\begin{cases} \dfrac{(1+\beta_{\mathrm{sf}})\gamma_c + \beta_{\mathrm{cf}}(1-\gamma_s)}{1+\beta_{\mathrm{cf}}+\beta_{\mathrm{sf}}}\Delta - \dfrac{(1+\beta_{\mathrm{sm}})\gamma_c + \beta_{\mathrm{cm}}(1-\gamma_s)}{1+\beta_{\mathrm{cm}}+\beta_{\mathrm{sm}}}\Delta & = \dfrac{(\beta_{\mathrm{cf}}(1+\beta_{\mathrm{sm}}) - \beta_{\mathrm{cm}}(1+\beta_{\mathrm{sf}}))(1-\gamma_c-\gamma_s)}{(1+\beta_{\mathrm{cf}}+\beta_{\mathrm{sf}})(1+\beta_{\mathrm{cm}}+\beta_{\mathrm{sm}})}\Delta > 0 \\ \dfrac{\beta_{\mathrm{sf}}(1-\gamma_c) + (1+\beta_{\mathrm{cf}})\gamma_s}{1+\beta_{\mathrm{cf}}+\beta_{\mathrm{sf}}}\Delta - \dfrac{\beta_{\mathrm{sm}}(1-\gamma_c) + (1+\beta_{\mathrm{cm}})\gamma_s}{1+\beta_{\mathrm{cm}}+\beta_{\mathrm{sm}}}\Delta & = \dfrac{(\beta_{\mathrm{sf}}(1+\beta_{\mathrm{cm}}) - \beta_{\mathrm{sm}}(1+\beta_{\mathrm{cf}}))(1-\gamma_c-\gamma_s)}{(1+\beta_{\mathrm{cf}}+\beta_{\mathrm{sf}})(1+\beta_{\mathrm{cm}}+\beta_{\mathrm{sm}})}\Delta > 0 \end{cases}$$

Because $1-\gamma_c-\gamma_s > 0$, then, it is equivalent to $\frac{\beta_{cf}}{\beta_{cm}} > \frac{1+\beta_{sf}}{1+\beta_{sm}}$ and $\frac{\beta_{sf}}{\beta_{sm}} > \frac{1+\beta_{cf}}{1+\beta_{cm}}$. In this case, the necessary condition $\beta_{cf} > \beta_{cm}$ and $\beta_{sf} > \beta_{sm}$ (see proof in Appendix 1D) implies that females care more about family tradition to the child and spouse than males do.

Hence, to explain the gender differences, under the pure CBFT model, suppose $\beta_{cf} = \beta_{cm} = \beta_c$ and $\beta_{sf} = \beta_{sm} = \beta_s$, when $\gamma_{sf} > \gamma_{sm}$ and $\gamma_{cf} > \gamma_{cm}$; or suppose $\gamma_{cf} = \gamma_{cm} = \gamma_c$ and $\gamma_{sf} = \gamma_{sm} = \gamma_s$, when $\beta_{cf} > \beta_{cm}$ and $\beta_{sf} > \beta_{sm}$, the pure CBFT model is sufficient to explain the empirical results. This suggests that females are more likely to assign higher weights to the child and the spouse in the SP-S-C community or higher family tradition to the child and the spouse than males.

8. Conclusion and Discussion

This study examines the community-based indirect reciprocity in BAs involving three generations. The theoretical model, called community-based family tradition, extends the "family tradition" model proposed by Stark and Nicinska (2015) and includes community-based indirect reciprocity driven by the fairness consideration and mental accounting theory. The pure CBFT model suggests that the source of inheritance has a different impact on bequeathing.

The empirical analysis uses survey data from the wave 2009 PPS of Osaka University in Japan. The results from the PPO regression suggest that with some socio-economics characteristics controlled, those who have an inheritance from their own parents are more likely to plan to leave as much bequest as possible to their children, while those who have an inheritance from their spouse's parents are more likely to plan to leave as much bequest as possible to both their children and their spouse. Hence, the source of the inheritance does affect the BA, which suggests that there is community-based indirect reciprocity in BA.

The empirical results show that once Japanese females have an inheritance from either their own parents or their spouse's parents, they intend to leave as much bequest as possible to their children; and once they have an inheritance from their spouse's parents, they intend to leave as much bequest as possible to their spouse. For Japanese males, once they have an inheritance from their own parents, they intend to leave as much bequest as possible to their children, while once they have an inheritance from their spouse's parents, the BA toward children is unaffected but it decreases the probability of a lower BA toward their spouse.

The gender differences in BA show that females pay more attention to the weights assigned or have higher family tradition to the child and the spouse than males do. Those results suggest that females are more likely to apply fairer consideration than males, which is consistent with the results from Andreoni and Vesterlund (2001). Since Stark and Nicinska (2015) argue that family tradition may moderate the effectiveness of the inheritance tax and the empirical result from Andreoni and Vesterlund (2001) indicates that females are less price-elastic than males, the empirical results from this study suggest that the taxation on inheritance is less functional for females than for males.

The results from this study must be considered with caution. First, the BAs are captured by asking if the respondents agree or disagree with the statement that they will leave as much of bequest as possible to their children and their spouse. Even when the empirical results are not significant, this does not mean that the individuals will leave nothing to their children and their spouses.

Second, although the empirical results do not violate the simplest pure CBFT model, the intention of bequeathing may be more complex. For example, for the full sample and female subsample, both INH_P and INH_SP have positive significant effects on TO_CHILD, which can be explained simply by either the altruistic model or the joy of giving model. In addition, the results in section 6.3 indicate that altruism toward children has positive significant effects on TO_CHILD and TO_SPOUSE, and reciprocity toward parents has a positive significant effect on TO_SPOUSE. Therefore, further investigation into a general model that combines altruism (or the joy of giving) and the CBFT is required.

Third, data limitations preclude this study from further analysis on the amount of inheritance received and the amount of bequest intended. In addition, as mentioned, this study uses parents' survival information to identify if the wealth transfer is from an inheritance or from inter vivos transfers. This categorization may not be accurate. Therefore, further research on this is needed.

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Tables

Table 1 Bequest Attitudes toward Children and Spouse (%)

	All	TO_SPOUSE					
		Doesn't hold true	2	3	4	Particularly true	Total
TO_CHILD	Doesn't hold true	5.48	0.80	0.80	0.85	0.14	8.06
	2	1.82	12.36	3.05	2.67	0.17	20.06
	3	1.98	4.07	31.10	4.95	0.55	42.65
	4	0.55	1.73	5.97	14.25	0.44	22.95
	Particularly true	0.52	0.19	0.85	0.80	3.91	6.27
	Total	10.35	19.15	41.77	23.53	5.20	100.00
	Number of Observations						3,634

	Female	TO_SPOUSE					
		Doesn't hold true	2	3	4	Particularly true	Total
TO_CHILD	Doesn't hold true	7.14	0.42	0.53	0.53	0.00	8.62
	2	3.01	13.27	2.59	1.06	0.05	19.99
	3	3.23	6.45	32.31	1.59	0.11	43.68
	4	0.90	3.07	8.57	9.31	0.00	21.84
	Particularly true	0.90	0.32	1.32	1.00	2.33	5.87
	Total	15.18	23.53	45.32	13.48	2.49	100.00
	Number of Observations						1,891

	Male	TO_SPOUSE					
		Doesn't hold true	2	3	4	Particularly true	Total
TO_CHILD	Doesn't hold true	3.67	1.20	1.09	1.20	0.29	7.46
	2	0.52	11.36	3.56	4.42	0.29	20.14
	3	0.63	1.49	29.78	8.61	1.03	41.54
	4	0.17	0.29	3.16	19.62	0.92	24.15
	Particularly true	0.11	0.06	0.34	0.57	5.62	6.71
	Total	5.11	14.40	37.92	34.42	8.15	100.00
	Number of Observations						1,743

Table 2 Summary Statistics

Variable	Definition	All Mean	All S.D.	Female Mean	Female S.D.	Male Mean	Male S.D.	P-value
TO_CHILD	I want to leave my children as much of my inheritance as possible (A five-point Likert scale coded as 1 “Doesn’t hold true at all for me” and 5 “Particularly true for me.”)	2.99	1.00	2.96	1.00	3.03	1.00	*
TO_SPOUSE	I want to leave my spouse as much of my inheritance as possible (A five-point Likert scale coded as 1 “Doesn’t hold true at all for me” and 5 “Particularly true for me.”)	2.94	1.02	2.65	0.98	3.26	0.98	***
INH_P	Receive inheritance/transfers of wealth from parents (1 = Yes, 0 = No)	0.24	0.43	0.20	0.40	0.29	0.45	***
INH_SP	Receive inheritance/transfers of wealth from spouse's parents (1 = Yes, 0 = No)	0.16	0.37	0.20	0.40	0.12	0.33	***
EXPINH_P	Expect to receive inheritance/transfers of wealth from parents (1 = Yes, 0 = No)	0.33	0.47	0.28	0.45	0.39	0.49	***
EXPINH_SP	Expect to receive inheritance/transfers of wealth from spouse's parents (1 = Yes, 0 = No)	0.25	0.43	0.29	0.45	0.21	0.41	***
FEMALE	Female dummy (1 = Female, 0 = Male)	0.52	0.50					
HHINC	Log of household income	6.37	0.63	6.37	0.60	6.37	0.66	
CHILDNUM	Number of children	2.16	0.74	2.15	0.72	2.17	0.75	
FAITH	I am deeply religious (A five-point Likert scale coded as 1 “Doesn’t hold true at all for me” and 5 “Particularly true for me.”)	1.70	1.06	1.69	1.08	1.72	1.04	
AGE	Respondent's age	52.01	11.69	50.87	11.91	53.24	11.32	***
LIFEEXP	Life expectancy (in decades, e.g., the mean of 3.32 means 33.2 years)	3.32	1.13	3.71	1.11	2.91	0.99	***
NOHIGH	Did not finish high school (1 = Yes, 0 = No)	0.10	0.31	0.09	0.29	0.12	0.32	***
HIGHSCH	Graduate from high school but not graduate from college (1 = Yes, 0 = No)	0.66	0.47	0.78	0.41	0.53	0.50	***
COLLEGE	Graduate from college or above (1 = Yes, 0 = No)	0.24	0.42	0.13	0.33	0.35	0.48	***
Observations		3,634		1,891		1,743		

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3 Means of the Variables by Bequest Attitude

	TO_CHILD					TO_SPOUSE				
Variable	1	2	3	4	5	1	2	3	4	5
INH_P	0.24	0.25	0.24	0.25	0.22	0.21	0.23	0.24	0.27	0.24
INH_SP	0.16	0.15	0.16	0.18	0.14	0.15	0.16	0.17	0.17	0.13
EXPINH_P	0.20	0.29	0.33	0.39	0.42	0.27	0.28	0.33	0.39	0.40
EXPINH_SP	0.20	0.21	0.24	0.31	0.29	0.23	0.25	0.25	0.27	0.25
FEMALE	0.56	0.52	0.53	0.50	0.49	0.76	0.64	0.56	0.30	0.25
HHINC	6.20	6.32	6.40	6.42	6.37	6.28	6.32	6.39	6.41	6.30
CHILDNUM	2.30	2.24	2.17	2.07	2.01	2.24	2.25	2.15	2.12	1.99
FAITH	1.73	1.69	1.77	1.62	1.56	1.67	1.65	1.76	1.67	1.63
AGE	55.52	54.37	52.40	49.50	46.46	52.40	53.01	52.07	51.79	48.02
LIFEEXP	3.03	3.11	3.29	3.54	3.82	3.43	3.31	3.34	3.22	3.53
NOHIGH	0.17	0.11	0.11	0.07	0.11	0.12	0.11	0.11	0.08	0.13
HIGHSCH	0.64	0.66	0.66	0.67	0.68	0.70	0.69	0.68	0.60	0.60
COLLEGE	0.19	0.23	0.24	0.26	0.22	0.18	0.20	0.22	0.32	0.28
Observations	293	729	1550	834	228	376	696	1518	855	189

Note: 1 “Doesn’t hold true at all for me” and 5 “Particularly true for me.”

Table 4 PPO results for TO_CHILD and TO_SPOUSE

TO_CHILD	Panel 1		Panel 2		Panel 3		Panel 4	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
INH_P	0.1681**	(0.07)	0.1681**	(0.07)	0.1681**	(0.07)	0.1681**	(0.07)
INH_SP	0.2657***	(0.09)	0.2657***	(0.09)	0.2657***	(0.09)	0.2657***	(0.09)
EXPINH_P	0.2175***	(0.07)	0.2175***	(0.07)	0.2175***	(0.07)	0.2175***	(0.07)
EXPINH_SP	0.0680	(0.08)	0.0680	(0.08)	0.0680	(0.08)	0.0680	(0.08)
FEMALE	-0.4338***	(0.07)	-0.4338***	(0.07)	-0.4338***	(0.07)	-0.4338***	(0.07)
HHINC	0.1859***	(0.05)	0.1859***	(0.05)	0.1859***	(0.05)	0.1859***	(0.05)
CHILDNUM	-0.2343***	(0.04)	-0.2343***	(0.04)	-0.2343***	(0.04)	-0.2343***	(0.04)
FAITH	0.0480	(0.06)	0.0776*	(0.04)	-0.0687*	(0.04)	-0.0743	(0.09)
LIFEEXP	0.4478	(0.34)	0.3433*	(0.20)	-0.2084	(0.20)	-0.3047	(0.32)
LIFEEXP × LIFEEXP	-0.0223	(0.05)	-0.0018	(0.03)	0.0779***	(0.03)	0.1045**	(0.04)
NOHIGH	-0.1208	(0.19)	0.1623	(0.14)	0.0568	(0.15)	0.5652**	(0.24)
HIGHSCH	0.1630**	(0.08)	0.1630**	(0.08)	0.1630**	(0.08)	0.1630**	(0.08)
Constant	0.5050	(0.61)	-1.0193**	(0.45)	-1.8196***	(0.45)	-3.7842***	(0.67)
Observations	3634							
Pseudo R^2	0.0263							

TO_SPOUSE	Panel 1		Panel 2		Panel 3		Panel 4	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
INH_P	0.0370	(0.08)	0.0370	(0.08)	0.0370	(0.08)	0.0370	(0.08)
INH_SP	0.3095***	(0.09)	0.3095***	(0.09)	0.3095***	(0.09)	0.3095***	(0.09)
EXPINH_P	0.1221*	(0.07)	0.1221*	(0.07)	0.1221*	(0.07)	0.1221*	(0.07)
EXPINH_SP	0.0920	(0.08)	0.0920	(0.08)	0.0920	(0.08)	0.0920	(0.08)
FEMALE	-1.3064***	(0.14)	-1.1187***	(0.09)	-1.5585***	(0.09)	-1.6803***	(0.20)
HHINC	0.1405***	(0.05)	0.1405***	(0.05)	0.1405***	(0.05)	0.1405***	(0.05)
CHILDNUM	-0.2040***	(0.04)	-0.2040***	(0.04)	-0.2040***	(0.04)	-0.2040***	(0.04)
FAITH	0.0746	(0.06)	0.1121***	(0.04)	-0.0286	(0.04)	-0.0035	(0.09)
LIFEEXP	-0.0044	(0.32)	0.1151	(0.20)	-0.6948***	(0.19)	-0.5608	(0.36)
LIFEEXP × LIFEEXP	0.0130	(0.04)	0.0042	(0.03)	0.1226***	(0.03)	0.1394***	(0.05)
NOHIGH	-0.1118	(0.20)	-0.0259	(0.14)	-0.1372	(0.15)	0.5325**	(0.24)
HIGHSCH	0.0410	(0.08)	0.0410	(0.08)	0.0410	(0.08)	0.0410	(0.08)
Constant	2.1387***	(0.61)	0.2906	(0.45)	0.0293	(0.44)	-2.8432***	(0.73)
Observations	3634							
Pseudo R^2	0.0506							

Robust standard errors in parentheses

* p < 0.1, ** p < 0.05, *** p < 0.01

Table 5 Marginal Effects for TO_CHILD and TO_SPOUSE

	BA=1	BA=2	BA=3	BA=4	BA=5
			TO_CHILD		
INH_P	-0.0109**	-0.0217**	-0.0006	0.0252**	0.0081**
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)
INH_SP	-0.0166***	-0.0339***	-0.0032	0.0403***	0.0133***
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
EXPINH_P	-0.0142***	-0.0282***	-0.0005	0.0325***	0.0104***
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)
EXPINH_SP	-0.0045	-0.0089	0.0001	0.0101	0.0032
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
FEMALE	0.0291***	0.0564***	-0.0012	-0.0640***	-0.0203***
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
HHINC	-0.0125***	-0.0243***	0.0008	0.0275***	0.0086***
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)
CHILDNUM	0.0158***	0.0307***	-0.0010	-0.0346***	-0.0108***
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)
FAITH	-0.0032	-0.0121*	0.0287***	-0.0099	-0.0034
	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)
LIFEEXP	-0.0202***	-0.0455***	0.0056	0.0420***	0.0180***
	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)
NOHIGH	0.0093	-0.0420*	0.0222	-0.0186	0.0292**
	(0.01)	(0.02)	(0.03)	(0.02)	(0.01)
HIGHSCH	-0.0111**	-0.0218**	0.0018	0.0241**	0.0070**
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
			TO_SPOUSE		
INH_P	-0.0030	-0.0045	0.0008	0.0054	0.0012
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
INH_SP	-0.0234***	-0.0364***	0.0016	0.0474***	0.0108***
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
EXPINH_P	-0.0099*	-0.0147*	0.0026	0.0181*	0.0039*
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
EXPINH_SP	-0.0074	-0.0110	0.0019	0.0136	0.0030
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
FEMALE	0.1090***	0.1133***	0.0573***	-0.2196***	-0.0600***
	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)
HHINC	-0.0116***	-0.0169***	0.0035*	0.0206***	0.0044***
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)
CHILDNUM	0.0168***	0.0246***	-0.0050**	-0.0299***	-0.0064***
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)
FAITH	-0.0061	-0.0166**	0.0279***	-0.0050	-0.0001
	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)
LIFEEXP	-0.0068	-0.0223***	0.0076	0.0099	0.0116***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
NOHIGH	0.0098	-0.0044	0.0181	-0.0435*	0.0201*
	(0.02)	(0.02)	(0.03)	(0.02)	(0.01)
HIGHSCH	-0.0034	-0.0050	0.0010	0.0061	0.0012
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)

Robust standard errors in parentheses

* p < 0.1, ** p < 0.05, *** p < 0.01

Table 6 PPO Results for Females and Males

	Female				Male			
	TO_CHILD		TO_SPOUSE		TO_CHILD		TO_SPOUSE	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
INH_P	0.2058*	(0.11)	-0.0065	(0.12)	0.1905*	(0.10)	0.1330	(0.10)
INH_SP	0.2898***	(0.11)	0.3007***	(0.12)	0.1512	(0.15)	0.2257	(0.14)
EXPINH_P	0.2429**	(0.10)	0.2320**	(0.10)	0.1763*	(0.10)	-0.0174	(0.11)
EXPINH_SP	0.0966	(0.10)	0.1473	(0.10)	0.0748	(0.12)	0.0684	(0.12)
Observations	1891		1891		1743		1743	
Pseudo R^2	0.0256		0.0154		0.0300		0.0239	

Robust standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 7 Marginal Effects for Females and Males

	Female					Male				
	BA=1	BA=2	BA=3	BA=4	BA=5	BA=1	BA=2	BA=3	BA=4	BA=5
					TO_CHILD					
INH_P	-0.0140*	-0.0275*	0.0046*	0.0288*	0.0081*	-0.0125*	-0.0253*	-0.0014	0.0291*	0.0100*
	(0.01)	(0.01)	(0.00)	(0.02)	(0.00)	(0.01)	(0.01)	(0.00)	(0.02)	(0.01)
INH_SP	-0.0193***	-0.0385***	0.0051	0.0410**	0.0117**	-0.0098	-0.0200	-0.0015	0.0232	0.0081
	(0.01)	(0.01)	(0.00)	(0.02)	(0.01)	(0.01)	(0.02)	(0.00)	(0.02)	(0.01)
EXPINH_P	-0.0166**	-0.0326**	0.0058*	0.0339**	0.0095**	-0.0117*	-0.0236*	-0.0006	0.0268*	0.0091*
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.01)	(0.00)	(0.02)	(0.01)
EXPINH_SP	-0.0068	-0.0131	0.0029	0.0133	0.0037	-0.0050	-0.0100	-0.0003	0.0114	0.0039
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.02)	(0.00)	(0.02)	(0.01)
					TO_SPOUSE					
INH_P	0.0008	0.0007	-0.0009	-0.0006	-0.0001	-0.0066	-0.0148	-0.0104	0.0236	0.0083
	(0.02)	(0.01)	(0.02)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)	(0.02)	(0.01)
INH_SP	-0.0365***	-0.0348**	0.0379***	0.0287**	0.0047**	-0.0106*	-0.0245*	-0.0195	0.0398	0.0147
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
EXPINH_P	-0.0289**	-0.0266**	0.0305**	0.0215**	0.0035**	0.0009	0.0020	0.0013	-0.0031	-0.0011
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
EXPINH_SP	-0.0186	-0.0168	0.0198	0.0134	0.0022	-0.0034	-0.0077	-0.0053	0.0121	0.0042
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)

Robust standard errors in parentheses
* p < 0.1, ** p < 0.05, *** p < 0.01

Table 8 Inheritance and Inter Vivos Transfers

Received from my parents

	Father	Mother	Variable	Freq.	Percent
INH_P = 1					
1	Alive	Alive	TRANS_PR	59	1.95
2	Alive	Deceased	INH_PR	31	1.02
3	Deceased	Alive		270	8.92
4	Deceased	Deceased		372	12.29
INH_P = 0					
5	Not missing	Not missing	NONE_PR	2,296	75.83

Received from spouse's parents

	Father	Mother	Variable	Freq.	Percent
INH_SP = 1					
1	Alive	Alive	TRANS_SPR	43	1.42
2	Alive	Deceased	INH_SPR	26	0.86
3	Deceased	Alive		179	5.91
4	Deceased	Deceased		266	8.78
INH_SP = 0					
5	Not missing	Not missing	NONE_SPR	2,514	83.03

Expect to receive from my parents

	Father	Mother	Variable	Freq.	Percent
EXPINH_P = 1					
1	Alive	Alive	EXPTRANS_PR	616	20.34
2	Alive	Deceased	EXPINH_PR	78	2.58
3	Deceased	Alive		303	10.01
4	Deceased	Deceased		6	0.2
EXPINH_P = 0					
5	Not missing	Not missing	EXPNONE_PR	2,025	66.88

Expect to receive from spouse's parents

	Father	Mother	Variable	Freq.	Percent
EXPINH_SP = 1					
1	Alive	Alive	EXPTRANS_SPR	478	15.79
2	Alive	Deceased	EXPINH_SPR	66	2.18
3	Deceased	Alive		242	7.99
4	Deceased	Deceased		6	0.2
EXPINH_SP = 0					
5	Not missing	Not missing	EXPNONE_SPR	2,236	73.84

Note: For the fourth case of EXPINH_PR and EXPINH_SPR, those whose mother and father have been dead for more than three years are eliminated in the analysis.

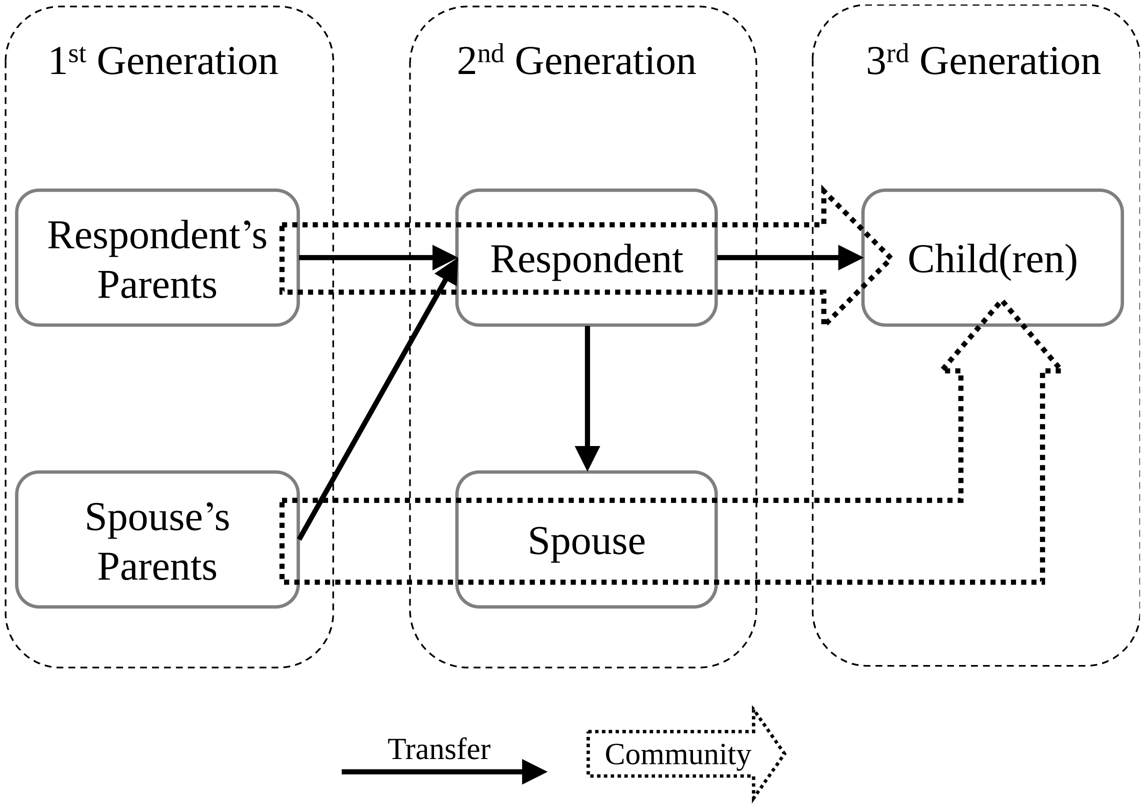
Table 9 Marginal Effects for Inheritance and Inter Vivos Transfers

TO_CHILD	BA=1	BA=2	BA=3	BA=4	BA=5
TRANS_PR	0.0100	0.0197	-0.0027	-0.0205	-0.0065
	(0.02)	(0.04)	(0.01)	(0.04)	(0.01)
INH_PR	-0.0099*	-0.0213*	-0.0012	0.0241*	0.0083*
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
TRANS_SPR	-0.0163	-0.0359	-0.0037	0.0414	0.0146
	(0.01)	(0.03)	(0.01)	(0.04)	(0.02)
INH_SPR	-0.0190***	-0.0423***	-0.0059	0.0494***	0.0178***
	(0.01)	(0.01)	(0.00)	(0.02)	(0.01)
EXPTRANS_PR	-0.0140**	-0.0300**	-0.0015	0.0339**	0.0116**
	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)
EXPINH_PR	-0.0126*	-0.0267*	-0.0009	0.0299*	0.0102*
	(0.01)	(0.01)	(0.00)	(0.02)	(0.01)
EXPTRANS_SPR	-0.0061	-0.0130	-0.0004	0.0146	0.0050
	(0.01)	(0.01)	(0.00)	(0.02)	(0.01)
EXPINH_SPR	-0.0022	-0.0045	0.0000	0.0050	0.0017
	(0.01)	(0.02)	(0.00)	(0.02)	(0.01)
GIVE_C_2%	-0.0474***	-0.0540**	0.0304***	0.0562**	0.0149**
	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)
GIVE_C_5%	-0.0597***	-0.0717***	0.0326***	0.0775***	0.0213***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)
GIVE_C_10%	-0.0722***	-0.0421**	-0.0159	0.0953***	0.0349***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)
GIVE_C_20%	-0.1106***	-0.0611**	-0.0201	0.1522***	0.0395***
	(0.02)	(0.02)	(0.03)	(0.02)	(0.01)
GIVE_P_2%	-0.0109	-0.0273	-0.0031	0.0310	0.0103
	(0.01)	(0.03)	(0.00)	(0.03)	(0.01)
GIVE_P_5%	0.0056	0.0129	-0.0009	-0.0135	-0.0041
	(0.01)	(0.02)	(0.00)	(0.03)	(0.01)
GIVE_P_10%	0.0008	0.0018	-0.0000	-0.0019	-0.0006
	(0.01)	(0.02)	(0.00)	(0.02)	(0.01)
GIVE_P_20%	0.0332*	-0.0550*	0.0089	-0.0094	0.0223
	(0.02)	(0.03)	(0.03)	(0.03)	(0.01)
Observations	3028				
Pseudo R^2	0.0344				

TO_SPOUSE	BA=1	BA=2	BA=3	BA=4	BA=5
TRANS_PR	0.0325	0.0456	-0.0184	-0.0499	-0.0099
	(0.03)	(0.04)	(0.02)	(0.04)	(0.01)
INH_PR	-0.0029	-0.0048	0.0005	0.0059	0.0013
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
TRANS_SPR	-0.0224	-0.0376	0.0002	0.0488	0.0110
	(0.02)	(0.03)	(0.01)	(0.04)	(0.01)
INH_SPR	-0.0283***	-0.0487***	-0.0036	0.0653***	0.0152***
	(0.01)	(0.01)	(0.01)	(0.02)	(0.00)
EXPTRANS_PR	-0.0084	-0.0146	0.0013	0.0178	0.0038
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
EXPINH_PR	0.0280	-0.0483**	0.0310	-0.0146	0.0039
	(0.02)	(0.02)	(0.03)	(0.02)	(0.01)
EXPTRANS_SPR	-0.0102	-0.0168	0.0012	0.0212	0.0046
	(0.01)	(0.01)	(0.00)	(0.02)	(0.00)
EXPINH_SPR	-0.0020	-0.0032	0.0005	0.0038	0.0008
	(0.01)	(0.01)	(0.00)	(0.02)	(0.00)
GIVE_C_2%	-0.0232	-0.0309	0.0157	0.0322	0.0062
	(0.02)	(0.02)	(0.01)	(0.02)	(0.00)
GIVE_C_5%	-0.0421***	-0.0608***	0.0206**	0.0684***	0.0139***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.00)
GIVE_C_10%	-0.0405***	-0.0580***	0.0207**	0.0648***	0.0131***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
GIVE_C_20%	-0.0384***	-0.0546***	0.0205**	0.0604***	0.0121***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.00)
GIVE_P_2%	-0.0271*	-0.0416*	0.0094	0.0490*	0.0103*
	(0.01)	(0.02)	(0.01)	(0.03)	(0.01)
GIVE_P_5%	-0.0077	-0.0109	0.0044	0.0119	0.0023
	(0.01)	(0.02)	(0.01)	(0.02)	(0.00)
GIVE_P_10%	-0.0205	-0.0305	0.0089	0.0350*	0.0071*
	(0.01)	(0.02)	(0.01)	(0.02)	(0.00)
GIVE_P_20%	-0.0313**	-0.0488**	0.0088	0.0588**	0.0125**
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)
Observations	3028				
Pseudo R^2	0.0590				

Robust standard errors in parentheses
* p < 0.1, ** p < 0.05, *** p < 0.01
Note: The marginal effects at the means are reported by the PPO for different levels of BA with other socio-economic characteristics controlled, such as female dummy, household income, number of children in the family, faith in religion, life expectancy and its square, and educational attainment.

Figure 1



1st Generation
2nd Generation
3rd Generation
Respondent's Parents
Respondent
Child(ren)
Spouse's Parents
Spouse
Transfer
Community

Appendix 1A

In the case of pure altruism, an individual chooses the amount of the bequest to child and spouse to maximize the utility function, given as:

$$U(b_c, b_s) = (1 - \alpha_c - \alpha_s) \times Log\left(y_i + h_p + h_{sp} - b_c - b_s\right) + \alpha_c \times Log(y_c + b_c) + \alpha_s \times Log(y_s + b_s)$$

Then,

$$\frac{\partial U}{\partial b_c} = \frac{\alpha_c}{b_c + y_c} - \frac{1 - \alpha_c - \alpha_s}{-b_c - b_s + h_p + h_{sp} + y_i} = 0$$

$$\frac{\partial^2 U}{\partial {b_c}^2} = -\frac{\alpha_c}{(b_c + y_c)^2} - \frac{1 - \alpha_c - \alpha_s}{(-b_c - b_s + h_p + h_{sp} + y_i)^2} < 0$$

$$\frac{\partial U}{\partial b_s} = \frac{\alpha_s}{b_s + y_s} - \frac{1 - \alpha_c - \alpha_s}{-b_c - b_s + h_p + h_{sp} + y_i} = 0$$

$$\frac{\partial^2 U}{\partial {b_s}^2} = -\frac{1 - \alpha_c - \alpha_s}{(-b_c - b_s + h_p + h_{sp} + y_i)^2} - \frac{\alpha_s}{(b_s + y_s)^2} < 0$$

$$\frac{\partial^2 U}{\partial b_c \partial b_s} = -\frac{1 - \alpha_c - \alpha_s}{(-b_c - b_s + h_p + h_{sp} + y_i)^2}$$

$$\frac{\partial^2 U}{\partial {b_c}^2}\frac{\partial^2 U}{\partial {b_s}^2} - \left(\frac{\partial^2 U}{\partial b_c \partial b_s}\right)^2 = \frac{\alpha_c \alpha_s}{(b_c + y_c)^2 (b_s + y_s)^2} + \frac{\alpha_c(1 - \alpha_c - \alpha_s)}{(b_c + y_c)^2(-b_c - b_s + h_p + h_{sp} + y_i)^2} + \frac{\alpha_s(1 - \alpha_c - \alpha_s)}{(b_s + y_s)^2(-b_c - b_s + h_p + h_{sp} + y_i)^2} > 0$$

Because $\frac{\partial^2 U}{\partial {b_c}^2} < 0$ and $\frac{\partial^2 U}{\partial {b_s}^2} < 0$, $\frac{\partial^2 U}{\partial {b_c}^2}\frac{\partial^2 U}{\partial {b_s}^2} - \left(\frac{\partial^2 U}{\partial b_c \partial b_s}\right)^2 > 0$ for all b_c and b_s, then, the utility $U(b_c, b_s)$ will reach its maximum, when

$$\begin{aligned} {b_c}^* &= -y_c + (h_p + h_{sp} + y_c + y_i + y_s)\alpha_c \\ {b_s}^* &= -y_s + (h_p + h_{sp} + y_c + y_i + y_s)\alpha_s \end{aligned}$$

Appendix 1B

In the case of pure joy of giving, an individual chooses the amount of bequest to the child and spouse to maximize the utility function, given as:

$$U(b_c, b_s) = Log\left(y_i + h_p + h_{sp} - b_c - b_s\right) + \beta_c \times Log(b_c) + \beta_s \times Log(b_s)$$

Then,

$$\frac{\partial U}{\partial b_c} = -\frac{1}{-b_c - b_s + h_p + h_{\text{sp}} + y_i} + \frac{\beta_c}{b_c} = 0$$

$$\frac{\partial^2 U}{\partial {b_c}^2} = -\frac{1}{(-b_c - b_s + h_p + h_{\text{sp}} + y_i)^2} - \frac{\beta_c}{b_c^2} < 0$$

$$\frac{\partial U}{\partial b_s} = -\frac{1}{-b_c - b_s + h_p + h_{\text{sp}} + y_i} + \frac{\beta_s}{b_s} = 0$$

$$\frac{\partial^2 U}{\partial {b_s}^2} = -\frac{1}{(-b_c - b_s + h_p + h_{\text{sp}} + y_i)^2} - \frac{\beta_s}{b_s^2} < 0$$

$$\frac{\partial^2 U}{\partial b_c \partial b_s} = -\frac{1}{(-b_c - b_s + h_p + h_{\text{sp}} + y_i)^2}$$

$$\frac{\partial^2 U}{\partial {b_c}^2}\frac{\partial^2 U}{\partial {b_s}^2} - \left(\frac{\partial^2 U}{\partial b_c \partial b_s}\right)^2 = \frac{1}{(-b_c - b_s + h_p + h_{\text{sp}} + y_i)^2} \times \left(\frac{\beta_c}{b_c^2} + \frac{\beta_s}{b_s^2}\right) + \frac{\beta_c}{b_c^2} \times \frac{\beta_s}{b_s^2} > 0$$

Because $\frac{\partial^2 U}{\partial {b_c}^2} < 0$ and $\frac{\partial^2 U}{\partial {b_s}^2} < 0$, $\frac{\partial^2 U}{\partial {b_c}^2}\frac{\partial^2 U}{\partial {b_s}^2} - \left(\frac{\partial^2 U}{\partial b_c \partial b_s}\right)^2 > 0$ for all b_c and b_s, then, the utility $U(b_c, b_s)$ will reach its maximum, when

$$ {b_c}^* = \frac{(h_p + h_{\text{sp}} + y_i)\beta_c}{1 + \beta_c + \beta_s}$$

$$ {b_s}^* = \frac{(h_p + h_{\text{sp}} + y_i)\beta_s}{1 + \beta_c + \beta_s}$$

Appendix 1C

In the case of pure CBFT, an individual chooses the amount of bequest to the child and spouse to maximize the utility function, given as:

$$U(b_c, b_s) = Log\left(y_i + h_p + h_{sp} - b_c - b_s\right)$$
$$+ \beta_c \times Log(b_c - \theta \times h_p - \gamma_c \times h_{sp})$$
$$+ \beta_s \times Log(b_s - \gamma_s \times h_{sp})$$

Then,

$$\frac{\partial U}{\partial b_c} = -\frac{1}{-b_c - b_s + h_p + h_{\mathrm{sp}} + y_i} + \frac{\beta_c}{b_c - \theta h_p - h_{\mathrm{sp}}\gamma_c} = 0$$
$$\frac{\partial^2 U}{\partial {b_c}^2} = -\frac{1}{(-b_c - b_s + h_p + h_{\mathrm{sp}} + y_i)^2} - \frac{\beta_c}{(b_c - \theta h_p - h_{\mathrm{sp}}\gamma_c)^2} < 0$$
$$\frac{\partial U}{\partial b_s} = -\frac{1}{-b_c - b_s + h_p + h_{\mathrm{sp}} + y_i} + \frac{\beta_s}{b_s - h_{\mathrm{sp}}\gamma_s} = 0$$
$$\frac{\partial^2 U}{\partial {b_s}^2} = -\frac{1}{(-b_c - b_s + h_p + h_{\mathrm{sp}} + y_i)^2} - \frac{\beta_s}{(b_s - h_{\mathrm{sp}}\gamma_s)^2} < 0$$
$$\frac{\partial^2 U}{\partial b_c \partial b_s} = -\frac{1}{(-b_c - b_s + h_p + h_{\mathrm{sp}} + y_i)^2}$$

$$\frac{\partial^2 U}{\partial {b_c}^2}\frac{\partial^2 U}{\partial {b_s}^2} - \left(\frac{\partial^2 U}{\partial b_c \partial b_s}\right)^2$$
$$= \frac{1}{(-b_c - b_s + h_p + h_{\mathrm{sp}} + y_i)^2} \times \left(\frac{\beta_c}{(b_c - \theta h_p - h_{\mathrm{sp}}\gamma_c)^2} + \frac{\beta_s}{(b_s - h_{\mathrm{sp}}\gamma_s)^2}\right)$$
$$+ \frac{\beta_c}{(b_c - \theta h_p - h_{\mathrm{sp}}\gamma_c)^2} \times \frac{\beta_s}{(b_s - h_{\mathrm{sp}}\gamma_s)^2}$$

Because $\frac{\partial^2 U}{\partial {b_c}^2} < 0$ and $\frac{\partial^2 U}{\partial {b_s}^2} < 0$, $\frac{\partial^2 U}{\partial {b_c}^2}\frac{\partial^2 U}{\partial {b_s}^2} - \left(\frac{\partial^2 U}{\partial b_c \partial b_s}\right)^2 > 0$ for all b_c and b_s, then, the utility $U(b_c, b_s)$ will reach its maximum, when

$$b_c^* = \frac{y_i\beta_c}{1 + \beta_c + \beta_s} + \frac{h_p(\theta + \beta_c + \theta\beta_s)}{1 + \beta_c + \beta_s} + \frac{h_{\mathrm{sp}}((1 + \beta_s)\gamma_c + \beta_c(1 - \gamma_s))}{1 + \beta_c + \beta_s}$$
$$b_s^* = \frac{y_i\beta_s}{1 + \beta_c + \beta_s} + \frac{h_p(1 - \theta)\beta_s}{1 + \beta_c + \beta_s} + \frac{h_{\mathrm{sp}}((1 + \beta_c)\gamma_s + \beta_s(1 - \gamma_c))}{1 + \beta_c + \beta_s}$$

There are some other propositions in the pure CBFT model, where $\beta_c, \beta_s > 0$, $0 < \gamma_s \leq 1$, $|\theta| + |\gamma_c| \neq 0$, $0 \leq \theta, \gamma_c \leq 1$, and $\gamma_c + \gamma_s \leq 1$:

Proposition 3. In a stronger family tradition toward children, *ceteris paribus*, the bequest to the child increases while the bequest to the spouse decreases. In a stronger family tradition toward the spouse, *ceteris paribus*, the bequest to the child decreases while the bequest to the spouse increases.

$$\frac{\partial b_c^*}{\partial \beta_c} = \frac{(1+\beta_s)(y_i + (1-\theta)h_p + h_{\mathrm{sp}}(1-\gamma_c-\gamma_s))}{(1+\beta_c+\beta_s)^2} > 0$$

$$\frac{\partial b_s^*}{\partial \beta_c} = -\frac{\beta_s(y_i + (1-\theta)h_p + h_{\mathrm{sp}}(1-\gamma_c-\gamma_s))}{(1+\beta_c+\beta_s)^2} < 0$$

$$\frac{\partial b_c^*}{\partial \beta_s} = -\frac{\beta_c(y_i + (1-\theta)h_p + h_{\mathrm{sp}}(1-\gamma_c-\gamma_s))}{(1+\beta_c+\beta_s)^2} < 0$$

$$\frac{\partial b_s^*}{\partial \beta_s} = \frac{(1+\beta_c)(y_i + (1-\theta)h_p + h_{\mathrm{sp}}(1-\gamma_c-\gamma_s))}{(1+\beta_c+\beta_s)^2} > 0$$

Proposition 4. When there is greater weight on children in the P-R-C community, *ceteris paribus*, the bequest to the child increases while the bequest to the spouse decreases.

$$\frac{\partial b_c^*}{\partial \theta} = \frac{h_p(1+\beta_s)}{1+\beta_c+\beta_s} > 0$$

$$\frac{\partial b_s^*}{\partial \theta} = -\frac{h_p\beta_s}{1+\beta_c+\beta_s} < 0$$

Proposition 5. When there is greater weight on children in the SP-S-C community, *ceteris paribus*, the bequest to the child increases while the bequest to the spouse decreases. When there is greater weight on the spouse in the SP-S-C community, *ceteris paribus*, the bequest to the child decreases while the bequest to the spouse increases.

$$\frac{\partial b_c^*}{\partial \gamma_c} = \frac{h_{\mathrm{sp}}(1+\beta_s)}{1+\beta_c+\beta_s} > 0$$

$$\frac{\partial b_s^*}{\partial \gamma_c} = -\frac{h_{\mathrm{sp}}\beta_s}{1+\beta_c+\beta_s} < 0$$

$$\frac{\partial b_c^*}{\partial \gamma_s} = -\frac{h_{\mathrm{sp}}\beta_c}{1+\beta_c+\beta_s} < 0$$

$$\frac{\partial b_s^*}{\partial \gamma_s} = \frac{h_{\mathrm{sp}}(1+\beta_c)}{1+\beta_c+\beta_s} > 0$$

Appendix 1D

Suppose $x = \frac{\beta_{cf}}{\beta_{cm}}$ and $y = \frac{\beta_{sf}}{\beta_{sm}}$, then $x\beta_{cm} = \beta_{cf}$ and $y\beta_{sm} = \beta_{sf}$,

$$\begin{cases} \dfrac{\beta_{cf}}{\beta_{cm}} > \dfrac{1+\beta_{sf}}{1+\beta_{sm}} \\ \dfrac{\beta_{sf}}{\beta_{sm}} > \dfrac{1+\beta_{cf}}{1+\beta_{cm}} \end{cases} \Leftrightarrow \begin{cases} x > \dfrac{1+y\beta_{sm}}{1+\beta_{sm}} = 1 + \dfrac{(y-1)\beta_{sm}}{1+\beta_{sm}} \\ y > \dfrac{1+x\beta_{cm}}{1+\beta_{cm}} = 1 + \dfrac{(x-1)\beta_{cm}}{1+\beta_{cm}} \end{cases} \Leftrightarrow \begin{cases} x-1 > \dfrac{\beta_{sm}}{1+\beta_{sm}}(y-1) \\ y-1 > \dfrac{\beta_{cm}}{1+\beta_{cm}}(x-1) \end{cases}$$

When $y - 1 < 0$,

$$\begin{cases} x-1 > \dfrac{\beta_{sm}}{1+\beta_{sm}}(y-1) \\ y-1 > \dfrac{\beta_{cm}}{1+\beta_{cm}}(x-1) \end{cases} \Leftrightarrow \begin{cases} \dfrac{x-1}{y-1} < \dfrac{\beta_{sm}}{1+\beta_{sm}} \\ \dfrac{x-1}{y-1} > \dfrac{1+\beta_{cm}}{\beta_{cm}} \end{cases} \Leftrightarrow \frac{1+\beta_{cm}}{\beta_{cm}} < \frac{x-1}{y-1} < \frac{\beta_{sm}}{1+\beta_{sm}}$$

Because $0 < \frac{\beta_{sm}}{1+\beta_{sm}} < \frac{1+\beta_{cm}}{\beta_{cm}}$, then, $(x-1)/(y-1)$ does not exist. In this case, $y - 1 < 0$ is rejected.

When $y - 1 > 0$,

$$\begin{cases} x-1 > \dfrac{\beta_{sm}}{1+\beta_{sm}}(y-1) \\ y-1 > \dfrac{\beta_{cm}}{1+\beta_{cm}}(x-1) \end{cases} \Leftrightarrow \begin{cases} \dfrac{x-1}{y-1} > \dfrac{\beta_{sm}}{1+\beta_{sm}} \\ \dfrac{x-1}{y-1} < \dfrac{1+\beta_{cm}}{\beta_{cm}} \end{cases} \Leftrightarrow \frac{\beta_{sm}}{1+\beta_{sm}} < \frac{x-1}{y-1} < \frac{1+\beta_{cm}}{\beta_{cm}}$$

Because $0 < \frac{\beta_{sm}}{1+\beta_{sm}} < \frac{1+\beta_{cm}}{\beta_{cm}}$ and $y - 1 > 0$, then, $x - 1 > 0$. In this case, $x > 1 \Leftrightarrow \beta_{cf} > \beta_{cm}$ and $y > 1 \Leftrightarrow \beta_{sf} > \beta_{sm}$.

Appendix 2

Tables A2-1 and A2-2 provide full results for Table 6.

Table A2-1 PPO Results for Females

TO_CHILD	Panel 1		Panel 2		Panel 3		Panel 4	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
INH_P	0.2058*	(0.11)	0.2058*	(0.11)	0.2058*	(0.11)	0.2058*	(0.11)
INH_SP	0.2898***	(0.11)	0.2898***	(0.11)	0.2898***	(0.11)	0.2898***	(0.11)
EXPINH_P	0.2429**	(0.10)	0.2429**	(0.10)	0.2429**	(0.10)	0.2429**	(0.10)
EXPINH_SP	0.0966	(0.10)	0.0966	(0.10)	0.0966	(0.10)	0.0966	(0.10)
HHINC	0.2424***	(0.08)	0.2424***	(0.08)	0.2424***	(0.08)	0.2424***	(0.08)
CHILDNUM	-0.1649***	(0.06)	-0.1649***	(0.06)	-0.1649***	(0.06)	-0.1649***	(0.06)
FAITH	0.0069	(0.04)	0.0069	(0.04)	0.0069	(0.04)	0.0069	(0.04)
LIFEEXP	0.4837	(0.52)	-0.1612	(0.33)	-1.1170***	(0.33)	-1.3974***	(0.52)
LIFEEXP × LIFEEXP	-0.0260	(0.07)	0.0553	(0.04)	0.1881***	(0.04)	0.2312***	(0.06)
NOHIGH	0.3396*	(0.20)	0.3396*	(0.20)	0.3396*	(0.20)	0.3396*	(0.20)
HIGHSCH	0.4401***	(0.13)	0.4401***	(0.13)	0.4401***	(0.13)	0.4401***	(0.13)
Constant	-0.7304	(0.99)	-1.0530	(0.71)	-1.4577**	(0.73)	-2.9790***	(1.08)
Observations	1891							
Pseudo R^2	0.0256							

TO_SPOUSE	Panel 1		Panel 2		Panel 3		Panel 4	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
INH_P	-0.0065	(0.12)	-0.0065	(0.12)	-0.0065	(0.12)	-0.0065	(0.12)
INH_SP	0.3007***	(0.12)	0.3007***	(0.12)	0.3007***	(0.12)	0.3007***	(0.12)
EXPINH_P	0.2320**	(0.10)	0.2320**	(0.10)	0.2320**	(0.10)	0.2320**	(0.10)
EXPINH_SP	0.1473	(0.10)	0.1473	(0.10)	0.1473	(0.10)	0.1473	(0.10)
HHINC	0.2291***	(0.08)	0.2291***	(0.08)	0.2291***	(0.08)	0.2291***	(0.08)
CHILDNUM	-0.0890	(0.06)	-0.0890	(0.06)	-0.0890	(0.06)	-0.0890	(0.06)
FAITH	0.0692*	(0.04)	0.0692*	(0.04)	0.0692*	(0.04)	0.0692*	(0.04)
LIFEEXP	-0.1446	(0.42)	-0.5790*	(0.31)	-1.7038***	(0.36)	-2.0365***	(0.70)
LIFEEXP × LIFEEXP	0.0276	(0.05)	0.0847**	(0.04)	0.2433***	(0.05)	0.3059***	(0.09)
NOHIGH	0.4471**	(0.20)	0.4471**	(0.20)	0.4471**	(0.20)	0.4471**	(0.20)
HIGHSCH	0.4700***	(0.13)	0.4700***	(0.13)	0.4700***	(0.13)	0.4700***	(0.13)
Constant	-0.0852	(0.83)	-0.6109	(0.67)	-1.0057	(0.75)	-2.8350**	(1.36)
Observations	1891							
Pseudo R^2	0.0154							

Robust standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A2-2 PPO Results for Males

TO_CHILD	Panel 1		Panel 2		Panel 3		Panel 4	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
INH_P	0.1905*	(0.10)	0.1905*	(0.10)	0.1905*	(0.10)	0.1905*	(0.10)
INH_SP	0.1512	(0.15)	0.1512	(0.15)	0.1512	(0.15)	0.1512	(0.15)
EXPINH_P	0.1763*	(0.10)	0.1763*	(0.10)	0.1763*	(0.10)	0.1763*	(0.10)
EXPINH_SP	0.0748	(0.12)	0.0748	(0.12)	0.0748	(0.12)	0.0748	(0.12)
HHINC	0.1844**	(0.08)	0.1844**	(0.08)	0.1844**	(0.08)	0.1844**	(0.08)
CHILDNUM	-0.2893***	(0.06)	-0.2893***	(0.06)	-0.2893***	(0.06)	-0.2893***	(0.06)
FAITH	0.0771	(0.10)	0.1057*	(0.06)	-0.0588	(0.06)	-0.2212	(0.14)
LIFEEXP	-0.1069	(0.30)	-0.1069	(0.30)	-0.1069	(0.30)	-0.1069	(0.30)
LIFEEXP × LIFEEXP	0.0846*	(0.05)	0.0846*	(0.05)	0.0846*	(0.05)	0.0846*	(0.05)
NOHIGH	-0.0092	(0.16)	-0.0092	(0.16)	-0.0092	(0.16)	-0.0092	(0.16)
HIGHSCH	0.0170	(0.10)	0.0170	(0.10)	0.0170	(0.10)	0.0170	(0.10)
Constant	1.2923**	(0.62)	-0.3594	(0.60)	-1.9526***	(0.59)	-3.6063***	(0.62)
Observations	1743							
Pseudo R^2	0.0300							

TO_SPOUSE	Panel 1		Panel 2		Panel 3		Panel 4	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
INH_P	0.1330	(0.10)	0.1330	(0.10)	0.1330	(0.10)	0.1330	(0.10)
INH_SP	0.2257	(0.14)	0.2257	(0.14)	0.2257	(0.14)	0.2257	(0.14)
EXPINH_P	-0.0174	(0.11)	-0.0174	(0.11)	-0.0174	(0.11)	-0.0174	(0.11)
EXPINH_SP	0.0684	(0.12)	0.0684	(0.12)	0.0684	(0.12)	0.0684	(0.12)
HHINC	0.2847*	(0.16)	0.2517***	(0.09)	0.0677	(0.08)	-0.2357	(0.15)
CHILDNUM	-0.3055***	(0.06)	-0.3055***	(0.06)	-0.3055***	(0.06)	-0.3055***	(0.06)
FAITH	-0.0641	(0.11)	0.1298*	(0.07)	-0.0052	(0.05)	-0.0621	(0.11)
LIFEEXP	-0.7007**	(0.30)	-0.5228*	(0.29)	-0.6503**	(0.29)	-0.4801	(0.30)
LIFEEXP × LIFEEXP	0.1364***	(0.05)	0.1364***	(0.05)	0.1364***	(0.05)	0.1364***	(0.05)
NOHIGH	-0.3465**	(0.16)	-0.3465**	(0.16)	-0.3465**	(0.16)	-0.3465**	(0.16)
HIGHSCH	-0.2075**	(0.10)	-0.2075**	(0.10)	-0.2075**	(0.10)	-0.2075**	(0.10)
Constant	2.7915**	(1.10)	0.6293	(0.67)	0.6097	(0.61)	-0.0798	(1.10)
Observations	1743							
Pseudo R^2	0.0239							

Robust standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Appendix 3

Tables A3-1 and A3-2 provide full results for Table 7.

Table A3-1 Marginal Effects for Females

	BA=1	BA=2	BA=3	BA=4	BA=5
			TO_CHILD		
INH_P	-0.0140*	-0.0275*	0.0046*	0.0288*	0.0081*
	(0.01)	(0.01)	(0.00)	(0.02)	(0.00)
INH_SP	-0.0193***	-0.0385***	0.0051	0.0410**	0.0117**
	(0.01)	(0.01)	(0.00)	(0.02)	(0.01)
EXPINH_P	-0.0166**	-0.0326**	0.0058*	0.0339**	0.0095**
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
EXPINH_SP	-0.0068	-0.0131	0.0029	0.0133	0.0037
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
HHINC	-0.0173***	-0.0329***	0.0081*	0.0331***	0.0090***
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
CHILDNUM	0.0118***	0.0224***	-0.0055**	-0.0225***	-0.0061**
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)
FAITH	-0.0005	-0.0009	0.0002	0.0009	0.0003
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)
LIFEEXP	-0.0208***	-0.0308***	0.0033	0.0366***	0.0118***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
NOHIGH	-0.0289*	-0.0469*	0.0235*	0.0418*	0.0105
	(0.02)	(0.03)	(0.01)	(0.02)	(0.01)
HIGHSCH	-0.0360***	-0.0605***	0.0266**	0.0556***	0.0143***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.00)
			TO_SPOUSE		
INH_P	0.0008	0.0007	-0.0009	-0.0006	-0.0001
	(0.02)	(0.01)	(0.02)	(0.01)	(0.00)
INH_SP	-0.0365***	-0.0348**	0.0379***	0.0287**	0.0047**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
EXPINH_P	-0.0289**	-0.0266**	0.0305**	0.0215**	0.0035**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
EXPINH_SP	-0.0186	-0.0168	0.0198	0.0134	0.0022
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
HHINC	-0.0296***	-0.0258***	0.0317***	0.0204***	0.0033***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
CHILDNUM	0.0115	0.0100	-0.0123	-0.0079	-0.0013
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
FAITH	-0.0089*	-0.0078*	0.0096	0.0062*	0.0010
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
LIFEEXP	-0.0078	-0.0042	0.0015	0.0072	0.0033*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
NOHIGH	-0.0654**	-0.0450**	0.0702**	0.0348**	0.0054*
	(0.03)	(0.02)	(0.03)	(0.02)	(0.00)
HIGHSCH	-0.0683***	-0.0476***	0.0733***	0.0369***	0.0057***
	(0.02)	(0.01)	(0.02)	(0.01)	(0.00)

Table A3-2 Marginal Effects for Males

	BA=1	BA=2	BA=3	BA=4	BA=5
			TO_CHILD		
INH_P	-0.0125*	-0.0253*	-0.0014	0.0291*	0.0100*
	(0.01)	(0.01)	(0.00)	(0.02)	(0.01)
INH_SP	-0.0098	-0.0200	-0.0015	0.0232	0.0081
	(0.01)	(0.02)	(0.00)	(0.02)	(0.01)
EXPINH_P	-0.0117*	-0.0236*	-0.0006	0.0268*	0.0091*
	(0.01)	(0.01)	(0.00)	(0.02)	(0.01)
EXPINH_SP	-0.0050	-0.0100	-0.0003	0.0114	0.0039
	(0.01)	(0.02)	(0.00)	(0.02)	(0.01)
HHINC	-0.0125**	-0.0248**	-0.0000	0.0279**	0.0094**
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
CHILDNUM	0.0196***	0.0389***	0.0000	-0.0438***	-0.0147***
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)
FAITH	-0.0052	-0.0162	0.0333**	-0.0007	-0.0112
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
LIFEEXP	-0.0261***	-0.0518***	-0.0000	0.0583***	0.0195***
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)
NOHIGH	0.0006	0.0012	-0.0000	-0.0014	-0.0005
	(0.01)	(0.02)	(0.00)	(0.02)	(0.01)
HIGHSCH	-0.0012	-0.0023	-0.0000	0.0026	0.0009
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
			TO_SPOUSE		
INH_P	-0.0066	-0.0148	-0.0104	0.0236	0.0083
	(0.00)	(0.01)	(0.01)	(0.02)	(0.01)
INH_SP	-0.0106*	-0.0245*	-0.0195	0.0398	0.0147
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
EXPINH_P	0.0009	0.0020	0.0013	-0.0031	-0.0011
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
EXPINH_SP	-0.0034	-0.0077	-0.0053	0.0121	0.0042
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
HHINC	-0.0145*	-0.0267**	0.0251	0.0304*	-0.0143
	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)
CHILDNUM	0.0155***	0.0345***	0.0227***	-0.0542***	-0.0185***
	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)
FAITH	0.0033	-0.0245***	0.0225*	0.0025	-0.0038
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
LIFEEXP	-0.0047	-0.0395***	0.0103	0.0150	0.0189***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
NOHIGH	0.0180*	0.0395**	0.0244**	-0.0612**	-0.0206**
	(0.01)	(0.02)	(0.01)	(0.03)	(0.01)
HIGHSCH	0.0101**	0.0229**	0.0168**	-0.0367**	-0.0131**
	(0.00)	(0.01)	(0.01)	(0.02)	(0.01)

Appendix 4

Tables A4-1 provides summary statistics and Tables A4-2 provides full results for Table 9.

Tables A4-1 Summary Statistics for Table 9

		All	
Variable	Definition	Mean	S.D.
TO_CHILD	I want to leave my children as much of my inheritance as possible	3.00	1.00
TO_SPOUSE	I want to leave my spouse as much of my inheritance as possible	2.94	1.02
TRANS_PR	Receive transfers of wealth from parents	0.02	0.14
INH_PR	Receive an inheritance from parents	0.22	0.42
NONE_PR	Receive nothing from parents	0.76	0.43
TRANS_SPR	Receive transfers of wealth from spouse's parents	0.01	0.12
INH_SPR	Receive an inheritance from spouse's parents	0.16	0.36
NONE_SPR	Receive nothing from spouse's parents	0.83	0.38
EXPTRANS_PR	Expect to receive transfers of wealth from parents	0.20	0.40
EXPINH_PR	Expect to receive an inheritance from parents	0.13	0.33
EXPNONE_PR	Expect to receive nothing from parents	0.67	0.47
EXPTRANS_SPR	Expect to receive transfers of wealth from spouse's parents	0.16	0.36
EXPINH_SPR	Expect to receive an inheritance from spouse's parents	0.10	0.30
EXPNONE_SPR	Expect to receive nothing from spouse's parents	0.74	0.44
FEMALE	Female dummy	0.53	0.50
HHINC	Log of household income	6.39	0.62
CHILDNUM	Number of children	2.16	0.73
FAITH	I am deeply religious	1.70	1.06
AGE	Respondent's age	52.02	11.55
LIFEEXP	Life expectancy (in decades)	3.33	1.12
NOHIGH	Did not finish high school	0.10	0.29
HIGHSCH	Graduate from high school but not graduate from college	0.66	0.47
COLLEGE	Graduate from college or above	0.25	0.43
Observations		3,028	

Tables A4-2 Marginal Effects for Inheritance and Inter Vivos Transfers

TO_CHILD	BA=1	BA=2	BA=3	BA=4	BA=5
TRANS_PR	0.0100	0.0197	-0.0027	-0.0205	-0.0065
	(0.02)	(0.04)	(0.01)	(0.04)	(0.01)
INH_PR	-0.0099*	-0.0213*	-0.0012	0.0241*	0.0083*
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
TRANS_SPR	-0.0163	-0.0359	-0.0037	0.0414	0.0146
	(0.01)	(0.03)	(0.01)	(0.04)	(0.02)
INH_SPR	-0.0190***	-0.0423***	-0.0059	0.0494***	0.0178***
	(0.01)	(0.01)	(0.00)	(0.02)	(0.01)
EXPTRANS_PR	-0.0140**	-0.0300**	-0.0015	0.0339**	0.0116**
	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)
EXPINH_PR	-0.0126*	-0.0267*	-0.0009	0.0299*	0.0102*
	(0.01)	(0.01)	(0.00)	(0.02)	(0.01)
EXPTRANS_SPR	-0.0061	-0.0130	-0.0004	0.0146	0.0050
	(0.01)	(0.01)	(0.00)	(0.02)	(0.01)
EXPINH_SPR	-0.0022	-0.0045	0.0000	0.0050	0.0017
	(0.01)	(0.02)	(0.00)	(0.02)	(0.01)
FEMALE	0.0249***	0.0522***	0.0005	-0.0579***	-0.0196***
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
HHINC	-0.0115***	-0.0242***	0.0001	0.0266***	0.0089***
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)
CHILDNUM	0.0121***	0.0254***	-0.0001	-0.0280***	-0.0094***
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)
FAITH	-0.0013	-0.0027	0.0000	0.0030	0.0010
	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
LIFEEXP	-0.0217***	-0.0455***	0.0003	0.0502***	0.0168***
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)
NOHIGH	-0.0127	-0.0265	0.0003	0.0292	0.0098
	(0.01)	(0.02)	(0.00)	(0.02)	(0.01)
HIGHSCH	-0.0084	-0.0172	0.0010	0.0186	0.0061
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
GIVE_C_2%	-0.0474***	-0.0540**	0.0304***	0.0562**	0.0149**
	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)
GIVE_C_5%	-0.0597***	-0.0717***	0.0326***	0.0775***	0.0213***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)
GIVE_C_10%	-0.0722***	-0.0421**	-0.0159	0.0953***	0.0349***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)
GIVE_C_20%	-0.1106***	-0.0611**	-0.0201	0.1522***	0.0395***
	(0.02)	(0.02)	(0.03)	(0.02)	(0.01)
GIVE_P_2%	-0.0109	-0.0273	-0.0031	0.0310	0.0103
	(0.01)	(0.03)	(0.00)	(0.03)	(0.01)
GIVE_P_5%	0.0056	0.0129	-0.0009	-0.0135	-0.0041
	(0.01)	(0.02)	(0.00)	(0.03)	(0.01)
GIVE_P_10%	0.0008	0.0018	-0.0000	-0.0019	-0.0006
	(0.01)	(0.02)	(0.00)	(0.02)	(0.01)
GIVE_P_20%	0.0332*	-0.0550*	0.0089	-0.0094	0.0223
	(0.02)	(0.03)	(0.03)	(0.03)	(0.01)
Observations	3028				
Pseudo R^2	0.0344				

TO_SPOUSE	BA=1	BA=2	BA=3	BA=4	BA=5
TRANS_PR	0.0325	0.0456	-0.0184	-0.0499	-0.0099
	(0.03)	(0.04)	(0.02)	(0.04)	(0.01)
INH_PR	-0.0029	-0.0048	0.0005	0.0059	0.0013
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
TRANS_SPR	-0.0224	-0.0376	0.0002	0.0488	0.0110
	(0.02)	(0.03)	(0.01)	(0.04)	(0.01)
INH_SPR	-0.0283***	-0.0487***	-0.0036	0.0653***	0.0152***
	(0.01)	(0.01)	(0.01)	(0.02)	(0.00)
EXPTRANS_PR	-0.0084	-0.0146	0.0013	0.0178	0.0038
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
EXPINH_PR	0.0280	-0.0483**	0.0310	-0.0146	0.0039
	(0.02)	(0.02)	(0.03)	(0.02)	(0.01)
EXPTRANS_SPR	-0.0102	-0.0168	0.0012	0.0212	0.0046
	(0.01)	(0.01)	(0.00)	(0.02)	(0.00)
EXPINH_SPR	-0.0020	-0.0032	0.0005	0.0038	0.0008
	(0.01)	(0.01)	(0.00)	(0.02)	(0.00)
FEMALE	0.1006***	0.1179***	0.0704***	-0.2276***	-0.0613***
	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)
HHINC	-0.0068	-0.0109	0.0015	0.0133	0.0028
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)
CHILDNUM	0.0149***	0.0239***	-0.0033*	-0.0292***	-0.0063***
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)
FAITH	-0.0059	-0.0185***	0.0295***	-0.0029	-0.0022
	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)
LIFEEXP	-0.0081	-0.0249***	0.0106	0.0097	0.0127***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
NOHIGH	-0.0004	-0.0186	0.0540*	-0.0539**	0.0190
	(0.02)	(0.03)	(0.03)	(0.03)	(0.01)
HIGHSCH	-0.0021	-0.0034	0.0005	0.0042	0.0008
	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
GIVE_C_2%	-0.0232	-0.0309	0.0157	0.0322	0.0062
	(0.02)	(0.02)	(0.01)	(0.02)	(0.00)
GIVE_C_5%	-0.0421***	-0.0608***	0.0206**	0.0684***	0.0139***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.00)
GIVE_C_10%	-0.0405***	-0.0580***	0.0207**	0.0648***	0.0131***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
GIVE_C_20%	-0.0384***	-0.0546***	0.0205**	0.0604***	0.0121***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.00)
GIVE_P_2%	-0.0271*	-0.0416*	0.0094	0.0490*	0.0103*
	(0.01)	(0.02)	(0.01)	(0.03)	(0.01)
GIVE_P_5%	-0.0077	-0.0109	0.0044	0.0119	0.0023
	(0.01)	(0.02)	(0.01)	(0.02)	(0.00)
GIVE_P_10%	-0.0205	-0.0305	0.0089	0.0350*	0.0071*
	(0.01)	(0.02)	(0.01)	(0.02)	(0.00)
GIVE_P_20%	-0.0313**	-0.0488**	0.0088	0.0588**	0.0125**
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)
Observations	3028				
Pseudo R^2	0.0590				

Robust standard errors in parentheses
* p < 0.1, ** p < 0.05, *** p < 0.01