BARGAINING POWER AND INTERGENERATIONAL CORESIDENCE: ADULT CHILDREN AND THEIR DISABLED ELDERLY PARENTS

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Abstract

In this paper, we use a game-theoretic framework of families' living and care arrangements to formulate an empirical model of the effects of changes in parent-child coresidence on time transfers by adult children of unpartnered disabled elderly parents. Our theoretical framework suggests that children recognize that if they coreside with the parent, then their siblings may respond by reducing their transfers of time to the parent. In general, our results support the notion that coresidence reduces the bargaining power of coresiding children relative to their non-coresident siblings. We observe significant reductions in the likelihood of providing informal care and in the intensity of care provided by children with siblings who begin to reside with their parent relative to children with no sibling who lived with a parent in either point in time. Similarly, children increase their likelihood and intensity of care provision when siblings no longer coreside with a parent. These findings highlight the importance of understanding the dynamics of family interactions when evaluating long-term care policies.

Introduction

Because of gradual deterioration with age or sudden health shocks, elderly persons face a considerable probability of becoming disabled and unable to care for themselves. Roughly one-third of all persons 65 and older also have mobility limitations (Freedman and Martin 1998; Freedman et al. 2000); about 20% of older U.S. adults have other chronic disabilities (Manton and Gu 2001). Recent evidence suggests a downward trend in the age-adjusted prevalence of disability and functional limitations, raising hope that long-term care burdens on families and public programs will be less than feared. At the same time, growth in the elderly population and evidence that the *level* of disability of those who are disabled has increased (Spillman and Pezzin 2000) suggest that the direction of change in the overall demand for long-term care is uncertain.

Long-term care is often the resultant of numerous individual and joint decisions by family members with different preferences facing different constraints. Family members, most notably, adult children, not only make caregiving decisions on behalf of disabled family members but often provide hands-on care themselves and share the financial consequences of caregiving decisions.

The unpartnered elderly are of particular policy interest because they are far more likely to be institutionalized (Freedman 1996) and are far more likely to reside with or receive transfers from their children than are their married counterparts (Dwyer and Coward 1991). We focus on the role of children in providing care for two groups of unpartnered elderly parents: the widowed and the divorced/separated. We ignore a third group of unpartnered elderly parents, the never married, because they are poorly represented in our data set. We focus on the unpartnered elderly because the presence of a spouse changes the incentives and constraints facing parents and children, and generally diminishes the caregiving role of children.

The preferences of adult children may differ from those of their siblings and from those of their disabled elderly parent. Differences may arise about the type of care the disabled elderly receive and about the setting in which they receive it. For example, a child may want a parent to

receive care from a family member, rather than be cared for in a nursing home, but may prefer that a sibling provide the care. Uncertainty about the parent's future health and informational asymmetries among family members further complicate family caregiving decisions. The possibility of conflict as well as cooperation regarding caregiving and the role of different family members in providing care suggests that family members may have incentives to behave strategically.

Coresidence is an important mode of support from adult children to their disabled elderly parents.[1] Coresidence has been linked to both economic well-being and health of elderly persons. A number of studies have shown that transfers provided in the context of coresidence are distinct from provision of resources to noncoresident family members (Aquilino 1990; Börsch-Supan et al. 1992; Lee and Dwyer 1996; Davis et al. 1997). For example, disabled elderly parents who coreside with adult children are less likely than their non-coresiding counterparts to make a transition into a nursing home (Garber and MaCurdy 1990; Kemper and Pezzin 1996; Dostie and Leger 2003). Moon (1983) provides some evidence to support the notion that coresidence affects the health of disabled elderly persons, finding that those who were cared for in the home of a family member have better health outcomes than those initially in similar health who were cared for in an institution.

Coresidence may also benefit the child. Economies of scale and scope in household production and the opportunity to spread the cost of household public goods over more users make residence sharing more efficient than providing similar services without coresidence. In addition, sharing a household reduces the time cost of providing care by eliminating travel time. Coresidence, however, entail costs, especially in reduced privacy.

In this paper we examine the effect of changes in intergenerational coresidence on the informal (i.e., unpaid) care that adult children provide to their disabled elderly parents. We

[1] There has been a secular trend toward living alone among the elderly (Kotlikoff and Morris 1990; Costa 1998, 1999).

examine both the probability that a child will provide care and the intensity (i.e., the number of hours) of care. Also, because informal and formal (i.e., paid) care are potential substitutes, we examine the effect of changes in coresidence on the parent's use of formal care.

Although theory predicts that parent-adult child's coresidence will reduce the contributions of non-coresident children, it does not predict the effect of coresidence on the parent's use of formal care. Whether coresidence with an adult child increases or decreases an elderly parent's use of formal care is an empirical question that depends on the magnitude of the changes in contributions of the coresident child and the non-coresident children.

Our theoretical framework suggests that children making decisions about caregiving and living arrangements recognize that their decisions will affect their siblings' behavior. More specifically, children recognize that if they coreside with the parent, then their siblings may respond by reducing their transfers of time and money to the parent. That is, theory suggests that coresidence may reduce the relative bargaining power of a coresiding child. Recognizing the likely responses of their siblings to coresidence, children will be less willing to coreside with a disabled elderly parent.

The literature is replete with studies examining the determinants of elderly living arrangements, including intergenerational coresidence, and of adult children's transfers of time and money to their elderly disabled parents. Most of these studies have focused on a particular child, an "index child," and have ignored other children (Börsch-Supan *et. al.* 1989, Kotlikoff and Morris 1990, Börsch-Supan *et. al.* 1992, Börsch-Supan, McFadden and Schnabel, 1993; Wolf 1984, 1995; Stern 1994 and 1995, Hoerger, Picone and Sloan 1996, Pezzin et al 1996; Kemper and Pezzin, 1996; Costa 1999). Other studies, still focusing on an index child, include variables representing the characteristics of the other children in the parent's network (Kotlikoff and Morris 1990; Pezzin and Schone 1999 and 2002; Stern 1993 and 1995). Only a few studies (Heidemann and Stern 1999, Engers and Stern 2002 and Checkovich and Stern 2002) explicitly model strategic interactions among the children.

2. Conceptual Framework

Game-theoretic models are especially suitable for analyzing intergenerational living and transfer arrangements. Such models not only recognize the divergent and often conflicting preferences of family members but also specify a process for translating these preferences into outcomes. Building on research that has modeled intrahousehold allocation within a game-theoretic framework (Manser and Brown 1980; McElroy and Horney 1981; Lundberg and Pollak 1993, 1994, and 2003), in this section we describe the game that serves as the point of departure for our empirical work.[2]

We model family interactions as a two-stage game with three players: a disabled elderly parent and two adult children. The first stage is noncooperative and determines living arrangements. A specific example illustrates the general point. At the first stage, the children decide, separately and simultaneously, whether or not to invite the parent to coreside; then the parent chooses among the feasible living arrangements: she can move into a nursing home, live on her own, or accept the invitation of any child who has invited her to coreside. At the second stage, the parent and the children take the living arrangement determined at the first stage as given and make decisions that determine resource allocation under that living arrangement. The second stage could be modelled as a noncooperative game or a cooperative game. Alternatively, we can finesse some but not all of the difficulties of modeling the second-stage game by postulating an "allocation rule." In the context of our model, an allocation rule is a reduced form corresponding to an unspecified second-stage bargaining game. The allocation rule specifies each family member's second-stage behavior as a function of the living arrangement, which was determined at the first stage, of the economic and demographic characteristics of the parent and the children, and of all relevant policy variables (e.g., the availability of tax credits or subsidies for long-term care).

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[2] The theoretical discussion in this section draws on Pezzin, Pollak and Schone (2006).

Our allocation rule is adopted and adapted from the sharing rule of Chiappori (1988, 1992). By beginning with the allocation rule, we can avoid not only the need to analyze the second-stage game but also the need to specify it, or even to specify whether it is cooperative or noncooperative. In the context of allocation between spouses within marriage, Chiappori postulates a Pareto- efficient sharing rule without attempting to derive it from an underlying model of bargaining within marriage. We use the allocation rule to analyze family bargaining over long-term care, but, unlike Chiappori, we do not assume that our allocation rule is Pareto efficient.[3]

Regardless of whether the allocation rule is derived from an explicitly specified second-stage game or postulated directly, we assume that family members are unable or unwilling to make binding agreements at the first stage regarding transfers or allocations at the second stage. Hence, the transfers that a child makes at the second stage are determined, or at least ratified, at the second stage: they do not mechanically implement binding agreements made at the first stage.

Like any dynamic game, our two-stage sequential game is solved by backwards induction. We begin by calculating the allocation rule corresponding to the second-stage game. We then consider the first stage game which determines the living arrangement, taking into account the allocation rule for the second stage. The crucial characteristics of our two-stage game are: (i) the first stage involves a big, up-front decision (i.e., the choice of a living arrangement) that affects second stage bargaining power, and (ii) family members cannot or will not make binding commitments regarding their future behavior. In what follows, we focus on the implications for family bargaining of the living arrangement that emerges as the outcome of the first stage game. The testable implications of coresidence are the core of our empirical work.

Consider an equilibrium of the first stage game in which the parent lives with one of the

[3] Like Chiappori, we assume that our allocation rule is single-valued. In Pezzin, Pollak and Schone (2006) we relax this assumption, but nonuniqueness complicates the analysis.

children. We argue that, with two or more children, coresidence strengthens the bargaining power of the noncoresident child and correspondingly weakens the bargaining power of the coresident child. The noncoresident child, knowing that the coresident child is acutely aware of the parent's needs and cannot easily evict the parent, can contribute less knowing that the coresident child will take up much of the slack.

Regardless of the structure of the game between the parent and the children, coresidence presents two issues that cannot arise in the one child case. The first new issue involves coalition formation. Pezzin and Schone (1999, 2002) consider the one child case and assume that when the parent and the child coreside, their interactions are cooperative. The full implications of this assumption for the two-child case are unclear. It is tempting to follow Pezzin and Schone and assume that when the parent coresides with one of the children, interactions between the parent and the coresident child are a cooperative game.[4] Instead, we opt for an alternative to the assumption that the parent and the coresident child play a cooperative game by postulating an allocation rule for the coresident household.

Allocation within a coresident household poses issues related to those analyzed in bargaining models of marriage. They are similar in that both involve bargaining between two family members who live together. Furthermore, just as we need to analyze allocation within marriage to understand the marriage market, we need to analyze allocation within coresident households to understand the decision to coreside. With one child, allocation within the coresident household and the coresidence decision are the issues. With two children, allocation within the coresident household plays an additional role because the noncoresident child must

[4] The assumption that the parent and the coresident child play as a "team" is much stronger than the assumption that they play a cooperative game. The team assumption is justified only if the incentives of the parent and the coresident child are perfectly aligned. Perfect alignment implies that the actions of the noncoresident child that affect the resources of the coresident household cannot affect the relative bargaining power of the parent and the coresident child. If resource allocation within the coresident household is affected by whether the noncoresident child gives money to the parent rather than to the coresident child, then this assumption is violated. And if bargaining power is affected, then the interests of the parent and the coresident child are not fully aligned.

decide on time and cash transfers to the coresident household, taking account of the coresident household's allocation rule.

Empirical work on allocation within marriage establishes that resources controlled by the wife have a different effect on household expenditure patterns than resources controlled by the husband (Lundberg and Pollak, 2005). In the coresident household, control over resources may also affect behavior and, if it does, transfers received by the parent and transfers received by the coresident child will have different effects. Formally, resources controlled by the parent and resources controlled by the coresident child are separate arguments of the coresident household's allocation rule.

The second new issue that arises in the two-child case involves monitoring. The position of the noncoresident child parallels that of the noncustodial parent described by Weiss and Willis (1985, 1993) in their analysis of child support by divorced fathers. Weiss and Willis assume that the child's well-being is a public good valued by both parents, but that each parent is also concerned with his or her private consumption and unconcerned with the private consumption of the ex-spouse. The divorced father, because he does not live with the child, is poorly positioned to monitor his ex-wife's allocation of child support payments between her own consumption and the child. The difficulty of monitoring precludes binding, enforceable agreements, and the father is rationally concerned that his ex-wife will "tax" any contribution he makes by reducing her own support for the child. The Weiss and Willis argument implies that children will receive less than they otherwise would if enforceable agreements were possible. For our purposes, the essential analytical assumption is that family members outside the household cannot effectively monitor.

Long-term care and child support pose similar analytical issues. The position of the noncoresident child contemplating a contribution to the coresident household is analogous to that of the divorced father contemplating child support. The noncoresident child, concerned that the coresident child will exploit her position, will undercontribute to the coresident household relative to what she would contribute if binding, enforceable agreements were possible. This

result is consistent with the observation that care is usually concentrated with one "primary caregiver." [5] Our empirical work focuses on testing the hypothesis that siblings will reduce their contributions in the special case when a parent and child coreside.

3. Data and Variables

Data for this analysis are drawn from the Assets and Health Dynamics of the Elderly (AHEAD) survey. AHEAD is an ongoing panel that began in 1993 with a nationally-representative sample of individuals aged 70 and older living in the community.[6] Respondents are resurveyed biannually by the Survey Research Center at the University of Michigan. Because it is a panel, AHEAD provides information on changes in the economic status of respondents, along with changes in their health, family structure, and living arrangements. Specifically, AHEAD include questions in six broad categories: health measures (including self-assessed health, morbid conditions, cognition, mood, and activity limitations); income and assets; family structure and intergenerational transfers, including hours of help from all sources; housing; insurance; and pensions. For each respondent, the survey collects a roster of all household members, regardless of their relationship to the respondent, of all children of the respondent, and information on all other individuals who provide disability care. We use the full complement of household members, noncoresident children and helpers to identify everyone who provides formal or informal care to a disabled respondent.

We work with the subsample of respondents with chronic disabilities. We define a respondent as chronically disabled if, in both wave 1 and wave 3 of the survey, he or she has

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[5] An extreme case in which the position of the noncoresident child is essentially identical to that of the divorced father arises when the parent has a cognitive disability such as severe Alzheimer's that prevents her from playing a role in allocation decisions within the coresident household. Under these circumstances, the coresident child makes all allocation decisions in the coresident household, just as the mother allocates resources in Weiss and Willis.

[6] AHEAD, which is now a part of the Health and Retirement Survey (HRS), over sampled Blacks, Hispanics and residents of Florida.

difficulty with at least one of the five instrumental activities of daily living (IADLs) or difficulty with at least one of the six activities of daily living (ADLs).[7] We further restricted our sample to respondents who report their marital status as widowed or as divorced/separated, who have at least two adult children (over age eighteen), and who were living in the community in both waves 1 and 3 of AHEAD.

We constructed a child-level analysis file by creating individual records for every child identified by an AHEAD respondent who met our inclusion criteria. This resulted in a sample of 1,104 adult children, 16.3% of whom experienced a change in coresidence status with the parent between 1993 and 1998.

Our main dependent variables are indicators of adult children's transfers of time to their disabled parents. Our measure of time transfers is based on adult children's informal caregiving — assistance to a parent because of a health-related problem or disability. We measure informal care propensities (i.e., the probability of providing care) and intensity (i.e., the total hours of care). In addition to analyzing informal care provision, we also examine the propensity and intensity of formal care use by the parent. Formal home care represents a close market substitute for children's informal caregiving. Moreover, interactions among formal care, informal care, and institutional care are at the core of public policy debates over long-term care.

4. Estimation

We use a difference-in-differences estimator (Meyer 1994) to test our hypothesis that when one child begins to coreside with a disabled parent, the relative bargaining power of noncoresident siblings increases. More specifically, we examine the extent to which changes in children's time transfers across survey waves is associated with changes in their siblings'

[7] The IADLs are: grocery shopping, preparing meals, taking medications, using a telephone, and managing household finances. The ADLs are: transferring, dressing, bathing, toileting, eating, and walking across a room.

coresidence with the parent. For example, a finding that a child reduces her time transfers when her sibling begins to coreside with the parent is consistent with our hypothesis.

We begin by classifying children into four mutually exclusive groups, two "treatment" groups, $\{\Delta_I, \Delta_O\}$, and two control groups, $\{K_B, K_N\}$. The two treatment groups consist of families where there was change in coresidence, and the two control groups consist of families who experienced no such change. Specifically,

Δ_I consists of children for whom at least one sibling makes a transition into coresiding with a parent between survey waves 1 and 3;

Δ_O consists of children for whom all coresiding sibling(s) make a transition out of coresidence with the parent between waves 1 and 3;

K_B consists of children for whom at least one sibling coresides with the parent in both waves 1 and 3; and

K_N consists of children for whom no sibling coresides with the parent in either wave 1 or waves 3.

Using this classification, we model care from each child *j* (*j=1 ..J*) in family *i* as:

$$C_{ji} = X_i\beta + Y_j\gamma + Z_k\delta + \varphi * t + \alpha_1\Delta_I + \alpha_2\Delta_O + \alpha_3 K_B + \tau_1 * t * \Delta_I + \tau_2 * t * \Delta_O + \tau_3 * t * K_B + \varepsilon_{ji}$$

where C_{ji} represents the number of monthly parental care hours provided by child j in family i, X_i represents family (and parent) characteristics of the ith family, Y_{ji} represents a vector of child-specific characteristics for the jth child in family *i*, and Z represents characteristics of the other children in the ith family. Variables in X include demographic characteristics of the parent, such as age, gender, race/ethnicity and education; parental functioning, which is captured by counts of limitations in IADLs (ranging from zero to five) and ADLs (ranging from zero to six) and a binary variable for incontinence; and parental economic status, captured by the parent's current income and wealth, as measured by the parent's total net worth, all measured at wave 1.

Variables in Y include the index child's age, gender, education, marital status, and number of children. Variables in Z include the presence of any unmarried sibling, the presence of a sister, and the size of the sibling network. Both sets of variables are measured at wave 1.

The variable φ captures time effects (survey waves=1 or 3) while the vector $\{\alpha\}$ measures the effect of time-invariant "group" trends capturing underlying differences in families with and without a change in parent-child(ren) coresidence status. The key parameter estimates for our hypotheses are the interaction terms between wave and groups, the vector of variables $\{\tau\}$. They represent the *changes* over time in children's provision of parental care across waves for each group relative to children whose siblings did not live with the parent in either wave of the survey — that is, relative to K_N, our reference group. These variables measure the effect of time-varying "group" effects and provide a test of the hypothesis that time transfers to parents among children whose sibling(s) made a transition into (or out of) coresiding with the disabled parent differ from those of children whose siblings did not live with the parent in either wave.

We estimate the models using probit specifications for the propensities and Tobit specifications for the intensities (monthly hours of care) of child-provided care and formal care.

5. Results

Table 1 provides descriptive information on our dependent variables for each of the four mutually exclusive groups of children: those who had at least one sibling make a transition into coresiding with a parent between waves 1 and 3 (Δ_I=1); those whose formerly coresiding sibling(s) made a transition out of coresidence with the parent between waves 1 and 3 (Δ_O=1); those who had at least one sibling coreside with the parent in both waves 1 and 3 (K_B=1) and those who had no siblings coreside with the parent in either waves 1 or 3 (K_N=1). The last column of Table 1 shows the difference in the outcomes between the two waves. Therefore, difference-in-differences estimates can be obtained from the descriptive data by comparing the relative sizes of these differences.

Our theory predicts that children should provide less care due to increased bargaining power when a sibling begins coresidence with the parent relative to children who never have a sibling who coresides with the parent. The data are consistent with this expectation: The likelihood that a child provides informal care increases for those who never have a sibling move in (by 6 percentage points) while those who have a sibling move in actually have a decline in the likelihood of providing care (-2 percentage points), indicating that the difference-in-differences estimate is 8 percentage points (p=0.08). Similarly, we expect that care should increase for children who no longer have a coresiding sibling in the later time period relative to children who have a coresiding sibling in both time periods. The differences are substantial: children whose siblings move out increase the likelihood of care by 19 percentage points relative to a 2 percentage point increase for those children whose sibling lived with the parent in both waves. Thus, the difference-in-differences estimate of 17 percentage points ($p < 0.01$) is also consistent with our expectation that children who have a coresiding sibling move out should face a reduction in bargaining power. Finally we would also expect bargaining power to increase for those who have a sibling move in (and lower likelihood of providing care) relative to those children who have a sibling move out. The difference-in-differences estimate of 21 percentage points ($p < 0.01$) — 19 percentage points minus -2 percentage points from the third and first rows of Table 1 — are consistent with what we would expect.

Parental use of formal care, on the other hand, increased over time across all four groups of children but the increase was substantially higher among children whose sibling either moved in with the parent between waves or remained living with the parent across both waves. These results are generally consistent with our hypothesis that sibling coresidence reduces transfers by non-coresident children, but they do not control for important confounders such as the parent's level of disability. To control for these confounders, we turn to multivariate analyses.

Table 2 presents estimated parameters for the full models for each of the outcomes. Our results are generally consistent with the univariate statistics shown in Table 1. Perhaps the most

striking finding in Table 2 is the effect of a sibling transition out of coresidence (Δ_O) relative to children whose sibling did not coreside with the parent in either wave (K_N, the reference group). Children whose siblings ceased to coreside with the parent between 1993 and 1998 are significantly more likely to provide parental care in wave 3 than in wave 1. They also provide significantly more hours of care in wave 3 relative to wave 1, as indicated by the Tobit coefficients. These effects persisted despite controls for changes in parent's health and disability and for other factors likely to influence caregiving. Although the underlying coefficients on the interactions between wave and sibling's transition into coresidence (Δ_I) were not statistically significant at conventional levels, their direction is of interest: Parameter estimates indicate that children whose sibling makes a transition into coresiding with the parent are less likely to provide care themselves (p=0.14) and provide fewer hours of care (p=0.17) after parent-sibling coresidence than they did before relative to those whose siblings did not coreside with the parent in either time period. Both sets of results, therefore, are consistent with our hypothesis that non-coresident children take advantage of their increased bargaining power by reducing the care they provide.

For formal care, we find a consistent pattern of increased use among parents in wave 3 who experienced a transition to intergenerational coresidence. The finding of a significant increase in parental use of formal care among children whose sibling began coresiding with the parent suggests that increases in care provision by coresident children were more than offset by decreases in care provided by noncoresident children.

In addition to these main findings, the parameter estimates in Table 2 indicate that other factors are associated with child-to-parent transfers in predictable ways. Disability levels, for example, are strongly associated with both the likelihood and the intensity of care provided by children. Controlling for parental disability and other factors, children were more likely to provide care to their elderly mothers than to their fathers. In addition, although there were no

statistically significant differences in the propensity to provide care, children of Hispanic and Black parents provided more hours of care to their disabled parents than did their White counterparts. Black and Hispanic children, however, were more likely than White children to have parents who used formal care.

The parent's economic status, as measured by current income, decreased the probability that children provided care while increasing the probability that the parent purchased formal care. Sons (and their spouses, if married) were less likely than daughters (and their spouses, if married) to provide care to a disabled elderly parent; they were also more likely to have parents who relied on formal care. Consistent with the gendered nature of parental care, having a sister in the sibling network decreased the likelihood that the index child provided care: Children who had at least one sister were also less likely to have parents who used formal care. Being married and having more children was negatively associated with providing parental care; these competing demands on the time of the child were also negatively associated with the number of hours of care provided in a month. Finally, children with a larger sibling network were less likely to provide parental care.

6. Conclusion

A number of demographic trends suggest that the demand for long term care for older persons will increase in the near future. The impending increase in the number of and proportion of older adults has renewed interest in intergenerational relations and the role of families in providing for their elderly members. Interest in intergenerational family behavior has also been heightened by concerns about the combined effect of other demographic trends, including changing fertility patterns and family structure. A better understanding of the process by which families come to assume the responsibility and share the burden of caring for the disabled elderly is essential for designing and evaluating long-term care policies.

In this paper, we have used a game-theoretic framework of families' living and care arrangements to formulate an empirical model of the effects of changes in parent-child coresidence on time transfers by adult children of unpartnered disabled elderly parents. In general, our results support the notion that coresidence reduces the bargaining power of coresiding children relative to their non-coresident siblings. Specifically, we observe significant reductions in the likelihood of providing informal care and in the intensity of care provided by children with siblings who begin to reside with their parent relative to children with no sibling who lived with a parent in either point in time. Similarly, children increase their likelihood and intensity of care provision when siblings no longer coreside with a parent. These findings highlight the importance of understanding the dynamics of family interactions when evaluating long-term care policies.

As the U.S. explores creative policies to address the needs of its growing elderly population while maintaining them in the community, understanding implication of shared living arrangements — where family caregiving for the unpartnered elderly is likely to be concentrated —is an important aspect of the evaluation of such programs. Interventions that compensate for reduced transfers from noncoresident children — for example, dependent care tax credits or deductions for coresident caregivers — may prove cost-effective in promoting intergenerational

coresidence and reducing institutionalization.

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Table 1. Provision of Parental Care and Parent's Use of Formal Care by Child Type and Wave

Child Type	N	Child Provides Informal Care Wave 1	Child Provides Informal Care Wave 3	Difference
At least one Sibling moves in	103	0.18	0.16	-0.02
At least one Sibling coresides with Parent in both waves	239	0.06	0.08	0.02
Sibling moves out	77	0.12	0.31	0.19
No Sibling coresides with Parent in either wave	685	0.27	0.33	0.06
		Parent Uses Formal Care Wave 1	Parent Uses Formal Care Wave 3	
At least one Sibling moves in	103	0.16	0.29	0.13
At least one Sibling coresides with Parent in both waves	239	0.15	0.32	0.17
Sibling moves out	77	0.13	0.17	0.04
No Sibling coresides with Parent in either wave	685	0.25	0.29	0.04

Table 2 : Main Multivariate Regression Results

	Informal Care Propensity		**Hours of Informal Care**		**Formal Care Propensity**		**Hours of Formal Care**	
					Coefficien			
	Coefficient	SE	Coefficient	SE	t	SE	Coefficient	SE
Wave and Group Variables								
Time trend (t)	0.18**	0.08	19.21	14.81	-0.07	0.08	-3.62	4.59
Δ_I	-0.32*	0.17	-63.09**	31.60	-0.26†	0.18	-10.13	10.26
Δ_O	-0.69***	0.21	-145.38***	42.01	-0.62***	0.20	-33.21***	12.00
K_B	-0.92***	0.15	-162.25***	29.66	-0.41***	0.13	-21.06***	7.42
Δ_I* t	-0.34†	0.23	-62.74	45.84	0.33	0.23	22.73*	13.05
Δ_O* t	0.53**	0.26	91.89*	52.71	0.06	0.27	13.20	15.71
K_B* t	-0.11	0.20	-16.02	39.87	0.46***	0.16	18.94**	9.26
Parent's Characteristics								
1-2 ADLs	0.12†	0.08	45.94***	15.74	0.71***	0.08	36.80***	4.97
3+ ADLs	0.19**	0.09	67.80***	16.56	0.91***	0.09	59.66***	5.20
Age 85-89	0.05	0.08	3.78	16.21	-0.40***	0.08	-13.13***	4.82
Age 90+	0.27***	0.09	55.08***	17.72	-0.19**	0.09	-5.59	5.28
Educ < 12 yrs	0.17†	0.11	4.23	20.02	0.16†	0.11	3.15	6.18
Educ > 12 yrs	-0.19	0.15	-30.56	29.22	0.56***	0.14	42.25***	8.05
Male	-0.13	0.10	-25.49	18.50	-0.17*	0.10	-6.67	5.65
Black	0.13	0.09	32.35*	17.70	0.21**	0.09	4.17	5.35
Hispanic	0.08	0.10	57.85***	19.61	0.20**	0.10	16.57***	5.62
# of Children	-0.06***	0.02	-9.37***	3.02	-0.02†	0.01	-0.62	0.85
Divorced	-0.18	0.14	-18.64	26.28	-0.03	0.13	-7.91	7.60
Soc Sec Income	-8.5E-5***	0.00	-0.01***	0.00	-5.3E-5**	0.00	0.003**	0.00
Index Child's Characteristics								
# of Children	-0.05***	0.02	-11.55***	3.64	0.00	0.02	0.35	1.00
Partnered	-0.14**	0.07	-39.71***	13.26	0.08	0.07	4.52	3.99
Educ < 12 yrs	-0.15*	0.09	-10.65	16.21	-0.15*	0.08	-6.81	4.74
Educ > 12 yrs	0.05	0.08	-8.94	15.22	0.06	0.08	4.48	4.44
Age 50 - 54	-0.30***	0.10	-55.59***	20.24	0.12	0.10	4.06	5.84
Age 55 - 64	-0.33***	0.09	-42.52***	16.69	0.26***	0.09	8.43*	4.92
Age 65+	-0.44***	0.11	-59.17***	21.83	0.18†	0.11	2.60	6.49
Male	-0.67***	0.07	-125.08***	13.49	0.19***	0.06	9.83***	3.69
Sibling Characteristics								
Any sister	-0.17*	0.10	-22.52	17.84	-0.21**	0.10	-10.13*	5.41
Any unmarried sibling	0.04	0.08	5.85	14.91	-0.09	0.08	-7.97*	4.42
Constant	0.32*	0.17	17.24	31.15	-1.15***	0.17	-76.22***	10.06

Log of the Likelihood	-1001.1***	-3651.6***	-1088.1***	-3451.2***

Notes: Omitted categories include persons with only IADLs, those with 12 years of education, parents less than 85 years old, children less than 50 years old, and persons of other race/ethnicity (mainly Caucasian). Results are statistically significant at *** $p < .01$; ** $p < .05$; * $p < .10$; † $p < .15$.