Time and Money: Social Security Benefits and Intergenerational Transfers

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This study attempts to estimate the impact of social security benefits on the probability and size of monetary and time transfers between older Americans and their children, using survey data from an 11-wave panel study. Findings indicate that increases in social security benefits are associated with a higher probability of grandchild care, higher amount of grandchild care time, higher probability of bequest, higher probability of monetary transfer and a higher amount of monetary transfers from parent to child. On the other hand, increases in social security benefits are associated with lower probability and amount of child-to-parent care time and child-to-parent monetary transfers. Implications, policy recommendations and limitations are discussed.

Table des matières

1 Introduction

The question of the impact of social security benefits on intergenerational transfers within American families is relevant in the context of recent policy proposals to reduce individual earnings from the soon depleted Social Security Trust Fund (Gross, 2010), to balance out longstanding and increasing US government budget deficits. Indeed, Social Security payments represent the largest single component of the federal budget. Social Security pays benefits to retirees through the Old-Age and Survivors Insurance (OASI) and to disabled people unable to work through the Disability Insurance (DI).

There is an important interplay between the public provision of income support and informal care provided within families. This study investigates the spillover effects on intergenerational transfers of social security benefits, such as how they impact parent-to-child and child-to-parent monetary transfers, help provided to parents, grandchild care and planned bequests.

In the following section, the source and type of the data will be presented, along with descriptive statistics. Then, the methods and econometric models used to estimate the effects will be presented, along with robustness checks. Next, the results will be explained and interpreted. Finally, the implications and limitations will be discussed.

2 Data

2.1 Source and type

The present study's source of information is the Health and Retirement Study (HRS). From 1992 to 2012, a panel data survey was conducted every two years on social security benefit recipients. At each wave of the study, the respondents were questioned as to whether they had made or received transfers exceeding 500$ to their children since the last wave, as well as the total amount of such transfers. They were also asked whether they planned any bequests at all, whether they planned to bequest more than 10,000$ to their children, and whether they planned to bequest more than 100,000$ to their children. Regarding time transfers, they were questioned as to whether they had given any grandchild care in the last month, whether they had received any help from their children in the last month, and the total amount of hours and days of such time transfers. Finally, control factors were obtained about the respondents, such as education level, age, gender, place of birth, number of children, marital status, race, and ethnicity.

2.2 Descriptive statistics

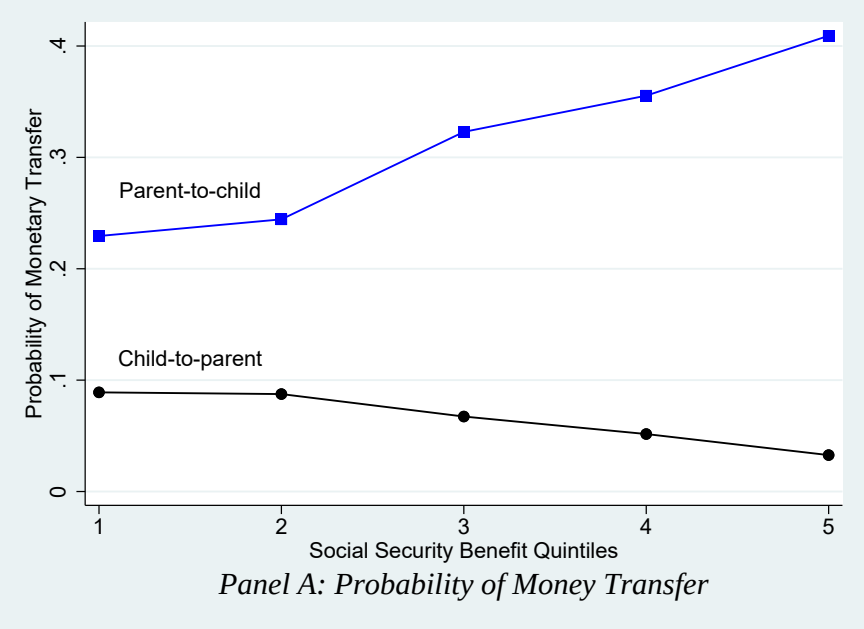
2.2.1 Sample description

The sample consists of 53,337 total respondent-wave observations of individuals receiving social security benefits, they received 16,413$ on average in benefits. The average age of respondents is 74 years old. About two thirds of the sample were male. The average number of children is 3.4 (note that the sample consists of only respondents with at least one child). The average number of years of education for the sample is 11, which corresponds to slightly less than the end of high school. A slight majority of respondents had a living partner, while almost a third of them were

widowed. Over 80% of respondents were white, about 14% were black, and about 7% were hispanic. Almost all of the sample had not purchased any long-term care insurance. About one fifth of respondents were still working.

	(1)
	mean
Social Security income	16413.43
Any transfer made?	0.31
Amount transfers made	3372.77
Amount transfers made conditional	11972.47
Any transfer received?	0.07
Amount transfers received	273.82
Amount transfers received conditional	5101.55
Any bequest planned?	0.70
Bequest > 10K planned?	0.65
Bequest > 100K planned?	0.41
Observations	53337

FIGURE 1 – Monetary transfers - Descriptive statistics



Panel A: Probability of Money Transfer

FIGURE 2 – Probability of Any Monetary Transfer since the last survey, by Social Security Income quintile

2.2.2 Variables of interest

Our variables of interest concern the probabilities and quantities of parent-to-child and child-to-parent transfers of money and time, shown in figures 1 and 3, respectively. According to our sample, about 31% of respondents had made a transfer to their children since the last wave of the survey. Figure 2 indicates that this number rises as they receive more benefits. The average amount of transfers made was 3,372$. Taking the same variable but conditional on the respondents having made transfers exceeding 500$ since the last survey, as defined in the survey, the average amount of

	(1)
	mean
Any care given?	0.14
Hours care given	8.09
Any help received?	0.11
Hours help received	11.74
Days help received	2.52
Observations	47581

FIGURE 3 – Time transfers - Descriptive statistics

transfers made to the children was 11972$.

Regarding child-to-parent monetary transfers (figure 1), about 6% of respondents had received a transfer from their children since the last wave of the survey. As shown in Figure 2, children are less likely to transfer money to their parents, as the latter receive more income from Social Security. The average amount of transfers received by respondents was 273$, and conditional on receiving any transfer exceeding 500$, the average amount was 5,101$. Figure 7 from the appendix shows a significant increase in social security benefits over the span of the survey, while the amounts of intergenerational transfer stayed constant, indicating a decreasing pass-through rate over time. There is no significant differences between genders (see figure 8 from the appendix).

According to our sample, figure 1 shows there was a 70% probability that a respondent planned any bequest to their children. The probability of planning a bequest of more than 10,000$ was 65%, and 41% for planned bequests larger than 100,000$.

The second main type of intergenerational transfers is time (figure 3). Parents mainly provide time transfers through grandchild care. About 14% of the time, respondents reported having provided at least some care time since the last survey, with an average of 8 hours per month. Figure 4 indicates parent-to-child time transfers increase with Social Security benefits.

Children mainly provide time transfers to their parents through helping time. Figure 3 shows they provided at least some help time with about 10% probability, on average 11 hours, or 2.5 days of help per month in the month preceding the survey. As shown in Figure 4, children provide less help as their parents receive more benefits.

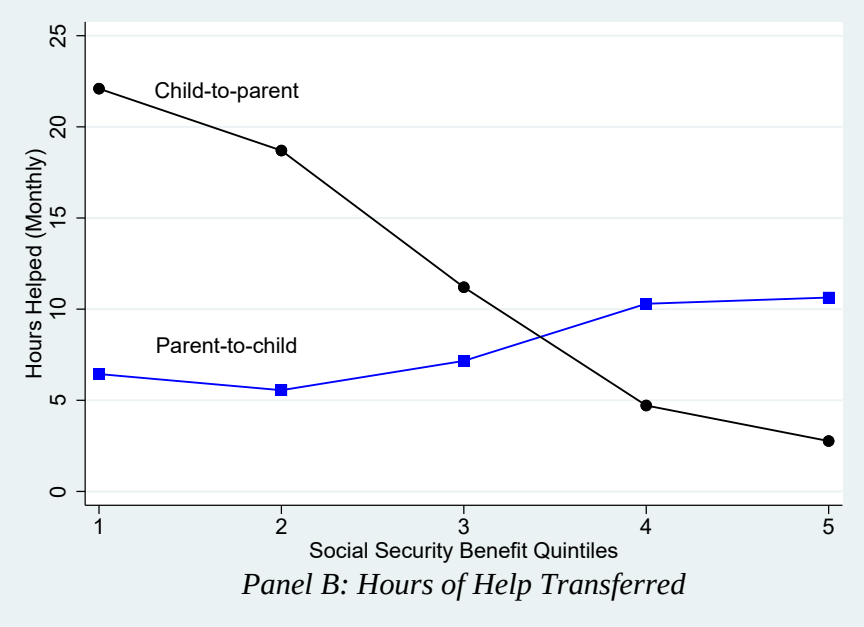


FIGURE 4 – Time Transfers in the last month, by Social Security Income quintile

3 Econometric Models

The econometric model of the paper consists of estimating the impact of Social Security benefits on transfers between parent and children through several regressions on different measures of transfers. In this section, we will explain the econometric models that the authors used to study monetary transfers. Next, we will explain the econometric models that the authors used to study time transfers.

3.1 Part 1 : Money transfers between parent and child

In the paper, the authors take into consideration three measures of monetary transfers. The first measure is planned bequest as a proxy for actual bequest. The second measure states if any money has been transferred from parent to child and from child to parent. The third measure accounts for the amount of monetary transfers. Each of these measures, we will use a specific econometric model : OLS, probit and tobit.

3.1.1 OLS

We use the OLS model on the planned bequest variables. Here the planned bequest refers to self-reported probabilities of bequesting more than 10,000$ and more than 100,000$. The values of these variables are between 0 and 1, so we consider them as continuous variables. We estimate the following regressions :

$$Y_{it} = \alpha + \beta_1 SocSec_{it} + \gamma X_{it} + \lambda_t + \epsilon_{it} \ ,$$

Y_{it} are the self-reported probabilities of bequesting more than 10,000$ and more than 100,000$ for individual i at time t. $SocSec_{it}$ represents social security benefits in tens of thousands $. X_{it} are parental characteristics such as age, number of children and wealth. λ_t accounts for time variations. ϵ_{it} is clustered error term at individual level to verify the independence of error term assumption in linear models that might be

here violated because we use a panel dataset.

The main assumption of the model is : $E[\epsilon_i|SocSec_{it}] = 0$ which means that if we know individual i social security benefit, it does not help us predict whether they will be above or below the average regression line. Here, we want to estimate β_1 as it captures the partial effect of Social Security benefits on planned bequests. Our estimator for β_1 is computed through log-likelihood maximization.

3.1.2 Probit

The dependent variables associated with the probit model in the present study are two binary variables stating whether individual i has made and received any monetary transfers from their children since the last survey.

In this model, we suppose that there exists a continuous latent variable Y^*, that determines whether individual i has made and/or received any monetary transfer exceeding 500$ from their children. We suppose that Y_i^* follows a linear model : $Y_i^* = Z_i\beta_2 + \epsilon_i$. The main assumption of the probit model is that the error term of the latent variable is such that : $\epsilon_i \sim \mathcal{N}(0, \sigma^2)$.

Due to the assumption on the distribution of the error term, we have : $P(y_i = 1|Z_i) = \Phi(Z_i\beta_2)$ and $P(y_i = 0|Z_i) = 1-\Phi(Z_i\beta_2)$, where Φ is the cumulative distribution function of the Normal distribution.

Here, we want to estimate the marginal effect of Social Security benefits on the probabilities to send or receive any money with other characteristics being fixed, which writes as follows : $ME_i = \frac{dP(y_i=1|Z_i)}{dSocSec_{it}} = \phi(Z_i\beta) \cdot \beta_{SocSec}$,
where ϕ is the distribution function of the Normal distribution.

Then, we compute the mean marginal effect of benefits given by : $\sum_{i=1}^{N} \frac{dP(y_i=1|Z_i)}{dSocSec_{it}}$

3.1.3 Tobit

The dependent variables associated with the tobit model in the present study are the amounts of monetary transfers individual i has made to their children and received from their children. These variables are left-censored and can be considered as continuous, making the tobit model appropriate.

We suppose that there exists a continuous latent variable Y^* which satisfies the linear model assumptions and which can be expressed as : $Y_i^* = \beta Z_i + u_i$. Our dependent and latent variables are linked through the following relationship : $Y_i = max(0, Y_i^*)$

Here the main assumputions of the tobit model are that the error term of the latent variable are homoscedastic and are normally distributed : $u_i \sim \mathcal{N}(0,\, \sigma^2)$.

We estimate the marginal effect of Social security benefits on the amounts of monetary transfers between parent and children. Therefore, the estimate is given instead by the following equation : $\frac{dE[Y|Z]}{dSocSec} = \beta_{SocSec}\, \Phi(\frac{Z\beta}{\sigma})$, where Φ is the cumulative distribution function of the Normal distribution. Here, β_{SocSec} will be estimated using the maximum likelihood method.

3.2 Part 2 : Time transfers between parent and child

We are also interested in how social security benefits affects time transfers between parent and child are affected. Here, our dependent variables are binary variables that indicates whether any time transfers have occurred and variables that accounts for the amount of time transfers (in hours and days). As in the first part of this section, we control for multiple demographic factors. We continue to cluster error terms at the individual level in order to accommodate for the panel dimension of our dataset. For the binary variables, the authors utilized the probit model ; for the variables accounting for the amount of time transfer, they used the tobit model. Since the time transfer variables are subjected to the same econometric models, the same hypothesis and justifications apply here.

4 Results

4.1 Part 1 : Money Transfers

In the first table (figure 5), the results for the relationship between Social Security Benefits and Monetary transfers are presented. Here, we observe two distinct patterns. First, there is a greater likelihood of a money transfer from parent to child and a decreased likelihood from child to parent for every additional 10,000$ in benefits. Notably, each coefficient in the model is found to be statistically significant at the 95% confidence level (t-test 1.96). Specifically, column 2 shows that an increase in social security benefits of 10,000$ is linked to an additional 3,030$ in transfers to the next generation. Furthermore, column 4 indicates that the likelihood of a planned bequest of 100,000$ or more rises by nearly 5% for every 10,000$ in benefits, with a statistically significant coefficient. In contrast, in column 6 we see that each 10,000$ in benefits is associated with a 740$ decrease in the transfer amount from child to parent, a finding supported by significant coefficient values.

	Parent-to-child				Child-to-parent	
	(1) Any transfer?	(2) Amount of transfer	(3) Plan Bequest > 10K ?	(4) Plan Bequest > 100K ?	(5) Any transfer?	(6) Amount of transfer
Income from social security	0.023***	0.307***	0.039***	0.048***	-0.005*	-0.069*
	(0.004)	(0.050)	(0.003)	(0.004)	(0.002)	(0.030)
Observations	42305	42305	35049	34592	42111	42111

Notes: This table shows the coefficient on Social Security Benefits for separate regressions in each column. All dollar amounts shown are in $10,000. Covariates not shown are described in Section II. The dependent variable in columns (3) and (4) is a number between 0 and 1. Columns (1) and (5) report mean marginal effects from probit models, columns (3) and (4) report OLS estimates, and columns (2) and (6) report mean marginal effects from tobit models. Robust standard errors are clustered at the household level and shown in parentheses.
$^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$

FIGURE 5 – Impact of Social Security Benefits on Monetary Transfers

4.2 Part 2 : Time transfers

In the second table (figure 6), the results for the relationship between Social Security Benefits and Time transfers are presented. Notably, each coefficient in the model is found to be statistically significant at the 95% confidence level (t-test 1.96).Column 2 shows that a 10,000$ increase in Social Security benefits is associated with an increase of 8 hours of help each month from parents to children. According to column

4, for every 10,000$ increase in benefits, there are approximately 2.6 fewer days of help, which equates to around 17 hours less each month. Overall, these results indicate that parents tend to exhibit altruistic behavior towards their children. The more benefits they receive, the more time they spend taking care of their grandchildren, while their children adopt the opposite approach.

	Parent-to-child		Child-to-parent		
	(1) Any childcare?	(2) Hours of childcare	(3) Any help?	(4) Days of help	(5) Hours of help
Income from social security	0.013***	10.010***	-0.010***	-2.863***	-19.044***
	(0.003)	(2.374)	(0.003)	(0.781)	(5.546)
Observations	33184	33184	41291	41285	41285

Notes: This table shows the coefficient on Social Security Benefits for separate regressions in each column. All dollar amounts shown are in $10,000. Covariates not shown are described in Section II. Columns (1) and (3) report mean marginal effects from probit models and columns (2), (4), and (5) report mean marginal effects from tobit models. Robust standard errors are clustered at the household level and shown in parentheses.
$^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$

FIGURE 6 – Impact of Social Security Benefits on Time Transfers

5 Robustsness

5.1 Goodness of fit

The authors chose specific models for particular reasons. However, we may wonder if these choices are the most accurate. For instance, when examining the probit model, we questioned its accuracy. To address this concern, we opted to use a goodness-of-fit measure. The method we employed for this approach is the Percentage Correctly Predicted. This involves dividing the number of correct predictions by the total number of predictions. Since we are dealing with binary variables, we use a classification threshold. In other words, if the probability of having 1 is below 0.5, then the predictor yields 0, and if the probability of having 1 is higher than 0.5, then the predictor equals 1. If the predictor and the actual value are equal, then the prediction is correct.

Using this method, four outcomes are possible :

True Positive : The predicted value and the actual value are both 1. True Negative : The predicted value and the actual value are both 0. False Positive : The predicted value is 1, but the actual value is 0. False Negative : The predicted value is 0, but the actual value is 1.

By using the default threshold of 0.5 and considering True Positive and True Negative as correctly predicted values, we obtain a correctly predicted percentage of 69.73% for the "giveany" variable and 93.76% for the "getany" variable. However, a quick look at the dataset reveals that the proportion of 1s is significantly smaller. Indeed, 31% of the observations for the "giveany" variable are equal to 1, and only 6% for the "getany" variable. Because having 1 is unlikely, we choose as a threshold the fraction of successes (i.e. being equal to 1) to account for the risk of the predictor never predicting 1. By doing so, we end up with smaller correctly predicted percentages, respectively, 61.06% and 62.08% for the "giveany" and "getany" variables. By lowering the threshold, we lose precision but gain in specificity/recall. In other words, by lowering the threshold, we can better predict 1s but also have more false positives. In our case, because our primary concern is identifying individuals who receive and give monetary transfers, the second approach is preferred, especially considering that a correctly predicted percentage above 50% is still considered satisfactory.

5.2 Probability linear model

In order to ensure the robustness of our analysis and validate the results obtained from the Probit model, we use the Linear probability model as a supplementary approach. By doing so, we found that the coefficients estimated by the Linear probability model were largely consistent with those obtained from the Probit model used in Figure 5 and 6 (see Figure 11 and 12 in Appendix), indicating stability in our results. However, it is important to note that the Linear probability model coefficients occasionally exhibited negative values due to the binary nature of the variables, which does not make any sense for probabilities.

5.3 Two part model

When we look at the variables at which the Tobit model is applied we noticed that there is a large share of 0 indicating individuals who do not transfer anything to their children or parents. That alone could lead to an over-estimation of the effect of independent variable on the dependant variable because here the 0 represent an absence of the phenomenon being measured. In other words, while the Tobit model aims to measure the likelihood of giving or receiving monetary or time transfers, a significant portion of the censored data does not partake in these inter-generational transfers. To address this concern, we want to test for the two part model. We assume that by looking at the actual share of the population that do participate in monetary transfer, we will see a smaller coefficient. Upon looking at the results, we see that most of the result align with our assumption (see Figure 11 and 12 in Appendix). By looking at Table 2bis, we see that the coefficient of the columns (2), (4) and (5) are drastically lower than when using the Tobit models. This tells us that most likely the Tobit models is exaggerating the effect of an increase in Social Security benefits which alter the interpretation of the results. In that light, the Tobit model does not appear as the best fitting model for the variables studied.

6 Conclusion

6.1 Discussion

Findings show a significant interplay between publicly provided formal care to retirees and informal care provided within families, indicating that as social security benefits increase, parents provide more monetary transfers, more grandchild care and more intention to bequest to their children. On the other hand, children reduce monetary and time transfers to their parents, as the latter receive more social security benefits. It would seem that parents behave, or are able to behave, more altruistically than their children, probably due to the latter's higher burden as part of the workforce and also likely raising children themselves.

We investigated how our variables of interest were affected by marital status (appendix figures 9 and 10). The idea was that this control variable, reflecting family structure, might hold a particular relationship to our variables of interest that does not solely occur through the confounding variable of social security income. We find that respondents who are coupled provide far more care to their grandchildren than those who do not have a partner (figure 9). Indeed, the latter groups receive more help from their children (figure 10). This effect, consistent across quintiles of social security income, would indicate that inter-generational transfers are strongly affected

by marital status, which might raise the question of providing more formal help in the form of social security benefits, to those having lost their partner.

6.2 Policy recommendations

Potential policies that would reduce social security benefits are therefore likely to increase the burden on children to provide informal care to their parents. This might have a negative effect on labor force participation, which is why we suggest as a policy recommendation, if social security benefits are reduced in order to help balance the federal budget, that there be investment in long term care services, such as nursing homes and assisted living, so that older Americans may receive the care they require, without negatively impacting the workforce. Having observed how our variables of interest evolved by year, over the span of the panel study, we found that child-to-parent monetary transfers have decreased mostly because children are less likely to make any transfers at all, not because they transfer less money, conditional on any transfer being made. This is not the case for time transfers, where children have provided less help time over the span of the study. This indicates that it might be more worthwhile to invest in long term care for older Americans, while perhaps decreasing social security benefits, since visibly children are more willing to provide monetary transfers to their parents rather than time.

6.3 Limitations

There are several limitations to this study. First, the nature of the survey data at hand leads to an absence of any control variables regarding the children of the respondents, which could lead to confounding variable bias in the size of the estimates. For example, we are not able to know if women tend to provide more informal care time and men more monetary transfers, for example.

Another limitation is the awkwardness of the probability of the bequest variable. Firstly, it is naturally difficult to estimate the probability with which one will bequest, considering the uncertainty of one's financial situation over the rest of one's lifespan. Secondly, the OLS model is used to estimate the coefficient for this variable, allowing for negative probability estimates, which is absurd.

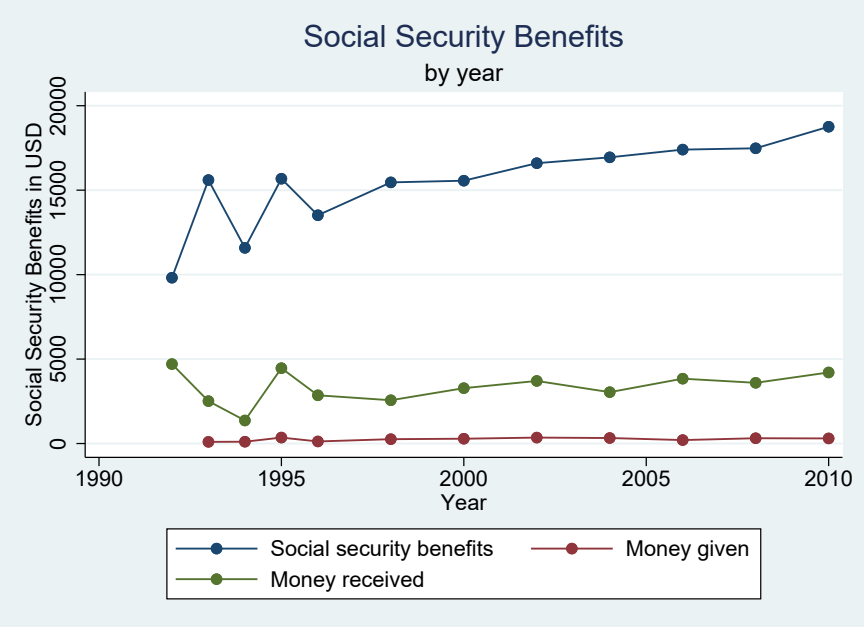


FIGURE 7 – Social security income, amount of money given, amount of money received by year

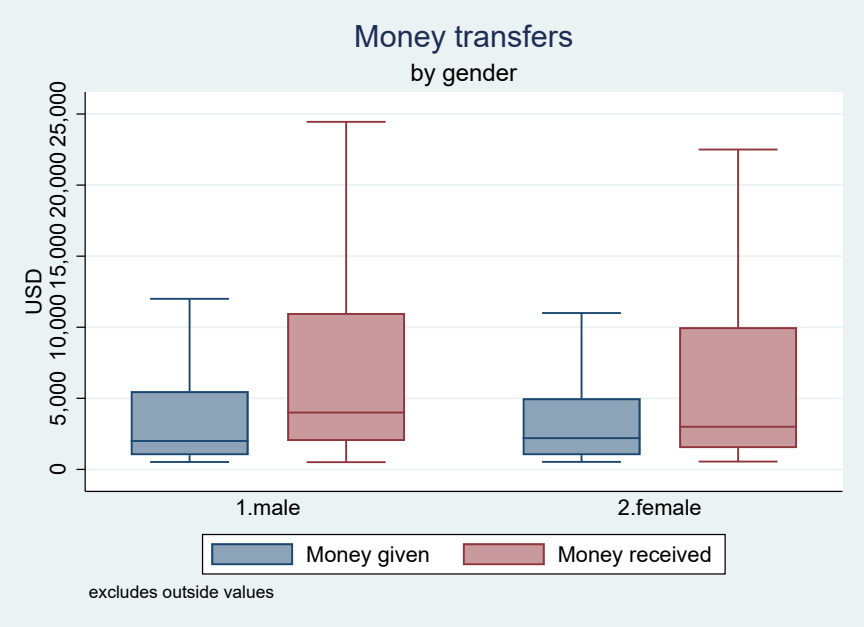


FIGURE 8 – Are intergenerational transfers gender-biased ? Amount of monetary transfers conditional on any transfer since the last survey, by gender

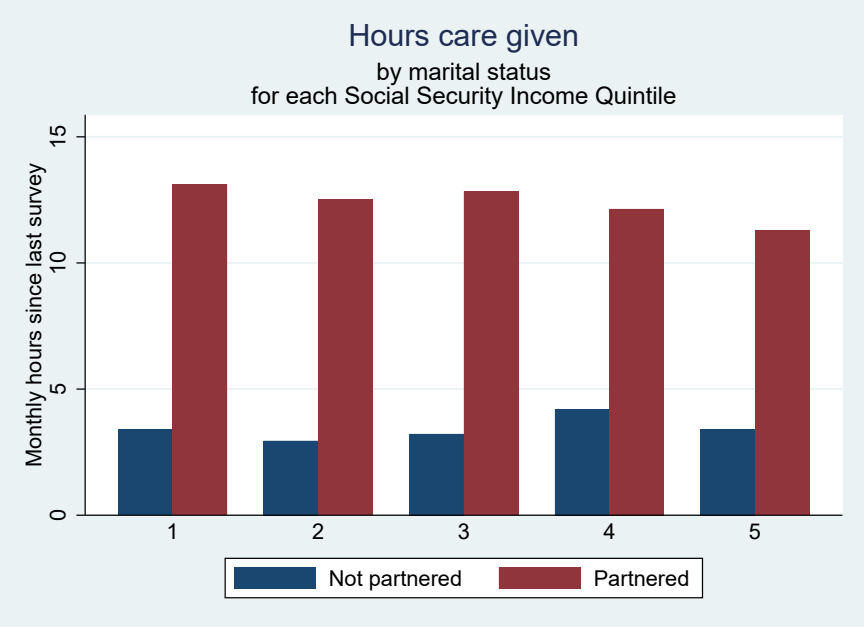


FIGURE 9 – Hours of care given by marital status, for each social security income quintile

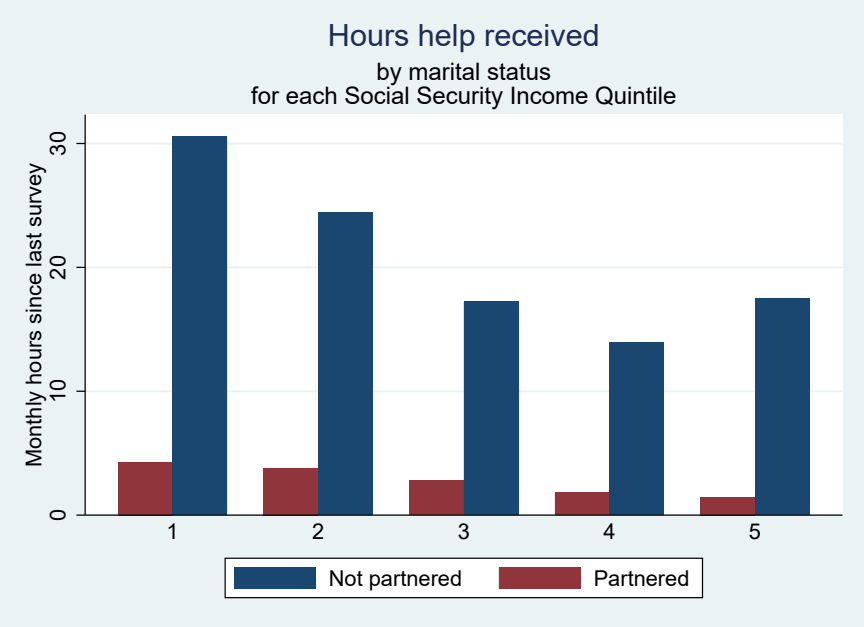


FIGURE 10 – Hours of help received by marital status, for each social security income quintile

Table 1bis—: Impact of Social Security Benefits on Monetary Transfers

	Parent-to-child		Child-to-parent	
	(1) Any transfer?	(2) Amount of transfer	(3) Any transfer?	(4) Amount of transfer
main				
Social Security income	0.024***	0.071***	-0.005**	-0.046*
	(0.004)	(0.012)	(0.002)	(0.018)
Observations	42305	42305	42111	42111

Notes: This table shows the coefficient on Social Security Benefits for separate regressions in each column. All dollar amounts shown are in $10,000. Columns (1) and (3) report the coefficents from the probability linear models, and columns (2) and (4) report mean marginal effects from the two part models.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

FIGURE 11 – Robustness analysis : Impact of Social Security benefits on monetary transfers

Table 2bis—: Impact of Social Security Benefits on Time Transfers

	Parent-to-child		Child-to-parent		
	(1)	(2)	(3)	(4)	(5)
	Any childcare?	Hours of childcare	Any help?	Days of help	Hours of help
main					
Social Security income	0.013***	0.061***	-0.009***	-0.074***	-0.072***
	(0.004)	(0.014)	(0.002)	(0.020)	(0.020)
Observations	33184	33184	41291	41285	41285

Notes: This table shows the coefficient on Social Security Benefits for separate regressions in each column. All dollar amounts shown are in $10,000. Columns (1) and (3) report coefficent from the probility linear models and columns (2), (4), and (5) report mean marginal effects from the two part models.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

FIGURE 12 – Robustness analysis : Impact of Social Security benefits on time transfers