Informal Care and the Division of End-of-Life Transfers

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ABSTRACT

Unmarried parents in the AHEAD study derive the majority of their long-term care hours from their children, and childcaregivers are generally unpaid. This paper examines the extent to which the division of end-of-life transfers compensates caregiving children. In a model of siblings' altruistic contribution of care to a shared parent, the parent's estate division is found to influence total family care, even where care contingencies are unenforced. Evidence in the AHEAD data that end-of-life transfers favor both current and expected caregivers, and that children make altruistic but resource-constrained caregiving decisions, is consistent with a theory of estate division in which planned end-of-life transfers elicit care from altruistic children.

I. Introduction

Several researchers have documented the importance of family-based long-term care for the elderly in the United States.[1] In data from the first wave of the

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1. See, for example, McGarry (1998), Pezzin and Schone (1997, 2002), and the Task Force on Aging Research (1994).

Assets and Health Dynamics among the Oldest Old (AHEAD) study of U.S. residents aged 69 and older, I find that 14 percent of all respondents and spouses receive regular care from their children, while only 1 percent pays a child for informal care. Average monthly care hours supplied by caregiving children are substantial, and the small group of children who are paid for their services enjoy wages that amount to less than a dollar per hour on average. Further, McGarry and Schoeni (1997) demonstrate that financial transfers from living parents to their children measured in the AHEAD do not favor caregiving over noncaregiving children. Given the apparent absence of a family spot-market for care, this paper investigates the relationship between parents' end-of-life transfer division choices and the informal care they derive from their children.

Recent studies of families' eldercare arrangements suggest that children respond altruistically to parents' care needs in the decision to provide long-term care.[2] The role of children's altruism is not neglected in the general models of family exchange of Bernheim, Shleifer, and Summers (1985), Cox (1987), and Cox and Rank (1992). However, the assumption that parents manipulate transfers in response to realized attention or help from their children, a fundamental component of such exchange models, has come into question in the context of eldercare. This paper presents a model of a group of altruistic siblings who make voluntary time contributions to a public good representing their parent's health. In turn, the parent determines each child's share in her estate. Rather than assuming that the parent manipulates bequests in response to realized care, this model of a strategically motivated parent and altruistic children requires only that the parent can commit in advance to a particular division of her estate. The model implies that a selfish parent seeking to maximize care hours commits positive bequests only to children whom she expects to be caregivers, in a lifetime sense. The model also implies that, all else equal, children with fewer caregiving siblings and fewer competing family obligations are more likely to be caregivers.

Because care measures in the first wave of the AHEAD study are imperfect indicators of lifetime caregiver status, the model implication that parents bequeath only to expected lifetime caregivers is tested using separate information on AHEAD families in which parents do and do not currently require long-term care. Among children whose parents currently require care, current caregiving activities are observed. Among children whose parents do not currently require care, parents' predictions of future caregivers are available. Taking the probability of being a lifetime caregiver as the probability of belonging to the set of potential bequest recipients, I estimate the dependence of bequest receipt on predictors of the child's lifetime caregiver status.

A second obstacle confronted by the estimation is the jointness in the family's determination of caregiving and transfers. The model in Section III implies that parents' estate-division choices depend on children's willingness to care, and that children's willingness to care, in turn, depends on expected bequests. For this reason, I specify the dependence of bequests and caregiving on observable and unobservable family characteristics as a recursive simultaneous bivariate probit. I find that the number of sisters the child has among a given number of siblings is a strong determinant of caregiving but has no independent effect on end-of-life transfer receipt, and so the

2. These include Pezzin and Schone (1999, 2002), Checkovich and Stern (2002), and Brown (2004).

estimates described below are based on the exclusion of the gender composition of the child's siblings from the transfer expression.

The coefficients of the random effects bivariate probit models of caregiving or expected caregiving and bequest or life-insurance receipt are estimated by maximum likelihood. The estimates indicate that children who are currently caregivers are 32 percentage points more likely than noncaregivers to be included in their parents' life-insurance policies. Expected caregivers are three percentage points more likely to be included in their parents' estates, despite a strong tendency toward equal division, and 15 percentage points more likely to be included in their parents' life-insurance policies. Current caregivers, however, are no more than one percentage point more likely to be included in their parents' estates. Within-family estimates of the dependence of end-of-life transfers on children's characteristics indicate that unequal dividers with current care needs intend to transfer an average of $11,303, or $651 at the median, more to caregiving children than to their noncaregiving siblings. Parents without current care needs bequeath an average of $22,301, $1,329 at the median, more to the children they identify as likely future helpers. Overall, caregivers and expected caregivers more often expect end-of-life transfers, and the choice of life-insurance beneficiaries is particularly responsive to care.

The large and significantly negative coefficients on number of siblings and number of sisters in the expressions for whether children care or are expected to care for their parents are consistent with the crowd-out prediction of the voluntary contributions model of caregiving. Children with both greater earnings and greater outside family obligations are significantly less likely to be current caregivers, suggests that competing time demands are important components of the care decision.

Finally, the estimated relationships between transfers and child characteristics can be used to evaluate competing theories of bequest behavior. The lack of evidence of compensatory transfers argues against altruistic bequest motives on the part of parents. A test of care-contingent bequest exchange based on the relationship between children's incomes and transfer-receipt probabilities uncovers, at best, mixed support. However, I find that the extension of a strategic model of bequests to accommodate multiple altruistic children generates a source of commitment where care-contingent transfers are not possible, reconciles the exchange hypothesis with features of the data on long-term care and allows both pre- and post-caregiving transfers to influence the care parents receive.

The paper is organized as follows. Section II discusses some related literature. Section III presents a model of children's voluntary contributions of care hours to a shared parent, and the parent's care-maximizing estate division. In Section IV, we turn to the AHEAD sample used in the estimation and the empirical importance of disinheritance. Section V reports estimates of the dependence of parents' estate-division choices on children's caregiving activities and discusses competing bequest motive hypotheses. This is followed by a section of concluding comments.

II. Related Literature

The existing literature on U.S. bequests demands that a project of this sort address two concerns. First, existing studies find that U.S. parents overwhelmingly choose to divide their estates equally among their children. Using administrative and U.S. Treasury data on estates large enough to have state or federal tax liabilities, Menchik (1980, 1988) and Wilhelm (1996) find that most estates are divided equally among testators' children in the United States. In each of these studies, the available data include information only on the children mentioned in a parent's will. However, in a representative sample of older parents drawn from the AHEAD study, I find that the intention to disinherit a child is not uncommon. Further, intended disinheritance and unequal estate division are more common among parents with current long-term care needs, and life-insurance policies are most often allocated unequally to children. Modes of unequal division in the AHEAD are treated in more detail in Section IV. In general, while the administrative data sources employed by Menchik and Wilhelm are extremely well suited to the analysis of the most consequential U.S. estates, a representative sample with explicit information on disinheritance appears to be of value where our concern is parents' ability to defray children's costs of informal care through transfers.

Second, Hurd (1987, 1989), Hurd and Smith (2002), and others have provided evidence that bequests are largely accidental, and that bequest motives explain little of observed saving or dissaving behavior. To the extent that the model provided here implies that parents value bequests, it might appear to be at odds with these findings. Using a standard life-cycle model, Dynan, Skinner, and Zeldes (2002) demonstrate that the addition of a substantial taste for bequests to preferences may contribute only a negligible amount to observed saving where parents are subject to longevity, medical expense, and earnings risk and have no access to annuity markets. In the context of this paper, a parent with access only to severely restricted annuity markets, which appears to be the case for those 70 and older in the United States, may hold assets with substantial value outside of her lifetime in the presence or absence of a bequest motive.[3] If such a parent can influence the informal care she receives from her family through her will and life-insurance policies, then the bequest option may have an economically meaningful influence on the sources and quality of her long-term care. Following Dynan et al., this relationship need not imply that the parent's bequest option exerts a significant influence on her saving decisions, which are likely to be driven largely by her high marginal utility of consumption in unlikely survival states.

III. A Model of Estate Division and Care

The motivations for transfers between parents and children have been the grounds of an extended debate in the economic literature. The implications of models of altruistic bequests and cash transfers from parents to children have been tested and rejected by Wilhelm (1996) and Altonji, Hayashi, and Kotlikoff (1997).[4] On the other hand, results from the estimation of the behavioral models of families' care arrangements in Pezzin and Schone (1999), Engers and Stern (2002), and Brown

3. See, for example, McCarthy and Mitchell (2002).

4. Horioka (2001) and Light and McGarry (2004) find some evidence of altruistic bequest motives for subsets of U.S. families using survey data that include self-reported transfer motives.

(2004) indicate that children respond altruistically to parents' care needs in deciding to provide informal eldercare.

Of particular relevance to this study, several researchers have examined the hypothesis that parents make inter-vivos transfers or bequests to their children in exchange for services such as attention or long-term care.[5] One factor that models of exchange have in common is that the parent must be able to condition her bequest or gift on the receipt of services from the child. The most common grounds on which wills are challenged in the United States are lack of mental capacity and undue influence, implying that parents suffering cognitive limitations may be unable to make legally valid changes in their wills (ABA 2004, Sacks 2002). Sloan, Picone, and Hoerger (1997) construct an empirical test of the exchange of bequests for care based on the notion that a parent who has experienced some cognitive impairment is likely to be unable to condition bequests on care provided by her children. They find that the role of parental wealth in determining care from children is not different for cognitively unaware and aware parents.

This section presents a simple model of the estate-division problem of a selfish parent with current care needs and altruistic children. The parent holds an exogenously determined stock of bequeathable assets and can commit to any preferred division of end-of-life transfers among her children as long as all bequeathable assets go to some child. I also assume that the parent cannot credibly condition the bequest shares she promises to her children on their realized caregiving behavior, since she may die unexpectedly or lose the ability to manipulate her assets as a part of the aging process. The model developed below addresses both the voluntary time contributions of a group of siblings to the care of their elderly parent, and the influence of the parent's estate-division choices on the total care provided.

The parent has J children, indexed $j = 1,..., J$. Child j values a private consumption good x_j, consumed by the child and her own family.[6] Additionally, each child values the total care voluntarily provided to the parent, $C = \sum_{j=1}^{J} c_j$, and so C functions as a public good.[7] Children's preferences are defined over the private and public goods, with child j's utility represented by the continuous and strictly quasi-concave function

$$U_j = u_j (x_j, C) \ \forall j.$$

I assume that u_j is strictly increasing in both of its arguments, and that the child's marginal utility of consumption x_j grows arbitrarily large as x_j approaches zero. Under this specification, children's contributions of care to a shared parent may vary due to differences in children's wages, concern for the parent's welfare, or some combination of these factors.

Each child is endowed with T waking hours to be expended in market work at wage w_j, time with her own family, and care for the parent. She and her family enjoy

5. These include Bernheim, Shleifer, and Summers (1985), Cox (1987), and Cox and Rank (1992). McGarry and Schoeni (1995) and Hochguertel and Ohlsson (2000) report findings that are inconsistent with the implications of exchange as presented in Cox and Rank (1992).

6. From this point, references to the child's own family indicate the spouse and children of the child, or the son- or daughter-in-law and grandchildren of the parent making the estate-division choice.

7. Checkovich and Stern (2002) find that the time contributed to the care of a parent by one child depends negatively on the time contributed by her siblings, suggesting both that children function as substitutes in the production of parental health and that children do not compete through care hours for parental transfers.

nonlabor income N_j. The child's own family demands a total of γ_j hours (or $w_j\,\gamma_j$ dollars) of support, which represents the combination of time and market inputs required to meet the family's needs. Where h_j represents child j's labor supply, the child's time constraint is $h_j \le T - \gamma_j - c_j$. Her financial constraint is $x_j \le w_j h_j + N_j + b_j$, including anticipated bequest from the parent $b_j \ge 0$. Note that the absence of the restriction that $h_j \ge 0$ permits the child to hire care for the parent at wage w_j.[8]

Finally, the parent is assumed to hold an exogenously accumulated stock of bequeathable wealth, which has an expected present value to her children of B. This stock of bequeathable wealth may consist of nonannuitized liquid assets that have value while the parent is alive and in the event of her death, or may be accumulated term or whole life insurance, at least part of which has value only in the event of the parent's death. The parent may commit today to any division of B among her children. As a result, her children take their promised shares of B as fixed nonlabor income to be realized. The parent transfers bequest $b_j \ge 0$ to each of her children, subject to $B = \sum_{j=1}^{J} b_j$.

With the above assumptions, the problem of child j can be written

$$(1)\quad \begin{aligned} &\max_{x_j,\,c_j}\; u_j\,(x_j, C_{-j} + c_j)\\ &s.t.\; w_j(T{-}\gamma_j) + N_j + b_j \ge\; x_j + w_j c_j \text{ and } c_j \ge 0, \end{aligned}$$

where C_{-j} represents the total time contributions of child j's siblings to the parent's care.

As in the private contributions models of Bergstrom, Blume, and Varian (1986) and Andreoni (1988), the child's problem can be rewritten as one in which the child determines both the amount of the private good she consumes and the total contribution to the public good, subject to the nonnegativity constraint on contributed care hours. Thus the child's problem in Equation 1 produces the continuous demand function for care hours

$$C = \max\left\{ f_j\left(T - \gamma_j + \frac{N_j + b_j}{w_j} + C_{-j}; w_j\right), C_{-j}\right\}, j = 1, \ldots, J.$$

The argument in f_j represents the full time endowment of child j plus the care hours of contributing siblings as valued by child j. If the inequality constraint on child j's contributed hours is not binding, then she chooses to be a caregiver. Her choice of total care hours supplied to the parent is $C = f_j\left(T - \gamma_j + \frac{N_j + b_j}{w_j} + C_{-j}; w_j\right)$, of which her contribution is $c_j = f_j\left(T - \gamma_j + \frac{N_j + b_j}{w_j} + C_{-j}; w_j\right) - C_{-j}$. Demand as a function of

8. Empirical evidence that children rarely hire formal caregivers for their parents, despite the fact that child wages often exceed formal caregiver wages, can be found in Engers and Stern (2002) and McGarry (1998). I find that 24 of the 8,222 Wave 1 AHEAD respondents report that a child assists them with the payment of a caregiver. Facing the w_j caregiver wage, a child employs formal care only in the rare event that her nonlabor income is great enough to meet her family's needs and to provide x_j such that

$$\left.\frac{\partial u_j}{\partial C}\right|_{C = C_{-j} + T - \gamma_j} > \frac{\partial u_j}{\partial x_j}$$

the total endowment, $f_j(.)$, is increasing and varies across siblings in response to both market wage and relative concern for the parent's well-being.

The demand function $f_j(.)$ is assumed to be differentiable. In addition, I assume that both the public and the private goods are normal for each child, so that $0 < f'(.) < 1$. Given the structure of children's utilities and the implied demand for care hours supplied to the parent, it can be shown that (i) there exists a unique Nash equilibrium to the voluntary care contributions game and (ii) any change in the distribution of endowments among the J agents that increases the aggregate time endowment of current contributors necessarily increases the equilibrium supply of care to the parent. With the adaptation of the argument in f_j to reflect child j's time endowment, the proofs of points i and ii follow Bergstrom et al. directly.

Here we turn to the parent's problem. Consider a selfish parent with utility of total care $u^P\left(\sum_j c_j\right)$, and $u^{P'}(.) > 0$. The parent chooses bequest division $\{b_j\}_{j=1}^J$ to maximize $u^P\left(\sum_j c_j\right)$, subject to $B = \sum_j b_j$ and $b_j \geq 0\ \forall j$. These assumptions, along with findings (i) and (ii), lead to the following result for the parent's estate-division choice.

Proposition 1

As long as $c_i = \max\left\{f_i\left(T - \gamma_i + \frac{N_i + B}{w_i}; w_i\right), 0\right\} > 0$ *for some* $i \in \{1, \ldots, J\}$, *the selfish parent chooses* $b_j > 0$ *only if* $c_j > 0$. *The parent commits positive bequests only to children who contribute to her care.*

Proof

Suppose not. Suppose that $c_i = \max\left\{f_i\left(T - \gamma_i + \frac{N_i + B}{w_i}; w_i\right), 0\right\} > 0$ for some $i \in \{1, \ldots, J\}$ and the parent allocates bequests $\{b_j\}_{j=1}^J$ such that $B = \sum_j b_j$ and $b_k > 0$ for k such that $c_k = 0$. Either

(a) some child $l \in \{1, \ldots, J\}$ chooses $c_l = f_l\left(T - \gamma_l + \frac{N_l + b_l}{w_l} + C_{-l}; w_l\right) > 0$ at initial bequest allocation $\{b_j\}_{j=1}^J$, or

(b) The equilibrium is such that $c_j = \max\left\{f_j\left(T - \gamma_j + \frac{N_j + b_j}{w_j} + C_{-j}; w_j\right) - C_{-j}, 0\right\} = 0\ \forall j$ at initial bequest allocation $\{b_j\}_{j=1}^J$.

In case a, the parent would prefer to reallocate bequest dollars b_k to child l and increase total care received $\sum_j c_j$, as implied by (ii). In case b, the parent would prefer to reallocate bequest dollars $\sum_{j \neq i} b_j$ to child i and enjoy a positive amount of care from her children. Therefore the parent will never bequeath a positive amount to a child who provides no care as long as $c_i = \max\left\{f_i\left(T - \gamma_i + \frac{N_i + B}{w_i}; w_i\right), 0\right\} > 0$ for some i.

The model demonstrates that, when children are sufficiently altruistic toward their parents, even a parent with no ability to condition the bequests she offers her children on their realized provision of care can influence the amount of care supplied by her family through the division of her estate. Further, the model describes the association between long-term care and expected bequests, replacing the standard selfish exchange motives for children with the perhaps more plausible assumption that children derive utility from helping their elderly parents, but must balance the needs of parents against those of their own families. The main implication to be tested below is that children who are lifetime caregivers, rather than their noncaregiving siblings, will be the beneficiaries of elderly parents' wills and insurance policies. In addition, the assumption that children make altruistic but resource-constrained care decisions generates two predictions to be addressed in the estimation. First, siblings' care contributions crowd each other out. Second, children's competing time demands diminish their care contributions.

In the above analysis, the interactions of parents and children are limited to bequests from parent to child and time transfers from child to parent. The findings in McGarry and Schoeni (1997) and the results reported at the start of this paper and in Table 4 provide little evidence of direct wages for care. Further, as long as insurance market limitations lead some portion of the parent's assets to have value only to her heirs, the inclusion of a spot market for care does not reverse the finding that the parent bequeaths preferentially to caregiving children. Following Engers and Stern (2002), one might also allow transfer payments among siblings. Assuming any coordination cost of paying care wages to siblings, however, this would not change the implication that parents transfer to children in the caregiving set.

IV. Data

The data used in this and the following section are drawn from the Asset and Health Dynamics Among the Oldest Old (AHEAD) study of U.S. residents born in or before 1923 and living outside of institutions in 1993. All findings are based on Wave 1 of the survey.

The long-term care needs of married individuals are most often met by their spouses, and so we might expect single, widowed, or divorced respondents to be at greater risk of going without needed care and to rely most heavily on children and nonfamily sources of assistance.[9] Additionally, the focus of this paper is on the division of bequests and life insurance among caregiving and noncaregiving children within the same family. For these reasons, Tables 1-4 and the following discussion consider the association between bequests and care in the families of unmarried parents with two or more living children identified in the AHEAD data. A further requirement imposed in the sample is that each parent must have a will or term or whole life-insurance policy naming at least one child, or positive reported net worth and no will.

9. McGarry (1998) finds that 67.2 percent of the helpers of married individuals in the first wave of the AHEAD are the individuals' spouses.

The exclusion of the institutional population from the first wave of the AHEAD study raises a serious concern in the construction of this sample. Nursing-home residents may have less access to care from children than the parents studied here. Short of choosing a different data source, there is no available solution for this problem. The following analysis, therefore, applies only to parents who have chosen not to reside in institutions. The U.S. Department of Health and Human Services reports that three quarters of the U.S. disabled elderly lived in the community in 2000, suggesting that community-based long-term care may be worthy of attention independent of nursing-home care. Seven percent of the unmarried sample parents who report care from children in 1993 transition to nursing homes by 1995, demonstrating that family care does not preclude eventual nursing-home care. Further, while nursing-home care is not chosen by any of the Wave 1 AHEAD families considered here, we observe other nonfamily care sources, including private formal care, care supported by Medicaid, and residence in assisted-living facilities and retirement communities.

A child is identified as a caregiver if the parent claims that the child regularly provides her with assistance in the activities of daily living (ADLs), which include crossing a room, bathing, dressing, using the toilet, feeding oneself, and getting in and out of bed, or instrumental activities of daily living (IADLs), including managing medications, shopping, preparing a hot meal, managing finances, and using the telephone. Though parents without current care needs clearly have little care to report, cross-sectional measures of children's caregiving activities are likely to be imperfect measures of lifetime caregiving. Another appealing feature of the AHEAD data for the investigation of long-term care sources is that parents not currently requiring help are asked who would assist them on a regular basis should the need arise. An indicator for whether each child is expected to help is included in the estimates for families whose parents report no current care needs.

The data on children's income in the AHEAD study reflect the limited ability of older parents to report their children's earnings. Continuous and categorical information on the household income of each reported noncoresident child and the child and spouse incomes of each coresident child are solicited in the AHEAD study, but the responses contain many missing values. I find that more parents in my sample can place their children's household incomes above or below $30,000 than can categorize their children's incomes in any other consistent way. Despite this modest information requirement, the $30,000 household-income indicator cannot be constructed from parents' responses for 30 (23) percent of sample children whose parents do (do not) require care.

The predictions of the model deal exclusively with the parent's discrete decision whether to include each child in her estate, and therefore much of the estimation emphasizes children's inclusion in their parents' wills and life-insurance policies. However, a measure of the effect of eldercare on the child's net transfer may be valuable as one indication of how influential end-of-life transfers are likely to be in eliciting family care, and how successfully they may compensate children for the large time transfer children make to their elderly parents. In order to estimate the change in the amount of end-of-life transfers associated with being a caregiver, we require information on the transfers sample parents intend to make to each of their children.

The AHEAD study reports which children are included in parents' wills and whether wills that include all children also prescribe roughly equal division. However, the data do not indicate whether an estate will be divided equally among included children where some child is excluded, or how parents' estates are to be divided among included children if not equally. Further, each of the small group of parents shown in Column 5 of Table 2 list each of their children individually as beneficiaries of their wills, and therefore are not asked whether their wills divide their estates roughly equally.

For these reasons, I calculate potential end-of-life transfers for each child who is included in her parent's will as the amount of life insurance held in the child's name plus the parent's net worth including housing divided by the number of children included in the will. For each child excluded from the parent's will, potential end-of-life transfers are calculated as the amount of life insurance held in the child's name. These approximations of the potential end-of-life transfers to each child account for differences in reported life-insurance benefits and the effect of parents' decisions to disinherit any or all of their children. However, they overlook the unequal division of bequests by the 3 to 4 percent of all sample parents who disinherit no children but provide unequally for their children in their wills. Additionally, if any of the parents with wills who disinherit some child but not all children divide their bequests unequally among the children remaining in their wills, then the approximated end-of-life transfers account only for the disinheritance and not for the variation in bequests among included children.[10]

Descriptive statistics for the variables employed in the estimation in Section V are reported in Table 1, and are obtained separately for families in which parents do and do not have current care needs. The characteristics of the families of parents with and without current care needs are roughly comparable, with a few exceptions. Children of parents with current care needs are included in their parents' wills 80 percent of the time, as compared with 91 percent for children of parents without current care needs. This reflects the differences in the two samples in the rates of disinheritance of some or all children. Fifty-one percent of parents with current care needs, as compared with 44 percent of parents without care needs, maintain term or whole-life-insurance policies. Children of parents who require care are slightly older (51 versus 47 at the median) and have lower incomes than children of parents who remain independent. I also find that parents with care requirements are older, and their total bequeathable wealth is smaller on average. Thirteen percent of the children of sample parents with care needs act as caregivers, where caregiver status is defined as above. Ten percent of sample children whose parents do not currently require care are expected to be future caregivers. Interestingly, predicted and actual caregiving rates are fairly consistent. The distribution of potential transfers is highly skewed in each sample, with a mean of \$22,271 and a median of \$5,467 in the care-needs sample, and a mean and median of \$41,935 and \$16,520 in the no care-needs sample. This effect is a product both of the distribution of parental wealth and of the practice of disinheritance.

10. Estimates of the probability of children's inclusion in parents' wills and life-insurance policies reported in Table 3 do not suffer from this data limitation.

Table 1
Descriptive Statistics for Variables Used in Estimation

Variables: Child Level	Care Needs?	Mean	Median	Minimum	Maximum	Standard Deviation
Bequest to child	*Y*	0.804	1	0	1	0.397
	N	0.913	1	0	1	0.282
LI to child	*Y*	0.253	0	0	1	0.435
	N	0.303	0	0	1	0.460
Bequest *or* LI	*Y*	0.857	1	0	1	0.350
	N	0.933	1	0	1	0.250
Life insurance face	*Y*	3,066	1,300	42	80,000	6,686
value to child | > 0	*N*	4,075	1,800	100	1,275,000	9,750
Total end-of-life	*Y*	22,271	5467	0	703,333	56,093
transfer from parent	*N*	41,935	16,520	0	1,752,000	97,652
Child cares / is	*Y*	0.129	0	0	1	0.336
expected to care	*N*	0.100	0	0	1	0.300
Gender (female = 1)	*Y*	0.515	1	0	1	0.500
	N	0.505	1	0	1	0.500
Age	*Y*	51.13	51	12	80	9.69
	N	47.30	47	17	73	8.33
Years of schooling	*Y*	12.35	12	0	17	2.87
	N	13.32	12	0	17	2.63
Married	*Y*	0.673	1	0	1	0.469
	N	0.703	1	0	1	0.457
Number of children	*Y*	2.489	2	0	17	1.876
	N	2.140	2	0	15	1.629
Biological / adopted	*Y*	0.972	1	0	1	0.164
child of *p*?	*N*	0.971	1	0	1	0.168
Child income ≥30k	*Y*	0.352	0	0	1	0.478
	N	0.502	1	0	1	0.500
Can't categorize inc.	*Y*	0.298	0	0	1	0.457
	N	0.234	0	0	1	0.423
Parent level						
Gender (female = 1)	*Y*	0.824	1	0	1	0.381
	N	0.769	1	0	1	0.422
Age	*Y*	80.59	80	69	103	6.82
	N	76.65	76	69	93	4.84
Years of schooling	*Y*	8.79	8	0	17	3.94
	N	10.61	12	0	17	3.48
Number of children	*Y*	4.874	4	2	15	2.633
	N	4.291	4	2	13	2.269
Number of ADL	*Y*	1.813	1	0	6	1.656
limitations	*N*	0.000	0	0	0	0.000
Number of IADL	*Y*	1.495	1	0	5	1.458
limitations	*N*	0.000	0	0	0	0.000

The above data include all AHEAD Wave 1 families in which parents are single, widowed, or divorced, have at least two children, hold some bequeathable asset, and answer all relevant bequest and demographic questions. Care-needs sample N = 2,922 children, 801 families; no care needs N = 3,189 children, 956 families.

A. *Life Insurance and Estate Division*

Previous bequest studies using probate or tax-return data on large estates have argued that disinheritance is uncommon. In data on wills probated in Connecticut between 1931 and 1946, Menchik (1980) finds that the number of children mentioned in the obituaries of the decedents almost always matches the number of children included in their estates. The evidence on intended disinheritance is quite different for the less wealthy AHEAD sample, however. Table 2 reports that 50 to 51 percent of all single, widowed, or divorced parents with multiple children in the AHEAD study have wills and intend to divide their bequests "about equally" among their children. Thirty-three percent have no wills but positive bequeathable wealth, implying equal division. In addition, Table 2 details the various modes of unequal estate division intended by unmarried AHEAD parents. While 8 percent of parents intend to disinherit some child but include another child in their wills, and 1 percent disinherit all of their children, only 3 percent provide unequally for their children while including all of their children in their wills. The remaining 4 percent have no bequeathable wealth and no wills.

The rates reported in Table 2 also suggest that disinheritance is particularly common among elderly parents with long-term care needs. While 90 percent of parents without care needs would have left positive bequests to each of their children had they died immediately after the survey, only 82 percent of parents with care needs would have left positive amounts to each of their children. Overall, parents with current care needs are more likely to intend unequal division, disinheritance, or both, and disinheritance appears to be the preferred mode of unequal estate division among unequal dividers.

Light and McGarry (2004) find that parents with stepchildren are substantially more likely to divide their estates unequally. The division choices reported in Table 2 are consistent with this result. While 83 to 84 percent of all sample parents have either wills that treat their children roughly equally or positive bequeathable wealth and no wills, only 51 percent of parents with stepchildren meet this same equal division standard. Since the decision to bequeath to a stepchild appears to be very different from the decision to bequeath to a biological or adopted child, I exclude the 3 percent of sample children who are stepchildren from the estimation in Section V.

In addition, few studies of realized or intended estate division include information on life insurance, with Bernheim et al. being a notable exception. While most researchers conclude that equal division of bequests is the norm in the United States, life insurance is more often divided unequally among children.[11] Although 89 percent of all parents with multiple children and no stepchildren have wills that include all of their children or positive bequeathable wealth and no wills, only 69 percent of these same parents include all of their children in any existing will and treat their children equally in any existing term or whole life-insurance policies. Therefore term and whole life-insurance policies are included with bequests in the end-of-life transfers parents divide among their children in the estimation in Section V.

11. Wilhelm (1996) finds that 68.6 percent of parents subject to the estate tax divide their bequests exactly equally among the children included in their wills, and 76.6 percent divide their bequests approximately equally (within 2 percent of the value of the transfer) among included children. Menchik (1980) finds 62.5 percent equal dividers, and Menchik (1988) 84.3 percent. Light and McGarry (2004) find that 92.1 percent of the mothers in their sample intend to divide their estates equally.

Table 2
Estate Division

Will Division		Equal, all children in	Unequal, all children in	Unk., all children in	All in total	Some in, some out	No child in will	No will, $B > 0$	No will, $B \leq 0$	Total
All families	*N*	875	52	19	946	135	25	575	76	1,757
	%	49.80	2.96	1.08	53.84	7.68	1.42	32.73	4.33	100.00
Parents with care needs	*N*	332	24	7	363	72	15	295	56	801
	%	41.45	3.00	0.87	45.32	8.99	1.87	36.83	6.99	100.00
Parents without care needs	*N*	543	28	12	583	63	10	280	20	956
	%	56.80	2.93	1.26	60.98	6.59	1.05	29.29	2.09	100.00
All families without stepchildren	*N*	848	47	19	914	94	21	544	71	1,644
	%	51.58	2.86	1.16	55.60	5.72	1.28	33.09	4.32	100.00
No stepchildren, care needs	*N*	318	22	7	347	56	13	278	52	746
	%	42.63	2.95	0.94	46.51	7.51	1.74	37.27	6.97	100.00
No stepchildren, no care needs	*N*	530	25	12	567	38	8	266	19	898
	%	59.02	2.78	1.34	63.14	4.23	0.89	29.62	2.12	100.00
All stepchild families	*N*	27	5	0	32	41	4	31	5	113
	%	23.89	4.42	0.00	28.32	36.28	3.54	27.43	4.42	100.00

Will + LI Division		All in will, equal LI	Not all in will or unequal LI	Total
All families	*N*	1175	582	1757
	%	66.88	33.12	100.00
All families without stepchildren	*N*	1135	509	1644
	%	69.04	30.96	
All families with stepchildren	*N*	40	73	113
	%	35.40	64.60	100.00

	All in will, equal LI	Not all in will or unequal LI	Total
No stepchildren, care needs	494	252	746
	66.22	33.78	100.00
No stepchildren, no care needs	641	257	898
	71.38	28.62	100.00

The above data include all AHEAD Wave 1 families in which parents are single, widowed, or divorced, have at least two children, hold some bequeathable asset, and answer all relevant bequest and demographic questions.

V. End-of-Life Transfer Division Estimates

This section describes the empirical model used to estimate the effect of caregiving on inclusion in parents' end-of-life transfers. The first relationship of interest, based on the theory in Section III, is the dependence of parents' decisions to include their children in their wills or insurance policies on children's decisions to care for their parents. It is represented by the expression

(2) $B_{ij}{*} = X_{ij}\,\beta + \delta C_{ij} + v_i + \varepsilon_{ij}$,

where the family or parent is indexed by $i = 1, ..., N$ and the child is indexed by $j = 1, ..., J_i$. Vector X_{ij} contains observable parent i–child j characteristics that determine the child's bequest. An indicator for whether child j cares for parent i, or is expected to care for parent i, is included as C_{ij}. Family effect v_i, along with the observed characteristics of the parent, links the probabilities with which siblings expect end-of-life transfers. Indicator B_{ij} for the presence of any potential end-of-life transfer to the child is one if $B^*_{ij} > 0$ and zero otherwise.

However, both reasonable intuition and the theory developed in Section III indicate that bequests and family long-term care are determined simultaneously. For example, we must account for the possibility of an idiosyncratic degree of affinity at the level of the parent-child pair that drives both long-term care and bequests. For this reason, I add a second equation to the empirical model:

(3) $C^*_{ij} = Z_{ij}\,\gamma + \omega_{ij}$.

Care indicator C_{ij} is one where $C^*_{ij} > 0$ and zero otherwise. The pair (ε, ω) is assumed to be independent of X and Z and distributed as a bivariate normal in which both ε and ω have mean zero and unit variance. $\text{Corr}(\varepsilon, \omega) = \rho$, and where $\rho \neq 0$ probit estimation of Equation 2 would produce inconsistent estimates of β and δ, even accounting for the error correlation across siblings. As a result, a test of $H_0 : \rho = 0$ serves as a test for the endogeneity of caregiving to bequests. Family effect $v_i \sim N(0, \sigma^2_v)$ and is assumed to be independent of X, C, and ε. Thus we consider a recursive simultaneous equations model of the relationship between long-term care from children and end-of-life transfers.

While the model described by Equations 2 and 3 is technically identified where $Z_{ij} = X_{ij}$, in practice researchers find estimates based on a specification of this type more credible where a valid exclusion can be imposed.[12] The approach I have adopted resembles that of Evans and Schwab (1995), though the present analysis includes the additional concern that parents' decisions to bequeath to their children are related. Unsurprisingly, it is difficult to find satisfying instruments that influence long-term care provided by children but do not influence children's bequest shares. The most convincing instrument I have found is the child's number of sisters, controlling for the total number of children in the family. McGarry (1998) shows that the number of sisters a child has is a strong predictor of whether he or she will care for a parent in the AHEAD study. In probit regressions of caregiving and expected caregiving indicators on each child's number of sisters and all of the elements in X_{ij}, including the number

12. See, for example, Altonji, Elder, and Taber (2005), and Evans and Schwab (1995).

of children in the family, I find *t*-statistics for the coefficients on number of sisters of –3.42 and –2.60, respectively. Random effects probit regressions of the bequest and life-insurance indicators described above on caregiving or expected caregiving, number of sisters, and X_{ij}, however, generate number of sisters coefficients that are very small relative to the care coefficients and statistically indistinguishable from zero. Though this is not a formal test of the validity of the number of sisters instrument, given the paucity of available instruments and resulting inability to test overidentifying restrictions, to my knowledge it is the best available diagnostic.

A. Transfers and Caregiving

Maximum likelihood estimates of the model described by Equations 2 and 3 are reported in Tables 3a and 3b. Table 3a presents estimates for the sample of families in which parents report current care needs, and Table 3b presents estimates for families in which parents report no care needs. In each table, the first two columns contain the point estimates and standard errors where the outcomes are bequests and caregiving, and the second two columns contain point estimates and standard errors where the outcomes are life insurance and caregiving. I label the four sets of estimates (1) current caregiving, bequest; (2) current caregiving, life insurance; (3) expected caregiving, bequest; and (4) expected caregiving, life insurance. Bequest samples are restricted to families in which parents have either wills or no wills but positive bequeathable wealth, and life-insurance samples are restricted to families in which parents have life-insurance policies benefiting at least one child. Average partial effects (APEs) discussed in this section are evaluated at sample median characteristics.[13]

We begin with the observation that a child's number of sisters is indeed a strong predictor of caregiving and expected caregiving. The coefficient on number of sisters in the care equation is significantly negative at the 1 percent level in each of the four sets of estimates. APEs of moving from one to two sisters range from a two percentage point decrease in the estimated probability of caregiving in Model 1 to a four percentage point decrease in the estimated probability of being expected to care in Model 4. The effect of the total number of children is similar, though its magnitude is relatively small. The coefficient on the parent's number of children is negative in all four sets of estimates, and it differs from zero at the 1 percent level in all but Model 4. The APE of an increase from three to four children is relatively small, however, at roughly one percentage point in each of Models 1–3. In addition to building confidence in estimates of the effect of caregiving based on the exclusion of number of sisters from the second stage equation, these findings suggest that siblings' contributions of care to a shared parent crowd out a child's own care contribution, as predicted by the strategic parent-altruistic children model.

13. I use median characteristics for families in which parents hold either wills or insurance, as reported in Table 1. Thus median characteristics for the care-needs sample are {Child: married, 51 years old, daughter, two children, 12 years schooling, earns ≤$30k; Parent: 80 years old, mother, eight years schooling, four children, 1 IADL limitation, $21,700 net worth}. The no care-needs sample medians are: {Child: married, 47 years old, daughter, two children, 12 years schooling, earns >$30k; Parent: 76 years old, mother, 12 years schooling, four children, $59,200 net worth}.

The model in Section III also predicts that, all else equal, children with greater time obligations to their own spouses and children will be less willing to contribute care. Estimates in Models 1 and 2 demonstrate that married children with more children of their own are less likely to be current caregivers. The coefficients on a marriage indicator and on the child's number of children are negative and significantly different from zero at at least the 5 percent level in both models. In each case, estimated APEs imply a four percentage point decrease in the likelihood of care where the child is married and a one percentage point decrease in the likelihood of care where the child's number of children increases from one to two. On the whole, children with greater own family obligations do appear to provide less current care. Puzzlingly, parents without current care needs predict that children with more children of their own and, in Model 3, married children are more likely caregivers. To my knowledge, none of the care and transfer motives considered above and in the following section provide an explanation for the evident inaccuracy in parents' predictions.[14]

Although the theory in Section III indicates that nonlabor income increases the child's latent demand for contributed care, the effect of the child's wage on caregiving is ambiguous. An increase in the child's wage increases the value of her total time endowment, increasing her demand for both consumption and care. However, it also increases her cost of care, leading to opposing income and substitution effects of the wage on caregiving. Though children's earning capacities are imperfectly observed by their parents, and therefore imperfectly observed in the AHEAD study, a child's household income and current earnings provide some information on her likely wage. Table 3 estimates show a significant negative relationship between current household income and current or expected caregiving in Models 1, 3, and 4, a small, insignificant negative relationship in Model 2, and no significant relationship between the child's years of schooling and any measure of caregiving. Given the likely endogeneity of current earnings to current caregiving, these estimates do not provide decisive evidence that either the substitution or income effect of earning capacity dominates in the child's caregiving decision.

Our imperfect ability to determine children's wages in the AHEAD data leads to a potential omitted variable bias. Children's schooling and bracketed household income cannot fully reflect the foregone wages of childcaregivers. For this reason any regressor in the caregiving expression that is correlated with the unobserved component of the child's wage can be expected to pick up some of the effect of the wage on the probability that the child provides care. Child characteristics including gender and age are generally correlated with children's wages, and therefore the estimated effects of these characteristics on caregiving represent a combination of their true effects and the wage effect. While this is undesirable where one is interested primarily in the effects of child gender and age on eldercare, to the extent that schooling, income brackets, gender, and age are able to absorb the effects of the unobserved wage in the caregiving expression, the prediction of caregiver status will not suffer from the missing wage information.

14. One referee points out that parents' evidently inaccurate predictions of future caregivers suggest that they are based in part on parents' preferences among their children. If this is the case, then the remaining endogeneity problem in the fixed-effects estimates that follow will be greater in the no care-needs sample.

The estimates in Table 3 indicate that children who care for their parents or are expected to care for their parents are more often included in parents' wills and life-insurance policies, as predicted by the model. Coefficients on caregiving and expected caregiving are positive in all four sets of estimates and significantly different from zero at the 1 percent level in all but one. The coefficient on current caregiving in Model 1 has a *t*-statistic of roughly 1.4. The average treatment effect (ATE) of being a current or expected caregiver on the probability of being included in a parent's bequest or life-insurance policy for each sample is calculated as

$$\frac{1}{N}\sum_{i=1}^{N}\int\left(\frac{1}{J}\sum_{j=1}^{J}\left[\Phi\left(X_{ij}\beta+\delta+v\right)-\Phi\left(X_{ij}\beta+v\right)\right]\right)\frac{1}{\sigma_v}\,\phi\left(\frac{v}{\sigma_v}\right)dv.$$

In Model 1, I find that the average treatment effect of being a caregiver on the probability of a bequest is 0.8 percentage points, and, again, does not differ significantly from zero. In Model 2, however, being a caregiver increases the sample average probability of being included in a parent's life insurance by 32.0 percentage points. Children who are expected caregivers are, on average, 2.7 percentage points more likely to be included in their parents' bequests. Finally, expected caregivers are 14.6 percentage points more likely to be included in their parents' life-insurance policies.

The difference in the magnitudes of the ATEs of being a current or expected caregiver in the bequest and life-insurance models stems in part from the difference between the rates at which children are included in their parents' bequests and life-insurance policies. While 91.2 percent of children in the care-needs sample and 96.5 percent of children in the no care-needs sample are included in their parents' bequests, 70.1 percent of children in the care-needs sample and 66.3 percent in the no care-needs sample are included in their parents' life-insurance policies.

In each Table 3 specification, the null hypothesis that the family effect is zero is easily rejected. The variance of the family effect, as compared with the variance of the idiosyncratic probit error, which is fixed at one, reflects the relative importance of the family effect in explaining observed behavior. The variances of the family effects in the bequest estimates are large when compared with both 1 and the variances of the family effects in the life-insurance estimates. This is not surprising given the frequency with which parents include all of their children in their estates.

Maximum likelihood estimates of correlation coefficient ρ in each set of estimates provide a test for the endogeneity of caregiving to the end-of-life transfer. In Model 1, the null hypothesis of zero correlation is easily rejected using a *t*-test. The correlation coefficient is significantly positive, indicating the expected positive association between the unobservable factors that determine caregiving and bequests. Surprisingly, the estimated correlation coefficients in the other three sets of estimates are negative. In two of these three the null hypothesis of zero correlation is also rejected, indicating a need for the joint estimation of end-of-life transfers and care, but evidently for reasons other than those proposed above.

Overall, the estimates demonstrate that caregivers and predicted caregivers more commonly receive end-of-life transfers than their noncaregiving siblings, and that the difference in whether caregivers and noncaregivers can expect transfers is most pronounced for the case of life insurance. They therefore provide some support for the model implication that parents bequeath preferentially to

Table 3a
Maximum Likelihood Estimates

	Care-needs Sample				
	Model 1			Model 2	
Independent Variable	Bequest	Caregiver		Life Insurance	Caregiver
Constant	10.345†	−2.003†		−0.965**	−1.849†
	(0.920)	(0.299)		(0.413)	(0.439)
Gender of child (f = 1)	0.348†	0.412†		0.130†	0.392†
	(0.103)	(0.041)		(0.050)	(0.056)
Age of child × 10^{-2}	−2.348†	−0.506*		1.114†	0.079
	(0.694)	(0.303)		(0.377)	(0.391)
Child's schooling/10	0.927†	0.088		1.081*	−0.045
	(0.211)	(0.090)		(0.114)	(0.118)
Child married	−0.606†	−0.168†		0.297†	−0.149**
	(0.117)	(0.047)		(0.062)	(0.064)
Child's number of	−1.313†	−0.248**		−0.346**	−0.378**
children/10	(0.288)	(0.121)		(0.149)	(0.169)
Child earns ≥30k	−0.350†	−0.235†		−0.067	−0.293†
	(0.120)	(0.053)		(0.072)	(0.073)
Parent unsure ≥30k	−0.661†	−0.344†		−0.112	−0.236†
	(0.141)	(0.054)		(0.068)	(0.075)
Parent's number of	−0.474*	−0.577†		−1.481†	−0.609†
children/10	(0.261)	(0.145)		(0.123)	(0.209)
Parent's net worth × 10^{-6}	3.908†	−0.504*		1.330†	−0.990**
	(0.729)	(0.293)		(0.474)	(0.422)
Parent's net worth^2 × 10^{-12}	−1.299	−0.037		−0.049	0.363
	(0.844)	(0.229)		(0.788)	(0.370)
Age of parent × 10^{-2}	−3.891†	1.246†		−0.574	0.963*
	(1.038)	(0.421)		(0.550)	(0.584)
Sex of parent (f = 1)	0.287*	0.263†		−0.009	0.093
	(0.154)	(0.063)		(0.079)	(0.087)
Parent's schooling/10	−0.083	− 0.078		0.472†	0.194**
	(0.166)	(0.061)		(0.086)	(0.087)
Parent's number of IADL	−0.321†	0.260†		−0.193†	0.248†
limitations	(0.043)	(0.016)		(0.024)	(0.024)
Child's caregiver status	0.230	—		1.736†	—
	(0.169)			(0.097)	
Child's number of sisters	—	−0.117†		—	−0.127†
		(0.022)			(0.036)
Dependent variable mean	0.912	0.131		0.701	0.137
Log likelihood	−1250.95	ρ : 0.177†	ln$L$	−1124.51	ρ : −0.247†
Number of children,	2534, 730	(0.058)	# k,p	1337, 398	(0.038)
families		σ_v : 4.003			σ_v : 0.923
		(0.196)			(0.036)

Table 3b
Maximum Likelihood Estimates

	No Care-needs Sample				
	Model 1			Model 2	
Independent Variable	Bequest	E Caregiver		Life Insurance	E Caregiver
Constant	6.905†	−0.668*		−3.114†	−1.485†
	(1.159)	(0.379)		(0.869)	(0.575)
Gender of child (*f* = 1)	0.350†	0.639†		0.056	0.755†
	(0.125)	(0.040)		(0.056)	(0.062)
Age of child × 10^{-2}	−5.240†	0.388		1.580†	0.044
	(0.980)	(0.292)		(0.400)	(0.398)
Child's schooling/10	0.662†	−0.042		1.004†	−0.142
	(0.228)	(0.088)		(0.114)	(0.126)
Child married	0.091	0.086*		−0.052	−0.072
	(0.156)	(0.050)		(0.067)	(0.072)
Child's number of children/10	−1.245†	0.256*		0.313*	0.877†
	(0.393)	(0.131)		(0.178)	(0.190)
Child earns ≥30k	−0.339**	−0.247†		0.218†	−0.100
	(0.170)	(0.052)		(0.070)	(0.077)
Parent unsure ≥30k	−0.854†	−0.249†		0.009	−0.196**
	(0.187)	(0.060)		(0.078)	(0.090)
Parent's number of children/10	0.400	−0.460†		−1.706†	−0.194
	(0.377)	(0.171)		(0.161)	(0.265)
Parent's net worth × 10^{-6}	4.209†	−0.039		4.172†	−0.975**
	(0.505)	(0.162)		(0.633)	(0.487)
Parent's net worth × 10^{-12}	− 0.857†	−0.034		−2.783**	1.045*
	(0.187)	(0.068)		(1.091)	(0.582)
Age of parent × 10^{-2}	−0.0006	−1.032**		3.008†	−0.0504
	(1.517)	(0.500)		(0.732)	(0.727)
Sex of parent (*f* = 1)	1.105†	0.085		−0.244†	0.056
	(0.174)	(0.052)		(0.072)	(0.073)
Parent's schooling/10	0.528†	0.010		0.353†	0.202*
	(0.212)	(0.076)		(0.099)	(0.108)
Child's caregiver status	1.347†	—		1.085†	—
	(0.257)			(0.107)	
Child's number of sisters	—	−0.107†		—	−0.146†
		(0.024)			(0.036)
Dependent variable mean	0.965	0.101		0.663	0.103
Log likelihood	−1192.13	ρ : −0.070	ln*L*	−1134.37	ρ : −0.095**
Number of children,	2,973, 930	(0.095)	# *k,p*	1,452,421	(0.041)
families		σ_v : 3.732			σ_v : 1.111
		(0.213)			(0.040)

Table 3a and b bequest samples include all Table 1 families in which parents have either wills or no wills but positive bequeathable wealth. Life-insurance samples include all Table 1 families in which parents have life-insurance policies benefiting at least one child. Stepchildren, but not all stepparents, are excluded from the estimation. * indicates significance at the 10 percent level, ** at the five percent level, and † at the 1 percent level.

children in the set of lifetime caregivers; further, as the strategic parent-altruistic children model would suggest, some planned end-of-life transfers reward care that has not yet been provided.

As discussed in Section IV, the magnitude of the difference in end-of-life transfers received by caregiving and noncaregiving siblings is of interest as a measure of the extent to which bequests compensate children for the large transfers of time they make to their elderly parents. It also provides an indication of how likely care-motivated end-of-life transfers are to exert meaningful influence on the eldercare supplied by families. In order to determine the difference in transfer dollars designated for caregiving and noncaregiving children of the same parent, I estimate a fixed-effects specification of the division of intended bequests and life insurance. This approach requires that the sample be narrowed to families in which parents have wills or life-insurance policies that treat their children differently. As reflected in Table 2, 252 unmarried parents with ongoing care needs, with a combined total of 1,002 children, report demographic information on two or more children and divide their end-of-life transfers unequally; 257 unmarried parents with multiple children and no current care needs, who combined have 924 children, meet the data requirements and divide end-of-life transfers unequally. I use data on these two family groups to estimate fixed-effect models of the estate-division choices of parents with and without care requirements.

Table 4 reports the results of mean and median fixed-effects regressions of end-of-life transfers from parents to children on children's characteristics and actions. Children who provide care receive an average of $11,303 more in end-of-life transfers, or $651 at the median, relative to their noncaregiving siblings. Each of these differences is significant at the 1 percent confidence level. Children of parents without current care needs who are expected to provide care receive an average of $22,301 more in end-of-life transfers, or $1,329 at the median, than their siblings who are not expected to care. The coefficients on expected caregiving also differ significantly from zero at the 1 percent level of confidence. However, these estimates do not correct for the possible endogeneity of caregiving. The number of sisters a child has, given total number of siblings, does not vary separately from the child's gender within families, and thus the one viable instrument proposed by this paper cannot be used in a fixed-effects specification. Given the estimated correlation coefficients in Table 3, it is not clear whether the failure to account for the endogeneity of care can be expected to bias these estimated differences in end-of-life transfers up or down.

There is a concern here that parents select themselves into the set of unequal dividers based on the same factors that determine the difference in bequests to children conditional on unequal division. Among parents with (without) long-term care needs who meet the requirements for this sample excepting unequal division, 494 (641) include all of their children in their wills, or have no wills, and treat their children equally in any existing insurance policies. Each family in this group in which some use child cares and another doesn't represents a zero transfer premium to the caregiver. As a result, the fixed-effects estimates of the transfer premia to caregivers and expected caregivers must be viewed as overestimates of the true transfer gain associated with caregiving.

Table 4
Family Fixed-Effect Regressions of End-of-life and Inter-vivos Transfers on Child Characteristics

Dependent Variable	End-of-Life Transfers		EOL, Median Regression		Inter Vivos Transfers	
Sample	Care needs	No Needs	Care Needs	No Needs	Care Needs	No Needs
Independent Variable						
Gender of child (f = 1)	1374.70	–1854.47	106.76	101.57**	447.15	–12.06
	(2849.9)	(4093.1)	(78.04)	(50.34)	(602.5)	(320.1)
Age of child	349.92*	–444.84	3.303	3.557	–82.09	–46.27
	(195.4)	(332.4)	(6.101)	(4.085)	(50.27)	(28.78)
Child's years of education	654.26	1314.76	50.80**	43.98†	–62.81	–3.18
	(631.1)	(1025.8)	(19.82)	(12.49)	(151.6)	(27.11)
Child's marital status (m = 1)	–7,463.81**	214.99	–81.87	–51.58	–1167.00	–193.65
	(2994.6)	(5156.3)	(93.99)	(63.31)	(795.3)	(411.4)
Number of child's children	–1,382.28*	926.10	–41.86*	11.36	720.05†	418.15†
	(710.7)	(1438.0)	(22.33)	(17.72)	(197.2)	(121.0)
Child earns ≥30,000	1,061.44	–4,433.77	–124.34	120.33*	–1,301.76	–899.87**
	(3,713.0)	(5,943.9)	(116.07)	(72.93)	(872.2)	(434.8)
Parent unsure ≥30,000	–3,124.05	13,710.23*	–244.47**	–6.98	–677.72	–1,253.57*
	(3,889.7)	(7,955.7)	(121.50)	(97.91)	(1,162.8)	(682.0)
Child supplies care indicator	11,302.60†	—	651.25†	—	–154.02	—
	(3,733.5)		(121.14)		(918.6)	
Child expected to care if needed	—	22,301.16†	—	1,329.13†	—	–803.61
		(6,570.6)				(504.9)

Table 4 (*continued*)

Dependent Variable	End-of-Life Transfers		EOL, Median Regression		Inter Vivos Transfers	
Sample	Care needs	No Needs	Care Needs	No Needs	Care Needs	No Needs
Independent Variable						
R^2 (pseudo R^2)	0.6383	0.6713	0.0040	0.0059	0.6252	.8194
F test of H_0 $\alpha_i = \alpha_0\ \forall_i$	3.81	4.14			2.56	7.32
$\Pr(F(n, d) > f)$[a]	<.01	<.01			<.01	<.01

Each end-of-life transfer sample includes all Table 3 families with the relevant care requirements in which parents have wills or life-insurance policies that treat their children differently. Each inter vivos transfer sample includes all Wave 1 families in which parents are single, widowed, or divorced, answer all relevant transfer and demographic questions, and report different gifts to two or more children in the year preceding the survey.* indicates significance at the 10 percent level,** at the 5 percent level, and † at the 1 percent level.

a. End-of-life transfer sample with care needs, 252 families, 1,002 children; end-of-life transfer sample without care needs, 257 families, 924 children. Inter vivos sample with care needs, 113 families, 372 children; inter vivos sample without care needs, 246 families, 732 children.

B. Bequest and Informal Care Motives

Estimates in Tables 3 and 4 allow us to examine existing bequest motive hypotheses applied to the case of informal eldercare. One standard description of parents' motives for transferring to their children is that parents care about their children's consumption. Models of altruistic bequests, for example that of Wilhelm (1996), generally predict that altruistic parents compensate less well-off children. Where bequests are motivated by parents' altruistic concern for children's consumption, we expect a negative relationship both within and across families between children's end-of-life transfers and their permanent incomes.

A second rationale for parental transfers is the strategic hypothesis of Bernheim et al. and of Cox (1987). Cox demonstrates that a parent's decision to engage in exchange with her child should respond negatively to the child's income, since the effective price of the first hour of the child's services is increasing in the child's income. While Cox models the strategically motivated parent's decision to make an inter-vivos gift, Bernheim et al. study the bequest chosen by a parent with both altruistic and strategic interests in transferring to her child. In their framework, the parent always bequeaths something to the child and the child always provides services in equilibrium, so that the theory in Bernheim et al. does not help us in our analysis of disinheritance. Applying the argument of Cox, then, to the case of a parent who chooses children with whom to engage in a bequest exchange, one may reasonably infer that the parent will prefer to engage in exchange with lower-income children. Therefore I conclude that both altruistic and exchange hypotheses of parents' bequest motives imply that the probability of bequest receipt for a child decreases with the child's income, all else equal.

However, the strategic parent-altruistic children model predicts an ambiguous influence of the child's wage on whether the child belongs to the set of caregivers, as described above. Thus it predicts an ambiguous influence of the child's income on whether the child receives an end-of-life transfer. In general, where the parent uses her bequest to enrich child donors, it is true that children with greater earning capacities experience greater wage costs of donated hours. At the same time, they may be more able helpers based on their financial positions or unobserved capacities for assistance. The difference in the predications of the three models of transfers provides the grounds for a test of transfer motives. Where the probability of transfer receipt decreases with child income, any of the three theories may be valid. However, where the probability of transfer receipt does not decrease with child income, only the strategic parent-altruistic children model applies.

The child's schooling and the indicator for whether the child's household income is above $30,000 are the best available measures of a child's individual income or earning capacity available to us. The estimates reported in Table 3 show mixed evidence regarding the influence of children's earning capacities on their receipt of bequests and life insurance. Children with more schooling are included in parents' wills and life-insurance policies significantly more often in each of Models 1–4. Estimated APEs imply 1.0 and 0.5 percentage point increases in the probability of being included in a parent's bequests for college graduates as compared with high school graduates, and 11.4 and 6.7 percentage point increases in the probability of being included in a parent's life insurance for college graduates relative to high school graduates.

Based on the education coefficients, one might infer that higher earners are actually more likely to receive end-of-life transfers from their parents. Such an argument disregards the likelihood that more altruistic parents may both invest more in their children's schooling and decide more often to give to their children through wills and insurance. If this were the case, then the education coefficients estimated here would be biased upward. Of course, the bias required to generate the estimated associations given a true negative association between children's earning capacities and transfer receipt would be quite large. This would require a substantial degree of parental altruism in the determination of both children's schooling and transfer receipt.

Next we turn to the children's incomes. Children whose family incomes fall below $30,000 are significantly more likely to receive bequests. The estimated APE of a child earning less than $30,000 on the probability of bequest receipt is one percentage point in Model 1 and six percentage points in Model 3. Life insurance, by contrast, shows no significant relationship with income in Model 2 and goes to high income children significantly more often in Model 4. Finally, even in bequest Models 1 and 3, high school graduates earning less than $30,000 and college graduates earning more than $30,000 are roughly equally likely to receive bequests. On the whole, the estimates provide mixed evidence regarding the effects of children's earning capacities on their receipt of bequests and insurance.

The fixed-effects estimates show little evidence that parents compensate either lower earners or children with less education through the division of their estates. In fact, among children whose parents are unequal dividers, the estimates indicate (insignificant) increases of $654 and $1,315 in expected transfers to children with each year of schooling, and the median fixed-effects estimates imply significant increases of $51 and $44 with each year of schooling. Further, the greater frequency with which low earners receive bequests does not translate to larger end-of-life transfer amounts to lower earners within families. In all Table 4 specifications, child earnings show either no association or a positive association with the dollar amount of end-of-life transfers. The lack of evidence of compensatory division of bequests within families matches Wilhelm's findings in estate tax return data on wealthy U.S. parents. These estimates imply that children with lower earning ability are not compensated through end-of-life transfers, contrary to the predictions of the altruistic bequest hypothesis.

The implications for the standard exchange framework are less decisive. It is clear that the probability of life-insurance receipt does not decrease with children's earning capacities, and thus that the parents' life-insurance arrangements do not fit the predictions of the standard exchange model. However, for a given level of schooling, lower earners are more likely to receive bequests. Thus the standard exchange model might be reconciled with the behavior of observed bequests but not life insurance. Such a reconciliation would rely on strong enough parental altruism to drive the association between schooling and bequest receipt, and yet weak enough parental altruism to generate no compensation of lower earners in the division of transfer dollar amounts.

According to both Bernheim et al. and Cox and Rank (1992), altruistic and strategic motives are both likely to be present in parents' transfer decisions. Cox and Rank emphasize the question of the relative importance of the two types of motives to realized transfers. If we make the related assumption that the exchange of care for care-contingent transfers is part of what motivates observed parent-child transfers and eldercare, then we can investigate the amount of care that may plausibly be motivated by contingent financial transfers. Children do not appear to be motivated to care for their parents in the AHEAD study in response to a spot wage for care. Echoing the findings of McGarry and Schoeni for the broader AHEAD sample, Table 4 estimates of the division of inter-vivos transfers in the sample of unmarried parents show no significant association between current or expected care provision and children's shares of gifts and loans from their parents.[15] In addition, only 73 of the 8222 AHEAD Wave 1 respondents and spouses report paying their children for care. The wages of paid childcaregivers can be approximated using reported hours of care and payments for care among these 73 parents. The approximation generates an average hourly wage to paid children of less than $1 per hour. Thus the available evidence suggests that the large transfer of care hours from children to parents observed in the AHEAD study is not motivated by concurrent payment, either stated or implicit.

The average end-of-life transfer differences between current caregivers and noncaregivers of $11,302, and between siblings expected and not expected to care of $22,301, appear large enough to exert meaningful influence on care decisions. However, caregiving children of parents who are unequal dividers in the estimation sample supply an average of 23 informal care hours per week. At this rate, the average bequest wage for caregiving children would be $9.45 per hour if the intensity of informal care were constant and if the lifetime duration of informal care for each caregiving child were one year. As the period over which informal care takes place increases from one year, the bequest wage to caregivers falls further below $10 per hour. The median regressions in the last columns of Table 4 cast more doubt on the hypothesis of selfish exchange. At the same time, it is worth noting that we can infer from the within family median regressions reported in Table 4 that current and expected caregivers receive larger transfers than their noncaregiving siblings with a high level of confidence.

The approximations of the difference in end-of-life transfers to caregivers and noncaregivers among parents who divide their estates unequally, combined with the above observation that the effective transfer wage to caregivers is zero among the children of equal dividers, indicate that purely selfish exchange cannot plausibly motivate the large number of long-term care hours children provide their parents in the AHEAD study. If care-contingent bequests are feasible for parents with long-term care needs, then we might infer from the above estimates that contingent bequests buy some care from children, but that the amount of care motivated by exchange is small relative to the amount that children provide out of purely altruistic concern for their parents. The standard exchange motive in this case would appear to be a small but significant component of the motives of older families who have achieved this stage of life.

However, one must add to the analysis the physical and legal limitations on the ability of older parents in declining health to make enforceable changes in their wills in response to realized care from children. Sacks (2002), for example, reports that in order to execute a will the testator must "(A) understand the nature of the testamen-

15. As in Dunn and Phillips (1997) and Hochguertel and Ohlsson (2000), the results also indicate compensatory inter-vivos transfers but not compensatory bequests.

tary act, (B) understand and recollect the nature and situation of the individual's property, [and] (C) remember and understand the individual's relations to living descendants, spouse, and parents, and those whose interests are affected by the will." To the extent that a parent with long-term care needs is unable to make bequests that are contingent on realized care, or otherwise revise her will, the standard exchange model is inapplicable to the interaction of older parents and their children over informal care arrangements. The findings of Sloan et al. and the prevalence of will contests based on testamentary capacity and undue influence suggest that this may be the case.

However, an extension of the strategic bequest hypothesis to accommodate multiple altruistic children answers some of the theoretical and empirical challenges facing the standard exchange framework. First, in the strategic parent-altruistic children approach the effect of the bequest on children's caregiving functions entirely through the children's altruistic concern for the parent's care. Parents need not pay caregiving children spot wages or construct credible threats to disinherit noncaregivers. Second, the influence of enriching child donors on the care received by the parent implies that any parental transfer that increases the resources available to children when care decisions are made may increase total care. Thus the positive association between prior transfers and caregiving shown by Henretta et al. (1997) and the evidence in Tables 3 and 4 of a highly significant positive association between both current and expected caregiving and children's end-of-life transfer shares may be the result of parents' strategic behavior. Third, the strategic parent-altruistic children approach reconciles strategic parental behavior with the finding that children with greater earning capacities are no less likely to receive life-insurance settlements and may be no less likely to receive bequests.

Other characteristics of the model in Section III that are supported by the estimates are the altruistic motivation and interdependence of children's caregiving decisions, and the role of competing time demands in children's caregiving decisions. The estimates indicate that children provide more care to parents in more physical need, through the positive dependence of caregiving on parents' ages and IADL limitations. Crowd-out of a child's care contributions by siblings' caregiving is evident in the effects of the child's number of siblings and number of sisters on estimated caregiving probabilities. Outside demands on children's time, as measured by children's marital status and number of children, diminish care contributions. These results suggest that the resource-constrained but altruistic care contribution specified in Section III may be a realistic description of children's choices.

VI. Conclusions

Children are the primary source of noninstitutional long-term care for unmarried elderly parents in the U.S.-representative AHEAD study, providing roughly three times the monthly hours of care supplied to parents by paid and unpaid nonrelatives and organizations combined. Given that this substantial transfer of time from adult children to their elderly parents is not compensated directly, I examine the relationship between parents' estate-division choices and the care they receive or expect to receive from their children. Theories of the explicit exchange of bequests for eldercare may be unconvincing or unpalatable, in that they require disabled elderly parents to condition their bequests on realized care from children, and children to withhold care from parents in poor health whose bequeathable assets dwindle.

I construct a model of family interactions over the division of end-of-life transfers and eldercare in which siblings may altruistically provide care for a shared parent. The selfish parent is not able to condition bequests on realized care, but may commit to any fixed division of her bequeathable assets among her children. Bequests behave as nonlabor income for children, and a bequeathed dollar increases the consumption of both a private good and parental well-being by any child who contributes care to the parent. As a result, parents transfer preferentially to children who are lifetime caregivers, and the children's altruism itself cements their commitment to provide care in response to parental transfers.

Data drawn from the AHEAD study are well suited to the examination of the relationships between intergenerational transfers and long-term care within the family, with information on respondents' bequeathable assets and transfer intentions, hours and types of care supplied by their children, and even parents' expectations about future care. Estimates of the dependence of end-of-life transfer receipt on children's characteristics indicate that parents more often make end-of-life transfers to children who provide them with regular care and to the children they expect to care for them should the need arise.

Estimates of the division of end-of-life transfers by unmarried AHEAD study parents of multiple children do not reflect compensation of lower earners or of children with less schooling, and therefore do not support the hypothesis that these parents' estate-division choices are motivated by conventional economic altruism. A test based on children's probabilities of bequest or life-insurance receipt, the relative magnitudes of care hours from children and the bequest premium to caregivers, and disabled parents' potential inability to enforce care contingencies suggest a limited role for the exchange of care for care-contingent transfers in these families. However, a model of strategic bequests that includes multiple altruistic children is able to reconcile the predictions of the strategic hypothesis with these features of the data.

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