### NBER WORKING PAPER SERIES

# INFORMAL CARE AND INTER-VIVOS TRANSFERS: RESULTS FROM THE NATIONAL LONGITUDINAL SURVEY OF MATURE WOMEN

Edward C. Norton Lauren Hersch Nicholas Sean Sheng-Hsiu Huang

Working Paper 18948 http://www.nber.org/papers/w18948

NATIONAL BUREAU OF ECONOMIC RESEARCH 1050 Massachusetts Avenue Cambridge, MA 02138 April 2013

The authors thank Daifeng He, and participants at the American Society of Health Economists biennial conference and the CESifo Venice Summer Institute who provided comments on an earlier draft. Patricia Rhoton, at The Center for Human Resource Research at Ohio State University, provided tremendous assistance in constructing the panel-level child-parent transfer data. We are grateful for funding from the National Institute on Aging through grants K01AG041763 (Nicholas). The authors gratefully acknowledge use of the services, facilities, and support of the Population Studies Center at the University of Michigan, funded by NICHD Center Grant R24 HD041028. The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

NBER working papers are circulated for discussion and comment purposes. They have not been peerreviewed or been subject to the review by the NBER Board of Directors that accompanies official NBER publications.

© 2013 by Edward C. Norton, Lauren Hersch Nicholas, and Sean Sheng-Hsiu Huang. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

Informal Care and Inter-vivos Transfers: Results from the National Longitudinal Survey of Mature Women Edward C. Norton, Lauren Hersch Nicholas, and Sean Sheng-Hsiu Huang NBER Working Paper No. 18948 April 2013 JEL No. 110,113

## **ABSTRACT**

Informal care is the largest source of long-term care for elderly, surpassing home health care and nursing home care. By definition, informal care is unpaid. It remains a puzzle why so many adult children give freely of their time. Transfers of time to the older generation may be balanced by financial transfers going to the younger generation. This leads to the question of whether informal care and inter-vivos transfers are causally related. We analyze data from the 1999 and 2003 waves of National Longitudinal Survey of Mature Women. We examine whether the elderly parents give more inter-vivos monetary transfers to adult children who provide informal care, by examining both the extensive and intensive margins of financial transfers and of informal care. We find statistically significant results that a child who provides informal care is more likely to receive inter-vivos transfers than a sibling who does not. If a child does provide care, there is no statistically significant effect on the amount of the transfer.

Edward C. Norton Department of Health Management and Policy Department of Economics University of Michigan School of Public Health 1415 Washington Heights, M3108 SPHII Ann Arbor, MI 48109-2029 and NBER ecnorton@umich.edu

Lauren Hersch Nicholas University of Michigan Institute for Social Research 426 Thompson Street Ann Arbor, MI 48106 Inichola@umich.edu Sean Sheng-Hsiu Huang Department of Health Management and Policy University of Michigan School of Public Health 1415 Washington Heights, M3108 SPHII Ann Arbor, MI 48109-2029 shenghsi@umich.edu

#### Introduction

Informal care is the largest source of long-term care for elderly, surpassing home health care and nursing home care (Norton 2000). By definition, informal care is unpaid. Yet providing informal care takes time away from other activities, may require loss of income, and even can worsen the health of the caregiver (Coe and Van Houtven 2009). Given these costs and the many alternatives to informal care, it remains a puzzle why so many adult children give freely of their time.

Informal care is not the only transfer between the generations, however. Transfers of time to the older generation may be balanced by financial transfers going to the younger generation. Each year billions of dollars are transferred from the older to the younger generation in the form of bequests and inter-vivos transfers. There is a long economic literature on the motivations for such transfers, including altruism and exchange (Bernheim, Shleifer and Summers, 1985; Altonji, Hayashi, Kotlikoff, 1997; Norton 2000; Norton and Van Houtven 2006). Of course, the latter explanation, exchange, belies the idea of unpaid care. However, putting aside the name, the idea of exchange makes sense for those extended families where an older person has money and needs help, and a younger person has time and needs money. This leads to the question of whether informal care and inter-vivos transfers are causally related. Understanding better how inter-vivos transfers are related to informal care could help explain the puzzle of why informal care is so prevalent.

Economists have found some evidence that inter-vivos transfers are larger for those children who provide informal care (Norton and Van Houtven, 2006). However, this relationship is difficult to quantify. First, informal care is endogenous to financial transfers. Informal care is not given randomly with respect to financial transfers. If financial transfers are

given in response to informal care, then the decision to provide informal care will depend in part on expectations of future transfers. The main empirical challenge is to control for endogeneity to get causal estimates.

Second, measurement of both informal care and financial transfers is difficult precisely because of the informal nature of informal care—there is no invoice to keep track of either time or money. In part because of these problems, past studies have not been able to address the intensive margins—the relationship between the quantity of informal care and inter-vivos transfers. Instead, they have focused on the extensive margin of just whether any informal care has been provided and whether any monetary transfers have changed hands. The intensive margins are also of great interest; does the marginal value of time spent on informal care rise?

To better answer these questions, researchers need longitudinal data on elderly parents and their children, with detailed information on financial transfers and the time spent on informal care. We use a data set with such detailed information to answer whether informal care givers receive more money than their siblings who do not provide care. This longitudinal study uses the 1999 and 2003 waves of National Longitudinal Survey of Mature Women. This data set contains extensive information on elderly mothers and their children. It also provides continuous measures of hours of care giving and the dollar value of transfers between each parent-child pair. The amount of informal care includes personal care, household chores, and running errands. The monetary transfers include lending and giving money, gifts, and other financial support. These measurements enable us to examine whether a child receives a larger amount of monetary transfers by giving more hours of care. We examine whether the elderly parents give more intervivos monetary transfers to adult children who provide informal care, by examining both the extensive and intensive margins of financial transfers and of informal care.

The longitudinal data is also useful to control for endogeneity. Forward-looking children may strategically provide informal care to receive monetary transfers from their parents. Therefore, informal care is endogenous in a simple regression to predict inter-vivos transfers because of this reverse causality. We use both a mother fixed-effect model and instrumental variables (IV) to account for such endogeneity. The mother fixed-effect model enables us observe within-family variations of care giving and monetary transfers. We also use indicators for birth order and gender as instrumental variables, following others in the literature. Two-stage least squares and two-stage residual inclusion estimations are used separately for linear and nonlinear specifications.

We find consistent and statistically significant results (p < 0.01) that a child who provides informal care is more likely to receive inter-vivos transfers than a sibling who does not. Our preferred specifications suggest that informal caregivers are 20 percentage points more likely to receive any transfer and 9 percentage points more likely to receive a financial transfer. If a child does provide care, there is no statistically significant effect on the amount of the transfer.

This paper makes several contributions to the literature. In terms of understanding informal care, it attempts to measure both extensive and intensive margins of both financial transfers and of informal care. The information in the NLS data set on both gift transfers and financial transfers to each child and informal care from each child is more detailed than what has been available in other studies. This allows us to model the intensive margins of both financial transfers and of informal care. On the methodological side, we take advantage of both panel data and instrumental variables to try to control for endogeneity.

#### **Theoretical Framework**

This section provides a conceptual framework for why elderly provide financial transfers and why their adult children provide informal care. This section builds on work of others (for summary see Van Houtven and Norton, 2006 and Grabowski, Norton, and Van Houtven, 2012). The conceptual framework leads to testable hypotheses and informs the empirical work.

The primary focus of this paper is on exchange, the idea that elderly parents will exchange money for informal care from their children (or other relatives or neighbors). When viewed as paying for a service, the basic prediction is that more informal care services will lead to more inter-vivos transfers. More informal care should lead to both a higher probability of any transfers and a larger amount of transfer conditional on any transfers. However, there are a variety of ways in which the payment (if any) may not be proportional as one would expect in a regular market. The market for informal care is not a normal market because the supply is typically limited to one's children, and perhaps children in-law. With a severely constricted supply, market rates may not apply and non-market factors may play an important role in determining the extent of informal care provided. Despite the unusual market, economic theory gives clear predictions.

The economic theory also argues that informal care is endogenous in a model predicting transfers. For example, one way to understand why informal care is endogenous is to consider the omitted variable of how generous the mother is in terms of financial transfers. A mother who is financially generous will transfer more for a given amount of informal care than a mother who is less generous. If the child takes this generosity into account when deciding whether to provide informal care, then the mother's generosity is omitted from both equations leading to omitted variable bias on a simple regression of informal care. Generosity is positively correlated with both informal caregiving and transfers, leading to positive bias. Similarly, the mother's wealth is

not observed and is related to both informal caregiving and financial transfers. Under exchange, where informal care is explicitly traded for cash transfers, we expect that informal care providers will be aware of this and adjust their amount of informal care in anticipation of some transfers. Because of the lack of a formal market, the relationship may be lumpy, without a market clearing price for time. But there still should be a positive relationship on the intensive margins of financial transfers and informal care. Informal care is not provided randomly, but instead is endogenous.

On the demand side, we expect there to be a wealth effect, with wealthier parents able to pay more. Opportunity costs matter for the demand side. When there are no close substitutes for informal care (e.g., the elderly person is not Medicaid eligible so the cost of a nursing home is relatively high) then the elderly person should be willing to pay more. On the supply side, opportunity costs also matter. A child with a higher income should receive more as compensation for her time. To the extent that quality of informal care can be observed, we expect people to be willing to pay more for high quality informal care. This will not be observable in the data, however.

There are other well-known alternatives to exchange as explanations for financial transfers. Altruism argues that parents care about their children's utility. They can use money to enhance their children's utility. According to the altruism model, parents should give money in a way that equalizes marginal utility. With declining marginal utility of income and wealth, this argues for giving more to poor children. One-sided altruism with care giving, though, complicates the predictions. If caregivers reduce hours of work (and hence income, raising their marginal utility of income) to provide informal care, then an altruistic parent may give more to the caregiver. Altruism can extend to grandchildren as well. When grandchildren are young and

live with their parents, future income is unknown, so it would be hard to use transfers to adjust for differences in future earnings. Instead, if money is given to parents of the grandchildren, money may be proportional to the number of grandchildren.

There are two different views of financial transfers and Medicaid. One view is that elderly persons will use transfers to gain Medicaid eligibility. This is one reason that most states have multi-year look back periods for financial transfers when determining eligibility for Medicaid for nursing home care. The opposing view is that people typically do not want to enter a nursing home, so will use the money to remain independent (Pauly 1990; Norton 1995). These theories argue that empirical work should control carefully for the adult children's income, the number of grandchildren, and financial proximity to Medicaid.

On the other side of the market, the suppliers of informal care may also have several other reasons for providing care besides the motivation to earn money. There may be a strong sense of filial duty. This will presumably be stronger if there are no substitutes, that is, no siblings, or siblings who live far away or who cannot adjust their hours to provide care. Another motivation could be to be an example to your children, in other words, to pay it forward. Those with children would then be more likely to provide informal care to their own parents.

We do not consider bequests further because research has shown that bequests are typically divided equally among children (Menchik, 1980; Tomes, 1981). Even when children provide unequal amounts of informal care, bequests tend to be divided equally (Norton and Taylor, 2005). There are theoretical reasons for why the between inter-vivos transfers is stronger with informal care than with bequests, including that transfers can be adjusted quickly to the amount of care, are less costly than writing a will, and can be kept secret from other family members and the public (Norton and Van Houtven, 2006).

## Hypotheses

In summary, we expect that more informal care will increase both the extensive and intensive margins of financial transfers. Within a family, children who provide informal care are more likely to receive inter-vivos transfers than their siblings who do not provide informal care. Those who provide more care will receive more transfers. Informal care is endogenous in a model of financial transfers. Therefore we expect a positive relationship between transfers and informal care giving, in both extensive and intensive margins of both variables, but that the amount of informal caregiving is endogenous.

Other hypotheses are that step children are less likely to receive transfers, the income of children matters (although opportunity costs and altruism suggest opposite effects). This implies that it is important to control for child-level characteristics.

A further complication is that income and wealth effects of the elderly person are likely to be strong, and will go in the opposite direction (wealthier families give more in transfers but are less likely to receive informal care). Therefore, we want to look within an extended family, both over time and across children, for variation in informal care and transfers, holding lifecycle wealth constant. We will run some models with mother fixed effects, and other models with instruments related to gender and birth order of the potential caregivers, as has been done in the literature transfers (Van Houtven and Norton, 2004 and 2008; Bolin, Lindgren, Lundborg, 2008).

#### **Empirical Approach**

The conceptual framework leads to a model where financial transfers from elderly parents to their adult children are the main outcome, and those transfers are a function of informal care provision, which is endogenous. In addition to informal care, predictors of financial transfers include wealth, income and marital status of the parent, and measures of the health. Child characteristics including gender, marital status, number of children, and distance from the adult parent (a proxy for contact) can also influence inter-vivo transfers.

There are three main empirical challenges. One is that transfers have a distribution with a large mass at zero and a skewed right positive tail. Therefore, following the health economics literature, we estimate both extensive and intensive margins of financial transfers. We address this by estimating regressions of the probability and amount of financial transfer a child receives on an indicator of whether the adult child provides any care to parents and hours of care conditional on any informal care.

A second empirical challenge is that wealth effects of the elderly parent are likely to be large. Poor elderly may have no money to give, regardless of the amount of informal care. Wealthy elderly may want to disperse their wealth while alive for a variety of tax and personal reasons, even if they receive no informal care. At the same time, wealthier parents are able to purchase formal care, and have lower demand for informal care even at higher levels of illness and disability. So controlling for the wealth effect is important. The NLS data has some information about wealth and income. However, wealth information is notoriously incomplete.

We control for permanent wealth of parents by including mother fixed effects in some specifications. These address the time-invariant components of parental wealth that determine the likelihood of both time and financial transfers. In the mother fixed effects models, we

compare children to their siblings, testing whether children who provide more care to a parent than other siblings do receive larger transfers holding parent characteristics constant.

Finally, there remains the problem of dealing with the endogeneity of informal care. This can occur because children provide informal care in anticipation of compensation from parents in the form of inter-vivos transfer, or if unmeasured factors such as relationship quality determine transfers in both directions. We will use several methods to deal with endogeneity. Besides running models with no controls for endogeneity, as comparisons, we use mother fixed effect regressions and instrumental variables.

The basic model describes the relationship between parental transfers to children,  $T_c$ , as a function of whether the child provides any informal care,  $IC_c$ , hours of care,  $HC_c$ , characteristics of the mother,  $M_m$  and adult child  $C_c$  described previously. We first estimate

$$T_{ct} = \alpha IC_{ct} + \beta HC_{ct} + \gamma M_{mt} + \delta C_{ct} + \varepsilon_{ct}$$
(1)

where  $T_c$  is either the probability of the parent providing any monetary transfer (including gifts) and any financial transfer (cash transfers such as loans and other support excluding gifts) to child *c* at time *t* estimated using logistic regression, or  $T_c$  is the natural logarithm of the amount given (for the subset of those who give any) estimated using ordinary least squares.

However, the  $\alpha$  and  $\beta$  coefficients estimated in Equation (1) are likely biased by endogeneity as previously discussed. The estimates will be too large (biased upward) if financial transfers and informal caregiving are more likely to occur when the child anticipates being repaid for time caring for the parent or where family dynamics promote transfers of time and money across generations.

Our preferred specification uses mother fixed effects to difference out time-invariant mother's characteristics such as wealth, generosity of financial giving, and the extent to which

the mother cares about her children's well-being. In these regressions, we identify the effects of informal caregiving using the variation within families both across siblings and over time:

$$T_{ct} = \alpha IC_{ct} + \beta HC_{ct} + \gamma M_{mt} + \delta C_{ct} + M_m + \varepsilon_{ct}$$
(2)

The NLS data also include a number of potential instruments for informal care provision including birth order and sibling gender (older children and daughters are more likely to provide informal care) that affect the probability of providing informal care. These characteristics are predetermined by the time an older parent needs care and cannot be easily manipulated by the adult child. Prior research has shown that variables such as number of siblings, birth order, and gender do not directly influence parental decisions about inter-vivos transfers (Van Houtven and Norton, 2004 and 2008; Bolin, Lindgren, Lundborg, 2008).

We use these variables to estimate instrumental variables regressions that yield causal estimates of the effect of caregiving on inter-vivos transfer receipt for those whose caregiving decisions are driven by genetic lottery underlying birth order and sibling gender composition. In the first stage, we predict caregiving as a function of these family composition variables  $FC_c$  and previously included control variables.

$$IC_{ct} = \rho FC_{ct} + \beta HC_{ct} + \gamma M_{mt} + \delta C_{ct} + \xi_{ct}$$
(3)

When the main equation is linear, we used two-stage least squares (essentially replace the endogenous variable with its predicted value).

$$T_{ct} = \lambda \, \tilde{IC}_{ct} + \beta \, HC_{ct} + \gamma \, M_{mt} + \delta \, C_{ct} + \varepsilon_{ct}$$
(4)

When the main equation has a dichotomous dependent variable, we used two-stage residual inclusion (essentially add the residual from the first-stage regression to the main equation). This approach can produce consistent estimates (Terza, Basu, and Rathouz, 2007).

#### Data

We use both the 1999 and 2003 waves of National Longitudinal Survey (NLS) of Mature Women data set, conducted by the Ohio State University on behalf of the Bureau of Labor Statistics. This survey includes women who were ages 30-44 when first interviewed in 1967. Originally, the Department of Labor selected this cohort to study how women balanced roles in labor markets and households. Since then, this survey has included a variety of topics. In the 1999 and 2003 waves, respondents were asked sets of questions about intergenerational transfers between them and their adult children. The NLS was discontinued after 2003 due to budget constraints. We both merged the 1999 and 2003 waves to construct pooled cross-sectional and longitudinal data to examine within-family and within-child variation and account for the unobservable time-invariant variables. The amount of informal care includes personal care, household chores, and running errands. The money transfers include lending and giving money, gifts, and other financial support.

The original sample comprises 5,083 women in 1967. Because of attrition due to death, loss to follow up, and institutionalization, there are only 2,467 women who completed the survey in 1999 and 2,237 women who completed it in 2003. For these women, only their children who are at least age 19 were eligible for the transfer questions. We first exclude the elderly women who lived with any child because informal caregiving is extremely hard to measure when there is co-residence (for reviews of literature about family bargaining over living arrangements, see Pezzin, Pollak, and Schone, 2007 and Byrne et al., 2009). This reduces the number of households to 1,704 and 1,457 in the 1999 and 2003 waves. We further limit the sample to the households with between two and five children because it requires at least two children per household for with-in family fixed effect estimation and because the transfer questions were

answered collectively for the respondent with more than five children. This results in 1,202 and 1,059 households in 1999 and 2003. We further exclude adult children have any missing values on one of seven transfer questions. The analytical sample comprises 1,111 households and 3,476 child-parent paired observations in 1999 and 976 households and 3,054 children in 2003. Overall, the pooled cross-sectional sample has 6,530 children and the matched panel sample has 5,249 children (see Table 1).

It is instructive to compare the NLS with the well-known Health and Retirement Survey (HRS). The HRS has about twice as many women in this age group. The demographics match on age, ADLs, and education, but the NLS women have significantly lower average household income (\$26,000 vs. \$39,000). The NLS has more detailed information on transfers of time and money in those two waves.

### **Dependent variables**

The dependent variables are whether or not the child received monetary transfers from the elderly mother during the past 12 months, and, if the child did receive a transfer, what are the dollar values of those transfers? We created aggregated variables to add up four types of monetary transfers asked about in NLS data set (lending, giving, gifts, and other support). About 50.8% and 43.7% of the adult children received any type of transfers from their elderly mother in the past 12 months (see Table 2). Among the children who received any transfers, the average amount was \$1,750. We also created a financial transfer variable that excludes gifts giving. Only about 12% and 11% of the adult children received any non-gift financial transfers. The average financial transfer was about \$4,670. Compared to transfer in 1999, the probability of receiving

any transfer decreased by 7 percentage points in 2003. The amount of transfers is similar in the two waves.

#### **Independent variables**

The primary explanatory variables of interest are the provision of informal care and the hours of care giving. We created informal care variables to aggregate the information on three types of informal care (personal care, household chores, and running errand). In 1999, about 13.4% adult children provided informal care to their elderly mother. Conditional on providing any care, the average hours of care giving was 284 hours per year. In 2003, 14.8% of the adult children provided informal care and the average hours increased to 395 hours per year. The higher probability and the longer hours of care probably reflect the increasing needs as the elderly women were four years older. To control for the needs of informal care, we also included a set of physical functioning indicators. The average number of ADLs was 0.14 in 1999 and increased to 0.21 in 2003. In 2003, 10% of the elderly women have ever been diagnosed with cancer, 60% of them have been diagnosed with hypertension, and 23% of them have heart problems.

We also care about the child's absolute income. By examining the relationship between transfers and relative income levels, it helps to answer whether altruism is an important motive of inter-vivos transfers. The original NLS data set has four child income categories: below 22K, between 22K and 55K, between 55K and 70K, and above 70K.

#### **Other Independent variables**

Our regressions also include important demographic, financial, and health variables at both the household level and child level. On average, the elderly mothers were 69.1 and 72.8 years old in 1999 and 2003. On average, the elderly woman had 3.2 transfer eligible children (conditional on having between two and five children). More than 60 percent were married in 1999 but only 52.5 percent remained married in 2003. The average annual family income of the elderly mothers was \$25,331 and \$24,522 in 1999 and 2003. We also construct a set of variables to measure the elderly mother's wealth. In 2003, 87% owned their home and 37.7% have IRA account. Only 9.1% of them had saving accounts more than \$40,000. In our analysis sample, on average the adult children were age 42.6 and 45.9 in 1999 and 2003. About 70% of the adult children were married and 76.9% of them had at least one child. Because transportation time and expenditures are significant cost of care giving, a dummy variable is created to indicate whether the child lived 10 or more miles away from their elderly mother. Almost two-thirds of the sample children lived more than 10 miles away from the elderly mother. We also carefully defined the child-parent relationship. 91.7% of the sample children are biological children.

### **Instrumental variables**

We use whether the child is the eldest child and the number of sisters as the instrumental variables in the two-stage least squares and two-stage residuals inclusion estimations. Because in many cultures the burden of caregiving falls to the eldest child and to daughters, both birth order and the number of daughters are highly correlated with informal care provision. The more sisters the adult child has, the less likely this adult child will provide informal care to the elderly mother because the burden of care provision is spread across more potential caregivers. We also use being the eldest child to measure birth order. As previous studies have found, the eldest

child is much more likely to provide informal care. Both instruments are statistically significant in the first-stage regressions. Our instrumental variables also theoretically satisfy the exclusion restriction because the child's birth order and gender were determined genetically and the size of family was determined long before the need of informal care. We use both the instruments for two potential endogenous variables (whether the child provides any informal care and the log hours of care conditional on providing any).

We run specification tests for the instruments (see Table 7). When using the number of sisters and being the eldest child as the instruments (for any informal care), the *F*-statistic was 11.8, the over-id test rejected at the 5-percent level (p=0.018), and the test of exogeneity rejected at the 1-percent level (this test is conditional on having valid instruments). Therefore, we have some concerns about the validity of the instruments in this data set. We also attempted to use the two instruments for the two endogenous variables, but the partial *R*-squared was low and we could not test over-identification. For these reasons, we tend to prefer the mother fixed effects results, but include the IV results for completeness.

#### Results

We start by presenting the single-equation results. These assume that the informal care variables are exogenous, an assumption that we test. Children who provide any care are 35.8 percentage points more likely to receive any transfer and 9.9 percentage points more likely to receive financial transfers than children who are not currently providing care (Table 3). These are large effects; fewer than half of all sample children receive any transfer and 11 percent receive financial transfers. However, providing more care is associated with a lower probability of any transfer at the margin. Mothers who require more assistance may have been sicker for a

longer time or have higher out-of-pocket health care spending, reducing their ability to make transfers. The results are similar qualitatively when the same model is run with a logit instead of a linear probability model; we report results from logistic regressions to account for the dichotomous dependent variable.

The last two columns of Table 3 consider the association between caregiving and the amount of financial transfers in the subset of children who receive transfers. We find no relationship between informal caregiving and all transfers, many of which are gifts for birthdays and holidays. Mothers with more income and wealth (proxied by home ownership) are more likely to provide transfers; eldest, biological, and unmarried children are more likely to receive transfers. We found a negative and statistically significant relationship between the amount of financial transfers given to children who provide care counterbalanced by a positive and significant relationship between annual hours of care and amount of money transferred. These seemingly contradictory results may reflect the actions of persistently generous mothers, who provide transfers regardless of care and another set of mothers compensating children for informal care provision, particularly children providing larger amounts of care.

The results from mother fixed effect regressions control for time-invariant characteristics of the mother including wealth and generosity (see Table 4). Within families, children who provide informal care are much more likely to receive any transfers or any financial transfers (see Table 4). Interpretation of the conditional logistic regression coefficients is difficult because the constant term is not estimated in a conditional fixed effects model, making it impossible to compute probabilities. The coefficients have the interpretation of log odds conditional on the mother fixed effects and other covariates, and conditional on having at least one child receive a transfer and one not (Norton 2012).

Results from the corresponding linear probability models with mother fixed effects showed that the point estimates imply magnitudes that the probability of receiving any transfer is about 20 percentage points higher for those who provide any care (roughly half the size of the effect reported in Table 3), and the probability of receiving financial transfers is about 9 percentage points higher (unchanged from the pooled cross-sectional models). These models compare siblings who do or do not provide informal care, suggesting that family characteristics are an important omitted variable for understanding the decision to provide any transfer, but not financial transfers. Unlike in the cross-sectional data, we find no significant effect of the number of hours of informal care on the probability or amount of any transfers or of financial transfers, again pointing to the importance of controlling for family preferences and other maternal characteristics.

We also find evidence of maternal altruism in inter-vivos giving. Parents are considerably more likely to provide financial transfers to children with incomes below \$20,000 (13.3 percentage points, p < 0.01), and incomes between \$20 and \$50,000 (5.5 percentage points, p < 0.01) than to those with incomes above \$70,000. Conditional on making any transfers, mothers also provide more resources to children in the lowest income groups. Mothers are more likely to make transfers to their eldest child and biological children. They are less likely to make financial transfers to married children and older children; married children are 4.1 percentage points less likely to receive financial transfers and each year of child age is associated with a 0.2 percentage point decline in his probability of receiving a transfer. These results all suggest that mothers make inter-vivos financial transfers to children most likely to need financial help rather than give equally to all children. We also remind readers that caregivers being more likely to receive transfers is consistent with one-sided altruism.

One other hypothesis that we can test is whether step children are less likely to receive transfers than biological children. The mother's fixed effects model shows that biological children are significantly more likely to receive transfers, but that the size of the transfers is unrelated to whether the child is a step child. The magnitude of the difference is more than 10 percentage points.

We hypothesized that mothers use inter-vivos transfers to compensate adult children for providing informal care. However, it is possible that transfers are provided in anticipation of future care needs instead. The panel nature of our data allow us to test the temporal precedence of caregiving and informal transfers. Mothers were 6.9 percentage points more likely to make transfers in 2003 to children who reported caregiving in 1999 in models that control for mother fixed effects. In contrast, the relationship between transfer receipt in 1999 and caregiving in 2003 was smaller in magnitude and only statistically significant in the logit FE models. We find no relationship between financial transfers and caregiving in either period, however.

A stronger test of our causal pathway is to instrument for child's caregiver status. We tested two instruments commonly used in the literature; whether a child was the oldest and whether female. In the mother fixed effect regressions, we found no differences in transfers to daughters versus sons, though older children were somewhat more likely to receive any but not financial transfers than children; we would be more confident with this identification strategy if there was no relationship between birth order and transfer receipt. Regressions using only child gender as an instrument generated a weak first stage, so we report the specification used by other papers for comparison. Table 5 presents first-stage estimates; being the eldest child and having sisters are both strong predictors of informal caregiving. Results are in the expected directions; children with more sisters provide less care and oldest children are more likely to provide care.

The individual *t*-statistics are always greater than 1.96 in absolute value. The *F*-statistic on the instruments is about 12 for any informal care but less than 10 for the number of hours. Therefore, we acknowledge that the instruments are somewhat weak for the number of hours.

In the instrumental variables estimation we faced several challenges. As is often the case, the point estimates and standard errors are quite large (see Table 6), to the point of being implausibly large. For the two-stage least squares models we used both instruments for two endogenous variables. For the two-stage residual inclusion model, models with two endogenous variables did not converge, so we report only the models that control for the endogeneity of any care, and leave out the amount of care.

#### Conclusion

Consistent with prior literature, we found statistically significant results that a child who provides informal care is more likely to receive inter-vivos transfers than a sibling who does not. Contrary to what we expected, there is no evidence for an intensive margin of informal care on either the extensive or intensive margins of financial transfers. Providing more informal care does not significantly affect the probability of any transfers or the amount of transfer (total or financial). Because the theoretical hypothesis is only partially confirmed, there must be other motives for providing informal care that are strong at the intensive margin. These could include altruism, providing an example for the grandchildren, and receiving other utility from providing care (positive benefits of time with parents).

The analysis on continuous measurements, hours and dollar amounts, provides new evidence of the exchange motive that the elderly use inter-vivos transfers to compensate the care givers. About 15% of older mothers received informal care from at least one child in 2003, on

average these women received 395 hours of care, the equivalent of a full day of work each week. Both the large need for care observed and the evidence of an exchange motive support public policy efforts to expand programs like Cash and Counseling (Carlson et al., 2007), which enable patients to compensate friends and family members for informal care provision.

#### References

- Altonji, J.G., Hayashi, F., Kotlikoff, L.J. 1997. "Parental altruism and inter vivos transfers: Theory and evidence." Journal of Political Economy 105(6):1121–1166.
- Bernheim, B.D., Shleifer, A., Summers, L.H. 1985. "The Strategic Bequest Motive." Journal of Political Economy 93(6), 1045–1076.
- Bolin, K., Lindgren, B., Lundborg, P. 2008. "Informal and formal care among single-living elderly in Europe." 17(3):393–409.
- Byrne, D., Goeree, M.S., Hiedemann, B., and Stern, S. 2009. "Formal home health care, informal care, and family decision making" International Economic Review 50(4), 1205-1242.
- Carlson, B.L., Leslie, F., Dale, S.B., Brown, R. 2007. "Effects of cash and counselling on personal care and well-being." Health Services Research 42(1), 467–487.
- Coe, N.B., Van Houtven, C.H., 2009. "Caring for mom and neglecting yourself? The health effects of caring for an elderly parent." Health Economics 18(9), 991–1010.
- Grabowski, D.C. E.C. Norton, and C.H. Van Houtven. 2012. "Informal Care." Chapter 30, pp. 318–328. In <u>The Elgar Companion to Health Economics, Second Edition</u>, A.M. Jones, ed. Northampton, MA: Edward Elgar.
- Menchik, P. L. 1980. "Primogeniture, equal sharing and the U.S. distribution of wealth." Quarterly Journal of Economics 94: 299–316.
- Norton, E.C. 1995. "Elderly Assets, Medicaid Policy, and Spend-down in Nursing Homes." Review of Income and Wealth 41(3):309–329.
- Norton, E.C. 2000. "Long-term Care." In Handbook of Health Economics, Volume IB. A.J. Culver and J.P. Newhouse, eds, pp. 956–994. New York, NY: Elsevier Science B.V.

Norton, E.C. 2012. "Log Odds and Ends." NBER Working Paper #18252.

- Norton, E.C. and D.H. Taylor, Jr. 2005 "Equal Division of Estates and the Bequest Motive." Journal of Aging and Social Policy 17(1):63–82.
- Norton, E.C. and C.H. Van Houtven. 2006. "Inter-vivos Transfers and Exchange." Southern Economic Journal 73(1):157–172.
- Pauly, M.V. 1990. "The Rational Non-Purchase of Long-term Care Insurance." Journal of Political Economy 98(1): 153–168.
- Pezzin, L.E., Pollak, R.A., Schone, B.S. 2007. "Efficiency in family bargaining: Living arrangements and caregiving decisions of adult children and disabled elderly parents" ESIFO Economic Studies 53(1), 69-96.
- Terza, J.V., Basu, A., Rathouz, P.J. 2008. "Two-stage residual inclusion estimation: Addressing endogeneity in health econometric modeling." Journal of Health Economics 27(3), 531– 543.
- Tomes, N. 1981. "The family, inheritance and the intergenerational transmission of inequality." Journal of Political Economy 89: 928–958.
- Van Houtven, C.H. and E.C. Norton. 2004. "Informal care and health care use of older adults." Journal of Health Economics 23(6):1159–1180.
- Van Houtven, C.H. and E.C. Norton. 2006. "Economic effects of informal care." Swiss Journal of Economics and Statistics 142(Special Issue):13–22.
- Van Houtven, C.H. and E.C. Norton. 2008. "Informal care and Medicare expenditures: Testing for heterogeneous treatment effects." Journal of Health Economics 27(1):134–156.

Panel A. Main Analytic Sample –-Pooled Sample	1999 Wave	2003 Wave	Pooled Sample
No restrictions	7.875 (2.148)	7.651 (1.984)	N.A.
Does not live with children	6,001 (1,704)	5,077(1,457)	N.A.
Has 2-5 children	3,764 (1,202)	3,329 (1,059)	7,055(1,404)
No missing values	3,476 (1,111)	3,054 (976)	6,530 (1,335)

Table 1: National Longitudinal Survey of Mature Women: Mother and Child, 1999 - 2003

*Notes:* The numbers represent the number of parent-child paired observations. The numbers in brackets represent the number of unique elderly mothers.

# Table 2: National Longitudinal Survey of Mature Women: Mother and Child

Characteristics, 1999 - 2003

		1999 Wave			2003	2003 Wave	
			Std.	N		Std.	
Variable	- -	Mean	Dev.	<u> </u>	Mean	Dev.	N
Depende	nt or Endogenous						
	Inter-vivos transfer	0.508	0.500	3,476	0.437	0.496	3,054
	\$ of Any Transfer	1,750	5,391	1,208	1,705	6,138	933
	Log(\$ of Any Transfer)	5.689	1.715	1,208	5.708	1.683	933
	Financial Transfer	0.120	0.325	3,476	0.11	0.313	3,054
	\$ of Financial transfer	4,608	7,747	332	4,669	10,381	276
	Log(\$ of Fin Transfer)	7.160	1.855	332	7.143	1.763	276
	Prob. Of Informal care	0.1337	0.3405	3,476	0.148	0.355	3,054
	Hours of Care Provided	284	1,112	464	395	1,297	453
	Log(Hours)	4.119	1.640	464	4.193	1.810	453
Elderly N	Iother Characteristics						
<i>.</i>	Age	69.086	4.438	1,111	72.845	4.432	972
	Married	0.599	0.490	1,111	0.525	0.500	972
	Number of children	3.166	1.034	1,111	3.275	1.178	972
	Highest Grade	12.221	2.602	1,111	12.345	2.589	972
	Family Income	25,331	29,877	1,111	24,522	32,048	972
	log (Family Income)	9.804	0.990	1,010	9.816	0.960	852
	No Income	0.090	0.286	1,110	0.127	0.333	976
	Own House	0.867	0.340	1,111	0.827	0.378	972
	Own House Missing	0.000	0.000	1,111	0.001	0.032	972
	Savings Above 40K	0.091	0.288	1,111	0.096	0.294	972
	Savings Missing	0.037	0.189	1,111	0.040	0.196	972
	IRA Account	0.377	0.485	1,111	0.323	0.468	972
	IRA Account Missing	0.029	0.167	1,111	0.044	0.206	972
	Has Other Debt	0.201	0.401	1,111	0.153	0.360	972
	ln (\$OtherDebt)	6.263	3.203	223	6.462	3.075	149
	Has Other Debt Missing	0.030	0.170	1,111	0.022	0.145	972
	ADL	0.138	0.506	1,111	0.205	0.711	972
	Cancer	0.108	0.311	1,111	0.103	0.304	972
	Hypertension	0.536	0.499	1,111	0.590	0.492	971
	Heart Problem	0.199	0.399	1,111	0.225	0.418	972
Child Ch	aracteristics						
-	Age	42.568	6.563	3,476	45.906	7.196	3,053
	Married	0.712	0.453	3,452	0.693	0.461	2,987
	Have Any Child	0.760	0.427	3,476	0.769	0.421	3,054

	Live >10 miles away	0.636	0.481	3,476	0.636	0.481	3,054
	Miles Away Missing	0.027	0.161	3,476	0.005	0.068	3,054
	Biological child	0.944	0.230	3,467	0.917	0.275	3,054
	Income 22K Below	0.100	0.299	3,467	0.116	0.320	3,054
	Income 22K-55K	0.106	0.308	3,467	0.121	0.327	3,054
	Income 55K-70K	0.123	0.328	3,467	0.146	0.354	3,054
	Income 70K Above	0.125	0.331	3,467	0.150	0.357	3,054
	Income Missing	0.547	0.498	3,467	0.466	0.499	3,054
Child Inst	<i>truments</i> Eldest child # of Sisters	0.329 1.224	0.470 0.932	3,476 3,476	0.334 1.207	0.472 0.928	3,054 3,054

Note: Sample restrictions include: (1) the elderly mother does not live together with the adult children. (2) The adult mother has 2-5 children. (3) The adult-child paired observation does not have any missing values on any informal care and monetary transfer questions.

	Prob AnyTrsf	Prob FinTrsf	Log( \$ AnyTrsf)	Log( \$ FinTrsf)
	(1)	(2)	(3)	(4)
Constant			3.313***	3.693*
			[1.225]	[2.028]
Received Any Care	0.358***	0.099***	-0.043	-1.061***
	[0.049]	[0.027]	[0.213]	[0.384]
Log(Hours of Care)	-0.033***	-0.009	0.052	0.251***
	[0.010]	[0.006]	[0.051]	[0.082]
ADL	-0.043**	0.002	0.01	0.12
	[0.018]	[0.009]	[0.107]	[0.142]
AGE	0.005*	0.001	-0.001	-0.025
	[0.003]	[0.001]	[0.015]	[0.023]
Married	-0.034	-0.036***	-0.016	-0.083
	[0.022]	[0.013]	[0.130]	[0.209]
HighestGrade	0.017***	0.009***	0.114***	0.138***
	[0.004]	[0.003]	[0.025]	[0.040]
Log(FamilyIncome)	0.053***	0.020***	0.188**	0.142
	[0.012]	[0.007]	[0.076]	[0.117]
Own a House	0.068**	0.032*	0.245	0.202
	[0.028]	[0.017]	[0.174]	[0.301]
Savings >\$40K	0.038	0.042**	0.630***	0.882***
	[0.033]	[0.019]	[0.217]	[0.251]
Child:Income <\$20K	-0.139***	0.035*	0.168	0.293
	[0.036]	[0.019]	[0.191]	[0.291]
Child:Income \$20K < and <\$55K	-0.060*	0.02	0.001	0.391
	[0.032]	[0.017]	[0.151]	[0.265]
Child:Income \$55K < and <\$70K	-0.063**	-0.01	0.003	0.439*
	[0.029]	[0.017]	[0.133]	[0.264]
Child:Income Missing	-0.121***	-0.022	-0.280**	0.234
	[0.028]	[0.015]	[0.132]	[0.253]
Child:Eldest	0.082***	0.024***	0.039	-0.255*
	[0.012]	[0.009]	[0.075]	[0.151]
Child:Female	0.026**	0.006	0.066	0.013
	[0.012]	[0.008]	[0.076]	[0.133]
Child:Married	-0.015	-0.048***	-0.022	0.173
	[0.016]	[0.011]	[0.098]	[0.166]
Child:Biological	0.106***	-0.015	-0.634***	-0.598**
	[0.034]	[0.022]	[0.238]	[0.279]
Child:Age	-0.004***	-0.003***	-0.012	0.041**

 Table 3: Pooled Cross-sectional Relationships between Children's Informal Care Provision and Receipt of Transfers from Elderly Mothers

	[0.002]	[0.001]	[0.009]	[0.017]
yr2003	-0.068***	-0.003	-0.009	-0.216
	[0.019]	[0.011]	[0.102]	[0.189]
r2			0.147	0.217
Ν	6365	6365	2132	604

(1)\*, \*\*, and \*\*\* represent significance at 10%, 5%, and 1% levels

(2)Indicators of missing values are included in the regression but not reported in the table to save space.

(2) Reported values are average marginal effects. Column (1) and column (2) are estimated with logistic model and column (3) and column (4) are estimated with OLS model.

(3) Standard errors are clustered at the household level

	Any Transfer	Any Transfer	Financial Transfer	Financial Transfer	Log( \$ AnyTrsf)	Log(\$ FinTrsf)
	Logit	OLS	Logit	OLS	OLS	OLS
	(1)	(2)	(3)	(4)	(5)	(6)
Constant		6.631		5.179	68.335*	-48.505*
		[6.840]		[6.360]	[39.306]	[27.006]
Received Any Care	1.657***	0.199***	1.012***	0.086**	0.043	-0.566
	[0.317]	[0.049]	[0.373]	[0.040]	[0.180]	[0.600]
Log(Hours of Care)	-0.119*	-0.012	-0.029	-0.003	0.056	0.208
	[0.066]	[0.010]	[0.082]	[0.008]	[0.044]	[0.136]
ADL	-0.224	-0.022	-0.213	-0.018	-0.148	1.412***
	[0.151]	[0.043]	[0.212]	[0.024]	[0.527]	[0.393]
AGE	-0.488	-0.097	-0.765	-0.075	-0.859	0.838**
	[0.458]	[0.099]	[0.547]	[0.092]	[0.570]	[0.391]
Married	0.055	0.008	-0.584	-0.044	-0.660*	-0.925
	[0.273]	[0.080]	[0.372]	[0.050]	[0.367]	[0.567]
Log(FamilyIncome)	0.384***	0.050**	0.227*	0.012	-0.360***	-0.385***
	[0.080]	[0.024]	[0.125]	[0.011]	[0.098]	[0.147]
Child:Income <\$20K	0.186	0.011	1.319***	0.133***	0.407**	0.606
	[0.232]	[0.029]	[0.294]	[0.028]	[0.158]	[0.374]
Child:Income \$20K < and						
<\$55K	-0.18	-0.039	0.459*	0.055**	0.274**	0.264
	[0.197]	[0.027]	[0.253]	[0.023]	[0.127]	[0.348]
Child:Income \$55K < and						
<\$70K	-0.22	-0.032	-0.016	0.02	0.192*	0.426
	[0.191]	[0.023]	[0.243]	[0.021]	[0.111]	[0.360]
Child:Eldest	0.417***	0.054***	0.098	0.003	-0.108	-0.098
	[0.100]	[0.012]	[0.140]	[0.010]	[0.070]	[0.158]
Child:Female	0.103	0.014	0.098	0.005	0.061	0.055

# Table 4: Elderly Mother Fixed-Effect Estimations on the Extensive and Intensive Margins

	[0.088]	[0.010]	[0.125]	[0.008]	[0.051]	[0.167]
Child:Married	-0.217**	-0.032**	-0.530***	-0.041***	0.045	0.112
	[0.105]	[0.014]	[0.150]	[0.012]	[0.077]	[0.207]
Child:Biological	0.906***	0.108***	0.496	0.043	0.212	0.384
	[0.248]	[0.038]	[0.335]	[0.032]	[0.229]	[0.856]
Child:Age	-0.006	-0.001	-0.040**	-0.002**	-0.005	0.038
	[0.011]	[0.001]	[0.016]	[0.001]	[0.010]	[0.023]
year 2003	1.538	0.325	3.015	0.294	3.309	-4.133***
	[1.828]	[0.394]	[2.173]	[0.368]	[2.269]	[1.577]
r2		0.582		0.469	0.065	0.138
bic	2807.938	3894.242	1511.2	-201.025	5340.541	1539.913
Ν	3374	6373	1965	6373	2132	604

(1)\*, \*\*, and \*\*\* represent significance at 10%, 5%, and 1% levels

(2)Regressions also control for mother's health, child characteristics, and missing values.

(3)Standard errors are clustered at the household level

(4)Regression coefficients reported for all specifications.

	2SLS-AnyCare	2SLS-Log(Hrs)	2SRI-AnyCare
	(1)	(2)	(3)
Constant	-0.515***	-2.166***	
	[0.094]	[0.438]	
Number of Sisters	-0.018***	-0.061***	-0.018***
	[0.004]	[0.021]	[0.005]
Child:Eldest	0.026**	0.094**	0.027***
	[0.010]	[0.046]	[0.010]
ADL	0.036***	0.156***	0.029***
	[0.009]	[0.041]	[0.006]
AGE	0.007***	0.032***	0.007***
	[0.001]	[0.006]	[0.001]
Married	-0.098***	-0.445***	-0.093***
	[0.010]	[0.045]	[0.009]
HighestGrade	0.003*	0.009	0.004**
	[0.002]	[0.009]	[0.002]
Log(Family Income)	0.009*	0.031	0.008
	[0.005]	[0.022]	[0.005]
Own a House	0.02	0.071	0.020*
	[0.014]	[0.066]	[0.012]
Savings >\$40K	-0.053***	-0.194***	-0.072***
	[0.012]	[0.051]	[0.018]
Child:Income <\$20K	0.002	0.002	-0.002
	[0.017]	[0.076]	[0.018]
Child:Income \$20K < and <\$55K	0.023	0.133*	0.024
	[0.017]	[0.076]	[0.017]
Child:Income \$55K < and <\$70K	-0.004	-0.006	-0.001
	[0.015]	[0.064]	[0.017]
Child:Income Missing	0.003	0.051	0.001

 Table 5: IV First Stage Regression on the Probability of Informal Care Provision and Hours of Care Provided

	[0.012]	[0.052]	[0.014]
Child:Female	0.012	0.095**	0.009
	[0.008]	[0.038]	[0.008]
Child:Married	-0.020*	-0.148***	-0.021**
	[0.010]	[0.050]	[0.010]
Child:Biological	0.068***	0.287***	0.100***
	[0.012]	[0.058]	[0.023]
Child:Age	-0.002**	-0.010**	-0.002**
	[0.001]	[0.004]	[0.001]
yr2003	-0.007	-0.024	-0.009
	[0.009]	[0.042]	[0.009]
r2	0.097	0.096	
Ν	6387	6373	6387

(1)\*, \*\*, and \*\*\* represent significance at 10%, 5%, and 1% levels

(2)Indicators of missing values are included in the regression but not reported in the table to save space.

(3) Reported values are the average marginal effects.

(4) Both 2SLS and 2SRI models use two instruments – **number of sisters** and **eldest child**; However, in 2SLS model we instrument for two both anycare and log hours of care. In 2SRI, we only instrument for anycare because the likelihood -function dose not converge when we instrument for two endogenous variables

	2SLS-	2SLS-Any Financial	2SRI-	2SRI-Any Financial
	AnyTransfer	Transfer	AnyTransfer	Transfer
	(1)	(2)	(3)	(4)
Instrumented Variables				
<b>Received Any Care</b>	-66.662	9.179	2.928***	2.781***
	[582.931]	[66.953]	[0.114]	[0.150]
Log(Hours of Care)	19.16	-2.294		
	[163.118]	[18.739]		
Constant	6.821	-0.356		
	[55.997]	[6.431]		
ADL	-0.688	0.044	-0.152***	-0.088***
	[5.106]	[0.587]	[0.024]	[0.027]
AGE	-0.154	0.012	-0.013***	-0.016***
	[1.251]	[0.144]	[0.004]	[0.004]
Married	1.886	-0.157	0.213***	0.162***
	[14.994]	[1.726]	[0.041]	[0.052]
HighestGrade	0.046	0.001	0.015*	0.016*
	[0.300]	[0.034]	[0.008]	[0.009]
Log(FamilyIncome)	0.037	0.012	0.049**	0.032
	[0.210]	[0.024]	[0.024]	[0.023]
Own a House	0.081	0.003	0.039	0.036
	[0.701]	[0.080]	[0.047]	[0.053]
Savings >\$40K	0.165	0.09	0.194***	0.253***
	[0.677]	[0.080]	[0.049]	[0.054]
Child:Income <\$20K	-0.125	0.037	-0.189***	0.092
	[0.723]	[0.087]	[0.072]	[0.066]
Child:Income \$20K <				- •
and <\$55K	-1.107	0.127	-0.144**	-0.007

Table 6: IV Main Equation on the Probability of Informal Care Provision and Hours of Care Provided

	[8.562]	[0.985]	[0.057]	[0.062]
Child:Income \$55K <				
and <\$70K	-0.24	0.017	-0.079	-0.017
	[1.595]	[0.185]	[0.056]	[0.058]
Child:Income Missing	-0.977	0.081	-0.171***	-0.066
	[7.220]	[0.829]	[0.057]	[0.049]
Child:Female	-0.99	0.112	0.006	-0.014
	[8.497]	[0.977]	[0.029]	[0.031]
Child:Married	1.453	-0.205	0.034	-0.076
	[12.245]	[1.407]	[0.034]	[0.049]
Child:Biological	-0.838	0.017	-0.046	-0.219***
	[7.117]	[0.818]	[0.069]	[0.062]
Child:Age	0.077	-0.011	0.001	-0.005
	[0.654]	[0.075]	[0.002]	[0.003]
yr2003	-0.102	0.008	-0.075**	0.01
	[0.511]	[0.059]	[0.037]	[0.034]
N	6373	6373	6379	6379

(1)\*, \*\*, and \*\*\* represent significance at 10%, 5%, and 1% levels

(2)Indicators of missing values are included in the regression but not reported in the table to save space.

(3) Reported values are the average marginal effects.

(4) Both 2SLS and 2SRI models use two instruments – **number of sisters** and **eldest child**; However, in 2SLS model we instrument for two both anycare and log hours of care. In 2SRI, we only instrument for anycare because the likelihood -function dose not converge when we instrument for two endogenous variables

## Table 7. Specification test

	Exogeneity Test	IV Stength	<u>Over-id Test</u>
	Wu-Hausman F	F test	Basman Test
	[p-value]	[p-value]	[p-value]
Dependent Variable			
Anytransfer To Child	28.514	11.794	5.614
	[0.000]	[0.000]	[0.018]