Do Good Kids Finish First?

Testing Bequest Motive Theories in Mexico[1]

Douglas McKee and Beth Soldo

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Abstract

This paper tests several leading bequest motive theories using a uniquely appropriate longitudinal data set, the Mexican Health and Aging Study. These data include a population-representative sample of bequests and bequest intentions of parents that is matched with rich measures of child characteristics and behavior. Our results are consistent with the theory of Bernheim et al. that parents use their bequest strategically to induce children to provide services. We also find evidence that contradicts predictions of pure theories of altruism and suggestive evidence that when business assets are at stake, parents favor those children who are most qualified to manage those assets.

[1]Douglas McKee is a post-doctoral scholar at the Economic Growth Center at Yale University. Beth Soldo is Professor of Sociology at the University of Pennsylvania. We would like to thank Julian Jamison, Fabian Lange, Vida Maralani, John McCabe, Stephen Shore, Rebeca Wong, and seminar participants at the University of Pennsylvania, Yale University, PAA 2008, and SOLE 2009 for their helpful comments. This research has been supported by grants AG 012836 and AG 018016 from the National Institute on Aging.

1 Introduction

For the past several decades, bequests have played a central role in economic models of life cycle saving and intergenerational wealth transfer. The amount of money bequeathed each year is considerable. In the United States, most estimates of the annual flow of bequests are in the hundreds of billions of dollars (Gale and Scholz 1994; Wilhelm 1996). In Mexico, we estimate the mean value of an inherited estate to be over 250,000 pesos (about 26,000 USD in 2002) which was more than five times the per capita Mexican GNI in 2000 (World Bank 2008). While there is widespread agreement about the importance of bequests, there is little consensus on why people leave assets when they die or how they decide how these assets should be distributed.

The literature contains several competing theories of bequest motives, and most yield testable predictions about either the total amounts that people leave or the distribution of those assets or both. The strategic bequest motive, first proposed in Bernheim et al. (1985), posits that parents leave assets to children to compensate them for help, care, or other services. This theory does not always make strong predictions about the equilibrium bequest allocation, but for a large class of reasonable parental and child utility functions, the theory does imply a positive correlation of services rendered and bequest shares within the household. These services might be physical assistance with daily activities or simply more frequent phone calls and visits than the children would otherwise provide. The altruistic theory of bequests espoused by Barro (1974) and Becker (1974) says that parents leave money to their children because they care about their children's well-being. This theory implies that children, even if they are selfish, will try to maximize the total utility of the family and that parents will leave more assets to the most needy children to equalize consumption across all children.

A third major theory of bequests is the so-called accidental theory that was first proposed

by Yaari (1965) and has been more recently championed by Hurd (e.g., Hurd 1987, 1989). This theory states that individuals are risk-averse and that they die with assets that were saved in case they lived longer than expected or had large unforeseen expenses. Most individuals would get little or no utility from the actual bequest. This theory is not necessarily incompatible with either the strategic bequest motive or the altruistic theory. Because an individual's expected bequest is positive, the individual can still credibly use these assets to induce children to provide services or compensate those that are less well-off.

To this point, empirical tests of these theories have been inconclusive and mostly confined to developed countries. Most of the existing research that looks at actual bequests is not generalizable to the whole population as it uses tax records that are only collected for very large estates.[2] In this paper we use a uniquely appropriate longitudinal data set, the Mexican Health and Aging Study (MHAS), to test these theories in a developing country context. More than 500 of the 15,000 individuals interviewed in the first wave of the survey died before the second wave and interviews that collected data about the actual bequest were conducted with next-of-kin during this second wave. In addition, both waves of MHAS collected comprehensive measures of assets, characteristics of all coresident and non-coresident children, services provided by children to parents, and any bequest plans held by living parents. These data allow us to evaluate a variety of potential determinants of the distribution of bequests within families at the child level.

In our analysis, we find strong new evidence that is consistent with the strategic bequest motive and evidence that is difficult to reconcile with Becker's theory of altruism. Children that have more schooling than their siblings are more likely to be favored by parents in the bequest as are children who physically assisted them in the last three months of their life. The

[2]Two exceptions are Behrman and Rosenzweig (2004), which looks at self-reported bequests of twins, and Hurd and Smith (2007) which analyzes next-of-kin interviews in the Health and Retirement Study.

relative financial situation of each child has no predictive power over the distribution of the bequest. This pattern of results remains largely the same when we analyze the determinants of the bequest plans of surviving parents with the additional robust finding that children who provide financial assistance are also more likely to receive a greater than equal share of the parent's planned bequest. In this paper we also present (and test) three alternative theories of bequest distribution (McGarry 1999; Baker and Miceli 2005; Cox 2003). We find no evidence supporting McGarry's modified theory of altruism or Cox's proposed evolutionary motives. However, the data do suggest that when business assets are at stake, parents may favor those children who are most qualified to manage those assets as suggested by Baker and Miceli.

The remainder of the paper proceeds as follows. Section 2 reviews the leading theories of bequest motives and summarizes the existing evidence for and against each one. Section 2 also discusses the implications of these theories for observed relationships between child behavior and characteristics, and bequest shares. Section 3 discusses the Mexican context and Section 4 describes the relevant features of the MHAS data. Section 5 describes our research design, Section 6 presents our empirical results and Section 7 concludes.

2 Theory and Implications for Equilibrium

2.1 Altruism

Altruism was first presented formally as a motivation for bequests by Barro (1974) and Becker (1974). In this model, parents and children play a two stage game. In the first stage, children take actions (a_k) that influence their own income (y_k) as well as the income of their parent (y_P). In the second stage parents make transfer payments to each child through their bequest. Parents value their own consumption and the utility of their children while children

are selfish and value only their own consumption:

$$\begin{aligned}
&\text{Child } k \text{ solves:} && \max_{a_k} U_K(c_k) \\
& && \text{s.t. } y_k = f^k(a_k),\ y_P = f^P(a_1, \ldots, a_K) \\
&\text{Parent solves:} && \max_{c_1,\ldots,c_K,c_P} U_P(c_P, U_K(c_1), \ldots, U_K(c_K)) \\
& && \text{s.t. } c_P + \sum_k c_k = y_P + \sum_k y_k
\end{aligned} \tag{1}$$

Because the parent plays second, he or she is able to adjust the consumption of each child using the bequest and each child's consumption will be increasing in the total income for the household. Thus each child will choose an action that maximizes total income in order to maximize his or her own consumption. This will always lead to a Pareto optimum. In addition, if parents value their children equally, they will use bequests to equalize the consumption of each child by giving more to those children who earn less. There is no need for the parent to use the bequest strategically (i.e., reward particular actions) to get exactly what they want.

The main prediction of this theory is that children who are more needy should receive larger shares of the bequest than children who are better off, but empirical research to date has found little evidence of this. Wilhelm (1996) examines U.S. estate tax data and finds little correlation between a child's earnings and his or her share of the total inheritance. This result does not generalize to the whole population because estate tax is only reported for very high value estates. Researchers have had some success finding support for parental altruism in inter vivos transfers (McGarry and Schoeni 1995, 1997), but even here, other researchers have found inconsistent behavior (Cox 1987; Cox and Rank 1992; Altonji et al. 1997).

2.2 The Strategic Bequest Motive

While the theory of altruism has some intuitive appeal, its prediction of Pareto optimal outcomes relies on the strong assumption of transferable utility. That is, if parents and children value something in addition to consumption that is not losslessly transferable then parents have an incentive to act strategically. Bernheim et al. (1985) use the example of telephone calls or visits between parents and children as something that parents might value more highly and want to induce their children to provide more than the children might otherwise choose.

Bernheim et al. augment the Becker model in two ways. First, they allow the children's actions to enter the utility function of both parents and children. While not explicitly stated by Bernheim et al., the incorporation of transferable utility does not change the prediction that needier children receive larger bequests from altruistic parents and the amount of service provided by children is not correlated with their share of the bequest in equilibrium. The reason is that parents are unable to incentivize children to provide more service than they selfishly want to provide. The second modification introduced by Bernheim et al. addresses this by allowing parents to precommit to a bequest schedule that ties child actions to estate shares. Parents in poor health might want to induce their children to provide physical assistance, and in the same way, parents who own property but are liquidity constrained might value financial transfers from a child while they are alive and reward that child with a share of the bequest when they die.

Because large representative samples of bequests and the characteristics and behavior of the parents and children involved in these bequests are rare, researchers have used more indirect methods to test the strategic bequest theory. In their original paper, Bernheim et al. (1985) find that parents who have more bequeathable assets get more attention from their children than poorer parents, presumably because these parents have more bargaining

power. However, when Perozek (1998) used different data and a richer set of controls, she did not find this correlation.

One might expect that under the strategic bequest motive, children who provide more service will always be rewarded with a greater than equal share of the bequest, but this is not a general result. The sign of the intra-family correlation of services provided and bequest share depends on the functional forms of both the parent and child utility functions as well as the nature of the variation across children. We show this through a few parametric examples of a family with one parent and two children. Specifically, if some of the children experience highly concave disutility of service, this correlation can actually be negative.

Bernheim et al. (1985) show that the equilibrium allocation of the strategic bequest motive game is the same as the optimal allocation of a related single agent decision problem. In this alternative formulation, parents choose allocations (actions of children and bequests to children) subject to the constraint that children must achieve at least the level of utility they would reach by opting not to receive any bequest. More formally, parents solve the following optimization problem:

$$\begin{aligned} \max_{a_1,a_2,b_1,b_2} \quad & U_p(y_p - b_1 - b_2, a_1, a_2, U_1(a_1, \underline{c_1} + b_1), U_2(a_2, \underline{c_2} + b_2)) \\ \text{s.t.} \quad & U_1(a_1, \underline{c_1} + b_1) \geq U_1(\underline{a_1}, \underline{c_1}) \\ & U_2(a_2, \underline{c_2} + b_2) \geq U_2(\underline{a_2}, \underline{c_2}) \end{aligned} \tag{2}$$

$\underline{c_1}$ and $\underline{c_2}$ are each child's endowments of the consumption good, and $\underline{a_1}$ and $\underline{a_2}$ are the amounts of action each child would perform in the absence of a bequest. $\underline{a_1}$ and $\underline{a_2}$ are assumed without loss of generality to be zero to simplify the discussion below. In some sense, parents are purchasing service from each child with the individual shadow prices determined by each child's utility function and endowment.

Consider first the following quadratic utility functions and endowments:

$$\begin{aligned} U_p(c_p, a_1, a_2, U_1, U_2) = &\quad c_p - 0.1c_p^2 + (a_1 + a_2) - 0.1(a_1 + a_2)^2 + 0.1U_1 + 0.1U_2 \\ U_1(c_1, a_1) = &\quad c_1 - 0.1c_1^2 - a_1 - 0.1a_1^2 \\ U_2(c_2, a_2) = &\quad c_2 - 0.1c_2^2 - a_2 - 0.1a_2^2 \\ \underline{c_1} = 2, &\quad \underline{c_2} = 0 \end{aligned} \tag{3}$$

Parental utility is separable in own consumption (c_p), total action ($a_1 + a_2$), and utility of each child (U_1, U_2). Parental utility is also increasing in consumption and action for sufficiently low values and marginal utility decreases for both. Note also that child services are perfect substitutes and the parent cares about each child equally. Each child has the same utility function which increases in own consumption and decreases in own action. The marginal utility of consumption is decreasing while the marginal disutility of action is increasing. The only difference between the two children is in their endowments where child one is wealthier than child two ($\underline{c}_1 > \underline{c}_2$).

The induced equilibrium allocations are shown in Figure 1 as a function of parental endowment (y_p). Because the poorer child values small bequests more highly than the wealthier child, parents with low endowments purchase service exclusively from the poorer child. As the parental endowment (and thus the amount available to bequeath) increases, the marginal cost of additional service from the poorer child increases until it is the same as for the richer child. From this point on, parents purchase service from both children equating the marginal costs. For these utility functions and child endowments, this results in service being positively correlated with the bequest for all levels of parental endowment.

Now consider a case where differetial treatment is driven by differences in the disutility

of action experienced by children:

$$\begin{aligned} U_p(c_p, a_1, a_2, U_1, U_2) = &\quad c_p - 0.1c_p^2 + (a_1 + a_2) - 0.1(a_1 + a_2)^2 + 0.1U_1 + 0.1U_2 \\ U_1(c_1, a_1) = &\quad c_1 - 0.1c_1^2 - 2a_1 - 0.1a_1^2 \\ U_2(c_2, a_2) = &\quad c_2 - 0.1c_2^2 - a_2 - 0.1a_2^2 \\ \underline{c_1} = 1, &\quad \underline{c_2} = 1 \end{aligned} \tag{4}$$

This could correspond to a situation where one child (child two in this case) lives closer to the parent and experiences comparatively less disutility for providing service due to the decreased travel costs. Figure 2 shows that this type of variation yields the same positive correlation for almost the same reason as in the previous example: a low endowment parent purchases only from the "cheaper" child, but even at higher potential endowments, the correlation between service and bequest is positive.

The positive correlation found in the two examples above is in large part a consequence of the amount of curvature with respect to action in each child's utility function. If children experience initially low disutility from service but it increases sharply, this can induce a negative correlation. Suppose, for example, that child disutility from service is an increasing linear spline with a sharp kink:

$$\begin{aligned} U_p(c_p, a_1, a_2, U_1, U_2) = &\quad c_p - 0.1c_p^2 + (a_1 + a_2) - 0.1(a_1 + a_2)^2 + 0.1U_1 + 0.1U_2 \\ U_1(c_1, a_1) = &\quad c_1 - 0.1c_1^2 - \mathrm{I}(a_1 \leq 1)\, a_1 - \mathrm{I}(a_1 > 1)\, 10a_1 \\ U_2(c_2, a_2) = &\quad c_2 - 0.1c_2^2 - \mathrm{I}(a_2 \leq 1)\, a_2 - \mathrm{I}(a_2 > 1)\, 10a_2 \\ \underline{c_1} = 2, &\quad \underline{c_2} = 0 \end{aligned} \tag{5}$$

Just as in the first example above, the only difference between children is in their endowments. Figure 3 shows the equilibrium allocations as a function of parental endowment.[3]

[3]The small steps and bumps seen in Figures 3 and 4 for some bequest allocations are artifacts of the

As before, a low endowment parent purchases exclusively from the poorer child, but when that child reaches the kink in their utility function at one unit of service, parents turn to the wealthier child. Highly endowed parents end up bequeathing more to the wealthier child for less service because the marginal price of service from the wealthier child remains lower than from the marginal price of the poorer child. This results in a negative correlation of bequest and action for a sizeable range of parental endowments. Figure 4 shows that the same negative correlation can be induced when the children have identical endowments but differ in the disutility they experience from performing the action.

These examples leave us in a difficult, but not untenable position. We would like to have a widely applicable general result for the sign of the correlation that can be tested with observed data, but have thus far been unable to find plausible restrictions on utility functions or variation across children that yield this. What we have found in our empirical work is that some important types of service (e.g., assistance with activities of daily living) are usually provided by only one child when they are provided at all. In this case the theory alwayws predicts a positive correlation of service and bequest share since the parent only needs to compensate the child who performs the service.

2.3 Alternative Theories

In addition to the three major theories elaborated above, three additional theories that have testable implications have recently been proposed. Baker and Miceli (2005) suggests that in some societies, when business assets such as arable land are at stake, owners will leave such assets to the child that is most qualified to use them. They show that this behavior is rational in the absence of well-functioning asset markets, but that if there are returns to

numerical optimization technique used to compute them.

children of rent-seeking, then fixed inheritance rules such as primogeniture or equal division may predominate. Mexico, especially in rural areas, has thin markets for land, so one might expect parents to leave farm businesses to their most able children. This theory is difficult to test because ability is difficult to measure. If the level of formal schooling is a valid proxy for this ability or if children who are coresident have more experience working in the business, then the theory predicts a positive correlation between these characteristics and the bequest share when the parent owns a business.

Cox (2003) suggests that evolutionary biology plays a role in the bequest process as parents should leave more assets to those children that are most likely to propagate their genes. Cox draws out several testable implications of the theory, but the clearest is that parents will favor full biological children over step-children or adopted children. Empirical support thus far has been mixed. Judge and Hrdy (1992) find no linkage using historical estate data from Sacramento, California, but Light and McGarry (2004) find that mothers with only biological children are significantly more likely to plan equal bequests than mothers with stepchildren or adopted children. Hurd and Smith (2007) find further evidence in support of this theory in that step children seem to receive a smaller share of the bequest than fully biological children in the HRS.

While bequests and inter vivos transfers are both ways in which parents transfer resources to children, the observed patterns are quite different. In particular, parents are somewhat more likely to give money to children that experience a decline in their income while no one has yet found any correlation of current income and bequest share. McGarry (1999) proposes that parents use inter vivos transfers to compensate children for negative shocks, and that they use bequests to equalize permanent income. The theory predicts the observed correlation of current income and inter vivos transfers, and if schooling is used as a proxy for permanent income, it also predicts a negative relationship between a child's schooling and their share of the estate. McGarry's empirical work using HRS data finds no correlation

of current income and the likelihood of a child being named in the will, but it also finds a positive correlation of schooling and this likelihood which contradicts her theory.

3 Mexican Context

In Mexico, inheritance is generally governed by the local laws of the state in which a person lived at the time of death but local laws often emulate the federal laws. Under the federal law, if an individual has a will she or he must leave support for any children age 18 and younger and children who are unable to work. The will must also make allowances for a surviving spouse if the spouse is unable to work, has not remarried, and lacks sufficient assets to support herself or himself. Finally, the will must also make allowances for any surviving parents or siblings who are age 18 and younger or unable to work (Zamora et al. 2004).

It is very common for individuals to die without a formal will in Mexico. In these cases, relatives of the same degree inherit property that was owned solely in equal parts. A surviving spouse has inheritance rights equal to those of the deceased children. Joint or communally owned property remains owned by the living owner(s). Property accumulated during the marriage is owned jointly unless prenuptial agreements were made. Property owned separately before marriage remains separately owned during the marriage (Zamora et al. 2004).

Beyond the nation's laws, however, there are numerous reasons why developing countries such as Mexico might have different inheritance patterns than those we observe in more developed countries.[4] First, there is much less institutional support for people in old age, which means that many older individuals rely on family support once they leave the labor

[4]Fafchamps and Quisumbing (2005) find that in Ethiopia, a much poorer developing country, asset transfers that occur around marriage are larger and more important than bequests, but this does not seem to be the case in Mexico.

force. Although government and private sector jobs do provide pension plans, many individuals in Mexico are in the informal or self-employed sector where there are no formal means of old-age support. Overall, only about 30% of men and 15% of women age 60 and older receive any pension support although sex differences disappear if one considers receiving one's own or spouse's pension (30% for women versus 32% for men (Wong and Parker 1999). In addition, there are far fewer market services for elder care such as nursing home facilities or home nursing care. As a result, many older individuals, especially older women, rely on family members in old age.

Families in Mexico are large, especially for those cohorts studied here. In the analytic sample described below, individuals have an average of six children. As individuals age, they become more likely to live in extended households. About 45% of women and 36% of men age 60 and older live with other family members (Wong and Parker 1999). Larger families and coresidence with older members allow for more opportunities for sharing elder care, for bargaining among family members, as well as more opportunities for parents to act strategically towards their children. Of course, these family exchanges might also be constrained by cultural norms about inheritance and property rights. This is particularly relevant in rural areas where inheritances are complicated by land rights (Hamilton 2002).

4 Data

The analyses presented here use data from two waves of the Mexican Health and Aging Study (MHAS), a longitudinal survey conducted in 2001 and 2003. The sample includes 9,862 households containing at least one person age 50 or older, providing a nationally representative sample of individuals age 50 and older in Mexico. The study interviewed both age-eligible individuals and their partners or spouses if present, for a total sample size

of 15,402 respondents.

Similar in design to the Health and Retirement Study in the United States, the survey contains detailed measures of health, assets, labor force participation, and family structure. In both waves, the survey includes information on all coresident and non-coresident children and financial transfers and other assistance exchanges between family members. These measures include the amount of monetary transfers between parents and children and which (if any) children may have assisted with any activities of daily living. In this paper we use the term ADL to mean an activity from the following list: Walking across a room, bathing or showering, eating, getting into or out of bed, and using the toilet. IADL (Instrumental Activity of Daily Living) refers to more complex activities including preparing hot meals, shopping for groceries, taking medications, and managing money.

In 2003, 92% of the original respondents were confirmed to be alive and reinterviewed if possible. An additional 4% (568) were confirmed deceased and 546 next-of-kin interviews were conducted. In these interviews, each next-of-kin was asked about the deceased individual's health in the three months before death and whether the individual received any assistance with ADL's or IADL's from their children during this time. The survey also collected information about financial transfers between the individual and his or her children from 2001 to the time of death.

Most critical to this paper, the next-of-kin reported whether the deceased had made arrangements for the division of his or her assets and which (if any) children received a more than equal share. Up to three different children could be listed. This way of asking about the distribution of the bequest suffers from far less measurement error than if next-of-kin were asked for a detailed accounting of how much each child received. One disadvantage of this approach is that it does not allow respondents to distinguish between a mildly unequal and a very unequal distribution. In addition, it is not possible to represent a a large family that explicitly dis-inherits a small number of children. The favored children are linked back to

the appropriate lines in the household roster or the non-coresident child roster. All questions about division of the bequest were only asked when the deceased individual did not leave a surviving spouse.

Living respondents in both waves also reported whether they had plans for the future division of their estates. These plans need not have been written as formal wills. If they had such plans, individuals were asked which (if any) children would receive a more than equal share. If the individual was in a union, one of the partners answered these questions for the couple. This level of detail is unique to MHAS. Even the leading survey of older people in the United States, the Health and Retirement Study, asks respondents whether they have wills and which children appear in the will, but does not ask about less formal bequest plans or which children might be favored in the will.

5 Research Design

The theories discussed above have strong predictions about the relationship between the characteristics and behavior of children on the one hand and the bequests and bequest plans of parents on the other. In the analyses that follow, we develop econometric models using the MHAS data to test these predictions.

The analysis uses two samples. The first is a sample of individuals who die between the first and second survey wave and their children. This sample provides information about the observed bequest behavior of parents and their children's characteristics and behavior. The second sample includes individuals who survive the two survey waves and their children. This much larger sample provides information about parents' bequest plans and their children's characteristics and behavior. Both samples allow one to consider recent child behaviors (those in the period before death or in 2003) versus more distal ones (those in 2001).

Most research in this area to date analyzes behavior at the parent level, and often the

dependent variable is an indicator for whether the estate was (or is intended to be) divided equally and the independent variables are characteristics of the parent or aggregate characteristics of the set of children. We estimate this type of model for comparison to the existing literature, but the primary contribution of this paper is to analyze bequests at the child-level where individual characteristics of children can be correlated with an indicator for whether a particular child gets a larger than equal share of the bequest. This approach allows much finer-grained hypotheses to be tested.

The theory of altruism predicts that children with higher needs get larger bequests. We measure needs using two variables, education and current financial situation, and test the hypothesis that those with lower education or in a worse financial situation relative to their siblings are actually given a larger than equal bequest (using the deceased sample) or that parents intend to leave these children such a bequest (using the surviving sample). McGarry's integrated theory of inter vivos transfers and bequests has the somewhat different prediction that lower education will predict a larger share but current financial situation will not.

The strategic bequest motive predicts that in most (but not all) families there will be a positive correlation of services provided by children and their bequest share. These services might include assistance with daily activities, more frequent contact, or financial transfers if the parent is liquidity constrained. We test these predictions by assessing whether helping with activities of daily living, having very frequent or very infrequent contact and providing financial transfers predict either an actual or planned larger than equal share of the bequest.

It is important to note that these regression models are not designed to estimate causal effects. The predictions we have derived from the strategic bequest motive theory are about the correlations of endogenous choice variables, and thus there is no need to find instruments for our measures of child service. At the same time, we do include several control variables that could be considered endogenous to different degrees. We follow standard practice and assume the bias induced by assuming exogeneity of basic characteristics such as schooling,

marital status, and financial situation is negligible as these are usually determined far in advance of any recent assistance decisions. The most problematic of the potentially endogenous variables encode each child's location of residence. Because children may decide where to live in conjunction with their decision to provide assistance to parents, we are very careful when interpreting the coefficients on these variables. While our preferred specification includes them to mitigate omitted variable bias, we also show that our results change very little when we drop the residential variables from our regressions.

A positive correlation of schooling or coresidence and bequest share can be explained by the most qualified heir theory (Baker and Miceli 2005), but these gross relationships have several other potential explanations. A better test of the theory is to compare bequest patterns when the parent does and does not own a business. In particular, this theory predicts higher correlations of these variables when a business is part of the estate. The evolutionary theory posited by Cox (2003) has the strong prediction that step-children or adopted children are less likely to be favored in a bequest than full biological children.

One important concern in these analyses is that unobserved differences across families, for example generosity or vindictiveness, might confound the results. We address this concern by estimating within family fixed effects models that sweep out all observed and unobserved characteristics that are constant within families—an approach that is made possible by analyzing the behavior at the child level. The results we present here come from linear probability models as these are the most straight-forward to interpret, but we have also estimated the corresponding fixed effects logit models and get very similar results.

All of the analyses described to this point use bequest and bequest plan data gathered in 2003, but respondents were also asked about bequest plans in 2001. This enables two additional analyses. First, we estimate a "between" individual variation model using the two year means of all the variables. While this conflates the effects of contemporaneous and lagged characteristics, it provides a measure of the average correlation between child

characteristics and how the child is treated in the planned bequest. Second, we net out each child's unobserved fixed attributes by estimating a "within" variation model. That is, we use the differences in variables between the two years in the regressions. Here the coefficient estimates can be interpreted as the effect of a change in behavior or characteristics on the likelihood of receiving a more favorable share of the bequest.

Most economic analyses address the problem of missing data using casewise deletion. That is, observations that contain any missing variables are removed from the sample. While this method technically requires data to be missing completely at random (MCAR), in practice it is quite robust when data satisfies the weaker missing at random (MAR) assumption (Rubin 1976; Allison 2002). Because the number of MHAS respondents who died between 2001 and 2003 is relatively small (544), we use the method of multiple imputation to increase efficiency by exploiting the information in partial observations. Specifically, we use multiple imputation by chained equations (van Buuren et al. 1999) with ten imputation samples. Like casewise deletion, this method has been shown to perform well when data satisfies the MAR assumption (van Buuren et al. 2005). In addition, all analyses have been performed using casewise deletion and the results are qualitatively and quantitatively nearly identical with the expected slightly larger standard errors. These results are available upon request.

6 Results

6.1 Determinants of Bequests

Parent-level Analysis

Table 1 summarizes the characteristics of 2001 respondents who died before 2003 and had a next-of-kin interview. Multiply imputed descriptive statistics for all variables of interest

are shown in the first column.[5] The main analysis sample, shown in the second column, is restricted to the 192 individuals who did not leave a surviving spouse, had at least two living children, and were reported to have left at least some assets when they died.

Because most men in Mexico marry younger women and have a lower life expectancy than their spouses, the analysis sample contains about twice as many women as men. Family sizes for this cohort are large—on average about 5.5 children—and 85% of deceased respondents had at least two children. Coresidence of adult children with elderly parents is quite common and 60% of the analysis sample lived with at least one child in 2001. 6% of children are either step-children or adopted children.

MHAS did not collect the value of the deceased's estate in 2003, but the asset measures recorded in 2001 when the individual was alive are comprehensive and serve as a good proxy.[6] Mexico is not considered a rich country, but the estates at stake are sizable. 58% of the analysis sample owned a house, 12% owned a business, and 32% had at least 10,000 pesos of other assets as well. The mean level of total assets is over 250,000 pesos (about 26,000 USD in 2002) and even the median level is over 80,000 pesos (about 8,000 USD in 2002) These amounts would be considered low in the United States, but relative to median monthly earnings of prime age Mexican men in 2002 (about 3,000 pesos or 310 USD; McKee and Todd (2007)) or Mexican GNI in 2000 (about 4,300 2002 USD; World Bank (2008)), they are substantial.

[5]The variables for incidence of IADL's and assistance with them in 2001 are missing in 20% of cases because proxy respondants were not asked about IADL's in 2001. No other variables are missing for more than 10% of the sample.

[6]Hurd and Smith (2007) use HRS data to compare estate values with wealth measures from the wave preceding death and find they are very similar.

Many of the deceased individuals were in poor health before they died. 44% of the analysis sample reported having difficulty with at least one ADL in 2001 and 57% had difficulty with an IADL. A third of the sample received help with an ADL from a child in 2001 and about half received help with an IADL. About two thirds (66%) of the sample received help with an ADL during the three months before they died and about the same fraction (64%) received help in this period with an IADL. More than half the parents who received assistance in the three months before death received that service from only one child and similarly, of those parents who received help in 2001, more than 75% were aided by exactly one child.

Parents received significant financial assistance from children as well with 28% of the analysis sample receiving at least 5,000p from a child between 1999 and 2001. Financial transfers from parents to children are very rare with just one respondent giving 5,000p or more to a child during this period.

According to the next-of-kin, 39% of the deceased respondents in the analysis sample made arrangements ahead of time for the division of their estate, and 85% of these individuals left their entire estate their children. 21% (41) of the analysis sample chose to divide their estate unequally between their children.[7] It is possible that the next-of-kin may have been unaware of or misreported the actual division of bequests, but we find no evidence of bias in their reports. Children, who might be expected to have more information and represent two thirds of the next-of-kin, report that the deceased had bequest plans in 42% of cases while next-of-kin who were not children report plans in a not significantly different 33% of cases. Children might also under-report their own share of the bequest but this is not testable because the identity of the child who is next-of-kin is not revealed in the data. What is clear is that next-of-kin who were children and next-of-kin who were not children report similar

[7] In three quarters of the unequal divisions, parents favored exactly one child.

fractions of unequal bequests (23% vs. 18%).

Table 2 presents the results of three regressions where the observations are deceased parents and the dependent variable is an indicator for whether the parent favored at least one child in the bequest. Some of the theories discussed above predict that families with higher variance in particular child characteristics are more likely to divide their bequest unequally. These tests are weaker than those that compare each child's individual characteristics to their bequest share, but we include them for comparison the the rest of the literature. The models we estimate are linear probability models with state-level fixed effects. The first model contains only characteristics of the parents and the second adds variables for the number, biology, coresidence, and schooling of the children. The third model adds variables describing health and assistance received from or given to children. The initial estimated coefficients are quite stable as the variables are progressively added to the model.

In the most complete model, only two coefficients are significant. Parents that own a business and parents with less than 10,000 pesos of non-housing or business assets are more likely to divide their estate unequally. The first result could be interpreted as evidence for the most qualified heir theory, but the second has no obvious interpretation. While it is possible that the sample size is just too small to reveal true latent relationships, it is nonetheless interesting that children's biology, coresidence status and schooling do not significantly predict bequest behavior of parents and none of the health and assistance measures are significantly predictive.

Child-level Analysis

Column one of Table 3 describes the children of the deceased parents analyzed above. These children have substantially more schooling than their parents (7.5 years vs. 2.6 years) and are on average 43 years old. Most are married (83%) and their parents reported in 2001 that 34% of them were in a financial situation that was at least good.

It is common in Mexico for at least one child to live with a parent and 15% of our analysis sample were coresident in 2001. These coresident children are on average five years younger than non-coresident children (39 vs. 44), though only 34% of coresident children are the youngest child. Coresident children are also much less likely to be married (35% vs. 91%) and most (79%) have lived with their parents their whole lives.

There is a good deal of variation in the amount of service children provide to their parents. Few children helped their parent with an ADL or IADL in 2001 (6% and 10%) but these proportions increased to 19% and 16% during the three months before the parent died. One in ten children (11%) gave their parent at least 5,000 pesos in the two years before 2001. 20% of the children were not coresident and lived in a Mexican community different from that of their parent in 2001 and 10% lived outside the country. Extremes in frequency of contact were uncommon. Only 6% of children communicated with their parent once per year or less and 15% of children lived outside the parent's household and talked with their parent at least once per day.

The theories of bequest motives described above have strong predictions about how parents divide their estates between children. Table 4 presents the results of five regressions at the child level where the dependent variable is whether the child received a larger than equal share of the bequest. The first model includes basic characteristics of each child but does not include any characteristics of the parent or the estate itself as these are swept out by the family-level fixed effect. The second model adds measures of assistance provided to the parent in the three months before the 2001 interview, and the third adds assistance measures for the last three months of the parent's life as reported by the next-of-kin. The fourth model includes measures of social contact between the parent and child, and the fifth shows that the results are robust to exclusion of the the child location variables.

Becker's theory of altruism predicts that children who have the most need will be compensated in the bequest, but the data do not seem to bear this out. In particular, the

financial situation of the child (relative to the other children in the family) is not predictive, while schooling, which can be interpreted as a proxy for permanent income, is positively correlated with receiving a larger bequest share. This result is also at odds with the negative relationship predicted by McGarry's integrated theory. The positive correlation can, however, be considered a sign that the heir best qualified to manage the estate is receiving a higher share.

The strategic bequest motive predicts that children who provide services will often receive a larger bequest than those who do not. These results provide some evidence for this in that children who helped with an IADL in the last three months of the parent's life are significantly more likely to have received a larger share, but none of the other measures of assistance has a significant effect. Similarly, children who are in contact with the parent once a year or less are significantly less likely to get a larger share. The effect of at least daily contact is positive, but not significant.

Coresidence predicts a 10-11% increase in the likelihood of getting a larger than equal share of the bequest, but this relationship is difficult to interpret. It is possible that those children who live with their parents are most in need of help and thus this positive association is a result of altruism. It is also possible that coresident children provide assistance in unmeasured ways and are reimbursed for this assistance through the bequest, consistent with the predictions of the strategic bequest motive. The significant positive effect for male children that emerges after controlling for assistance measures is difficult to interpret as well, but it may simply be a weak social norm in this society to favor sons.

The strongest prediction of Cox's evolutionary biology theory is that parents will favor children to whom they are genetically linked. These results show a reduction in the bequest share given to step-children or adopted children, but it is not significant.

6.2 Determinants of Bequest Plans

Parent-level Analysis

The results presented to this point are based on relatively small samples of 192 deceased parents and their 1,144 children. It is possible that some relationships predicted by theory are not found in the data due solely to lack of power. We now turn our attention to the much larger sample of surviving parents and their children and analyze their stated bequest plans as opposed to their actual bequests. This sample has the added advantage that the information is self-reported and thus does not suffer from potential next-of-kin reporting bias. Individuals over age 50 who were alive in 2003 and were interviewed in both waves are described in Table 5. The first column includes all respondents who reported bequest plans in 2001 and 2003 and the second restricts the sample to those with at least two children and a positive level of assets in 2003. Relative to the deceased individuals shown in Table 1, the survivors are younger, more educated, healthier, and have substantially more wealth. About one in ten report having bequest plans (11%) and of these, about a third (433 respondents or 4.4% of the total) plan to give at least one of their children a larger than equal share of the estate. More than 90% of those respondents with bequest plans intend to leave all their assets to their spouse (if alive) and/or children. As was the case with the deceased parents, more than half the survivors who received help with an ADL got that help from exactly one child.

Table 6 presents results for four models that predict whether parents had unequal bequest plans in 2003. These models are very similar to those used to predict actual bequests in Table 2. The first column includes characteristics of the parent measured in 2001 and the second adds aggregate characteristics of their children. The third and fourth columns add variables for health and assistance in 2001 and 2003 respectively. Even with a much larger sample than that used to model actual bequests above (9,459 vs. 192), few significant rela-

tionships emerge. Individuals over age 77 are five percentage points more likely to bequeath unequally. This is not surprising since they are closer to the end of life and are more likely to have any bequest plans at all. Owning a business is no longer a significant predictor of unequal division, and it is difficult to interpret the now positive and significant coefficient on non-house non-business assets. If the parent received a large (over 5,000 peso) transfer from a child, he or she is more likely to plan to divide the estate unequally. This can interpreted as evidence for the strategic bequest motive if parents face binding liquidity constraints.

Child-level Analysis

Child-level analysis of the large sample of bequest plans provides our most powerful results. Characteristics of children of surviving parents are shown in the second column of Table 3. Not surprisingly, these children are younger and more educated than the children of deceased parents shown in the first column. They are also less likely to be married or have children and more likely to live with their parents (27% vs. 15%) than children of deceased parents. In part because their parents are healthier, children of surviving parents rarely help with an ADL or IADL (less than 1%) but they are almost as likely to give significant financial assistance (9% vs. 11%). Contact between parents and non-coresident children in 2001 is very similar between the two samples.

Table 7 shows how child characteristics and behavior predict whether parents plan in 2003 to favor particular children in their bequests. These models are designed to be as comparable as possible to those shown in Table 4 to predict actual bequests. The results show that the determinants of bequest plans are qualitatively similar to the determinants of actual bequests. In general, the magnitudes of effects are smaller, but because of the much larger sample size (53,124 vs. 1,144), the estimates are very precise.

We continue to find little evidence of altruism as a bequest motive. The financial situation of the child is not predictive and schooling has a positive point estimate though it is no longer

significant. Being single or having children, which might be considered indicators of need, predict larger (not smaller) shares of the bequest.

In contrast, the evidence for the strategic bequest theory becomes stronger when we look at bequest plans. Four out of the six physical and financial assistance measures are positive and significant predictors of a larger share while just one, help with an ADL in 2001, is significant and negative. In all cases the point estimates are larger for more recent (2003) assistance although this difference is not significant for help with an IADL. This implies that parents may be updating their bequest plans on a regular basis to reward the children that are currently providing help. Measures of social contact are not significant predictors, unless the physical location variables are dropped from the regression. In this case, children who are in very infrequent contact with their parents are less likely to receive a better than equal share of the bequest.

The somewhat weak evidence for the best-qualified heir theory that we found for actual bequests (a significant positive correlation of schooling and bequest share) has disappeared, but this relationship may only hold when certain types of assets are at stake. The insignificant effect of being a step-child or an adopted child again violates the prediction of the Cox's evolutionary theory.

Table 8 presents the results of estimating the most complete model of bequest plans shown in Table 7 for six sub-samples. The first two columns dived the sample by the sex of the parent and show that male parents are significantly more likely to favor male children in their bequest. None of the other coefficients are significantly different.

The second two columns compare the determinants of bequest plans in urban and rural areas and show just two significant differences. Males are more favored in rural areas, perhaps because of stronger social norms, while frequent contact is more likely to be rewarded by parents in urban areas. Urban parents reward children who help with ADL's and IADL's less than rural parents, but this difference is not significant. Urban areas have thicker markets

for assistive services and urban parents have more wealth, so it is possible that the value of contact with children, relative to their provision of assistive services, is higher is these areas.

The third pair of regressions divides estates into those that include a business and those that do not. These results weakly support the theory of the most qualified heir. The only significant difference between the samples is a stronger effect of coresidence when a business is at stake, which is predicted by the theory, but we find no difference in the effect of schooling or any other characteristic that could be a proxy for a child's ability to manage a business. In results not shown here, we find little difference in effects between rural and urban businesses.

Table 9 presents the results of estimating "between" and "within" models that exploit the bequest plans reported in 2001 and 2003. The dependent variable in the "between" models is the mean of the two indicators for whether the child would receive a larger than equal share of the bequest and the independent variables are means of the measures of child characteristics and behaviors. These models also include a parent-level fixed effect. The results continue to show a strong positive correlation between measures of assistance and bequest share. In addition, very infrequent contact between parents and children is penalized while frequent contact is rewarded lending further support to the strategic bequest motive. Child's schooling is positively related to bequest share, providing further evidence against theories of alruism, and coresidence, marriage, and presence of children have the same difficult-to-interpret effects as found above.

The "within" models regress the change in the bequest share indicator on the observed changes in child characteristics and behavior, netting out all observed and unobserved fixed characteristics of children. The effects of the first several variables (sex, age, schooling, and genetic relatedness) cannot be estimated as they are constant across the two waves. A zero coefficient estimate is expected if the characteristic or behavior has no effect but instead proxies for some unobserved fixed characteristic of the child. A zero is also expected if the parents value lagged characteristics or services as much as recent ones. The significant

positive coefficient on financial assistance corroborates the higher effect of recent assistance found above and shown in Table 7. The results also suggest that children who move farther away from their parents between 2001 and 2003 are upgraded in their parents' bequest plans. It is possible that parents are rewarding these children for expected future financial assistance, since better job opportunities are the most common reason for migration. Finally, there is a weakly significant negative effect of becoming married. One possible interpretation of this result is that altruistic parents shift resources to more needy single children, although this is inconsistent with the positive correlation of marriage and bequest share found in most of the above results.

7 Conclusion

The results described above are consistent with the theory of a strategic bequest motive. They show that in Mexico, children who help care for their parents (both physically and financially) are more likely to receive a favorable share of the bequest and that living parents are also more likely to plan to leave such children a greater share when they die. Our results contradict the predictions of Becker's theory of altruism as well as McGarry's integrated theory of inter vivos transfers and bequests. More precisely, the evidence is inconsistent with the idea that parents try to equalize the well-being of their children using the bequest. Instead, parents are more likely to leave or plan to leave a larger than equal share to their male children, and to those with more schooling. This could signal a continuation of a family decision to invest unequally in some children (those who got more schooling in the first place) rather than others. This evidence does not imply that parents are not altruistic as the fact that children's utility directly enters the parental utility function is an important part of the strategic bequest motive. The key assumption of the altruistic model that seems to be rejected in the data is that parents and children only value items (like monetary income)

that can be transferred losslessly between agents. We find intriguing, but somewhat weak evidence for the most-qualified heir theory posed by Baker and Miceli (2005) as parents are more likely to favor coresident children when their estate includes a business. Finally, we find no evidence that parents treat fully biological children differently than their step-children or adopted children.

Although the data and results described above are particularly well suited to exploring the reasons underlying bequest motives in Mexico they are not without limits. First, the regressions above describe correlations rather than explaining the dynamics of the bequest process. The fixed effect models control for all unobserved and observed characteristics that are constant within families, but do not describe the actual decision making of parents and how this changes over time. The data may also include reporting error by next-of-kin and individuals reported plans for their bequest may differ from what they would actually leave to their children.

In 80% of the bequests observed, parents equally divided their assets between their children and in the U.S., about two thirds of bequests are distributed equally across children (Menchik 1988; Wilhelm 1996). The theories considered above do not explain these facts well. The theory of altruism only predicts equal distribution when all children are in equal financial situations and the strategic theory has this prediction only in very special situations. McGarry's integrated theory predicts equal division when all children have the same expected permanent income. Cox's biological theory predicts equal division in most cases, but it does a poor job of predicting when division is not equal. Only recently have new economic theories been proposed to explain the predominance of equal bequests and none has yet been empirically tested (Lundholm and Ohlsson 2000; Bernheim and Severinov 2003).

Despite these limitations, this study brings to bear unique data that for the first time show how individual child characteristics and behavior influence the bequest plans and actual bequests of parents. Future theories of bequest motives must now explain the new finding

that when distribution is unequal within families, children who provide more services tend to receive larger bequests. In addition, it teaches us about inheritance and bequest motives in a setting where the literature on how these decisions are made is quite limited. These issues are particularly salient in developing contexts like Mexico because formal programs for old age support are limited and family members often rely on each other for support throughout the life course.

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Figure 1: Equilibrium allocations by y_p under quadratic utility when child one is wealthier than child two

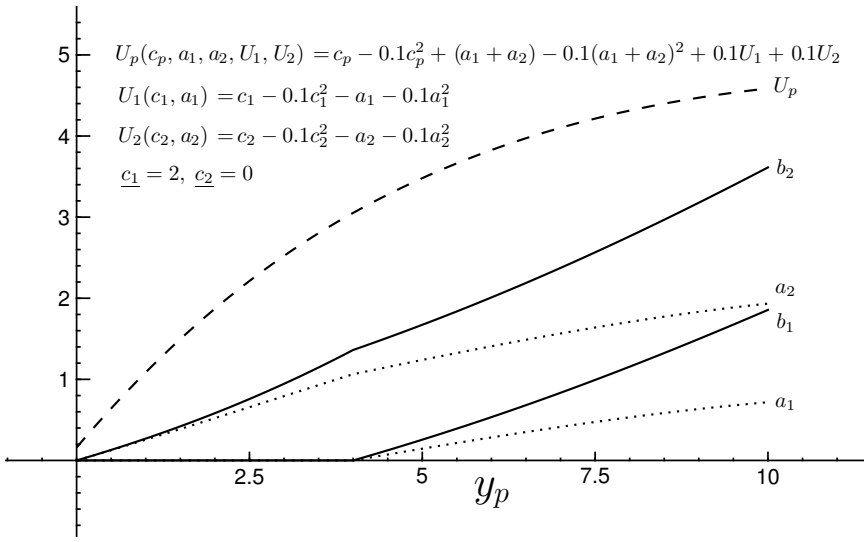

Figure 2: Equilibrium allocations by y_p under quadratic utility when child one experiences higher disutility from action than child two

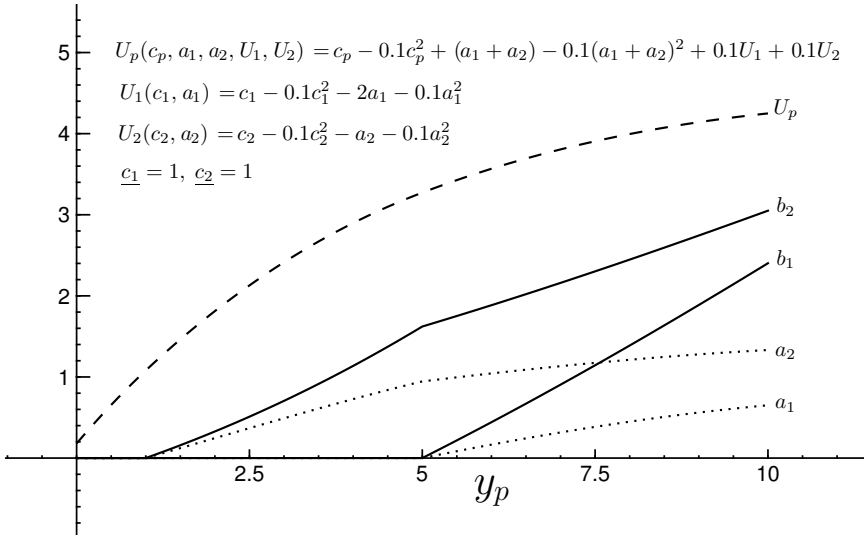

Figure 3: Equilibrium allocations by y_p where child disutility of action is a linear spline and child one is wealthier than child two

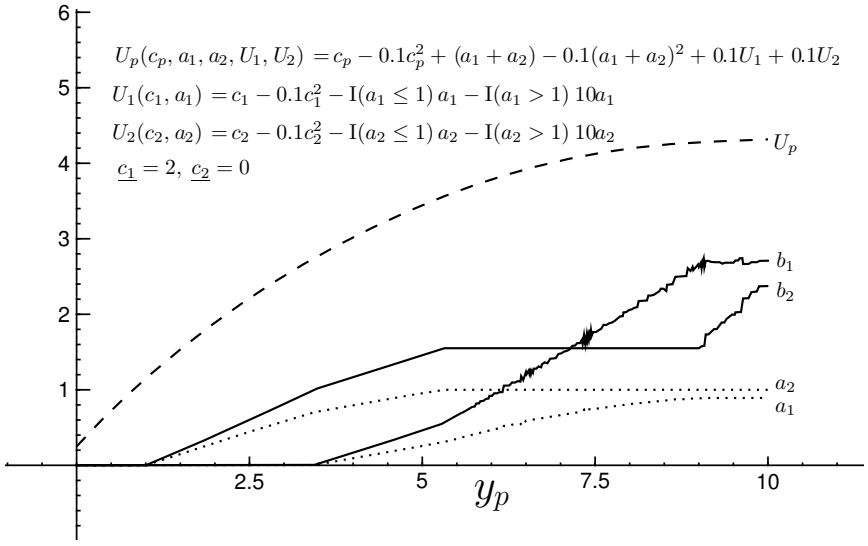

Figure 4: Equilibrium allocations by y_p where child disutility of action is a linear spline and child one experiences higher disutility from action than child two

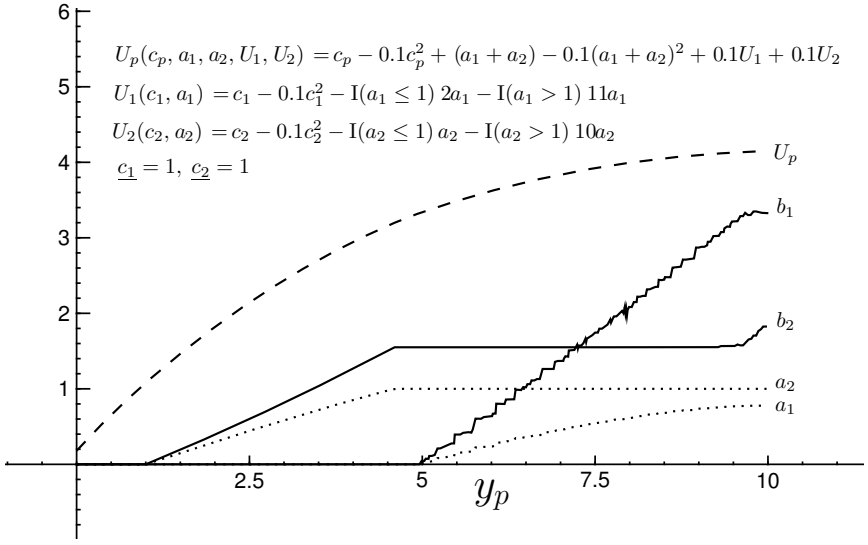

Table 1: Characteristics of 2001 respondents who died by 2003

	All		No Surv. Spouse ≥2 Children Had Assets at Death	
	Mean	Std Dev	Mean	Std Dev
Left a surviving spouse	0.46			
Male	0.51		0.35	
Urban	0.65		0.64	
Age (2001)	72.2	12.3	76.6	11.0
Schooling (yrs)	3.2	3.8	2.6	3.3
Interview by proxy (2001)	0.20		0.25	
Next-of-kin is child	0.47		0.68	
Assets (2001):				
Total value	202,195	633,730	255,687	750,813
(median)	(60,322)		(80,072)	
Owned house	0.53		0.58	
Owned business	0.16		0.12	
More than 10,000p other assets	0.34		0.32	
Number of children	5.52	3.35	5.96	2.59
Has ≥ 2 children	0.85		1.00	
One or more coresident children (2001)	0.57		0.60	
One or more non-biological children	0.13		0.06	
Max diff. in adult children's schooling	4.61	4.30	5.28	4.13
Frac. with children in diff. fin. sits.	0.38		0.44	
Health and Assistance (2001):				
Difficulty with ADL (past 3 mths)	0.39		0.44	
Difficulty with IADL (past 3 mths)	0.43		0.56	
Help with ADL (past 3 mths)	0.24		0.33	
Help with IADL (past 3 mths)	0.31		0.50	
Received ≥ 5,000p (past 2 yrs)	0.26		0.29	
Gave ≥ 5,000p (past 2 yrs)	0.04		0.01	
Assistance before death:				
Help with ADL (last 3 mths)	0.58		0.66	
Help with IADL (last 3 mths)	0.56		0.64	
Made bequest arrangements			0.39	
Favored a child in bequest			0.21	
Number of Observations	544		192	

Source: MHAS 2001, 2003

Missing values imputed using multiple imputation by chained equations.

All amounts are measured in Mexican pesos.

Table 2: Results from linear probability model predicting unequal bequests for sample of deceased parents in 2003

	(1)	(2)	(3)
Male	0.035	0.027	0.025
	(0.059)	(0.062)	(0.065)
Urban	0.062	0.064	0.075
	(0.068)	(0.066)	(0.071)
Age $\geq$ 77 (2001)	0.016	0.017	0.023
	(0.073)	(0.073)	(0.079)
Schooling 1-6 yrs	0.119†	0.124†	0.115
	(0.066)	(0.070)	(0.073)
Schooling 7+ yrs	0.022	0.015	-0.020
	(0.092)	(0.100)	(0.108)
Interview by proxy (2001)	-0.102	-0.094	-0.116
	(0.077)	(0.083)	(0.105)
Next-of-Kin is child	0.067	0.073	0.065
	(0.075)	(0.080)	(0.082)
Owned house (2001)	0.040	0.040	0.055
	(0.056)	(0.058)	(0.061)
Owned business (2001)	0.195*	0.189†	0.188†
	(0.098)	(0.099)	(0.108)
More than 10,000p other assets (2001)	-0.142†	-0.142†	-0.151†
	(0.081)	(0.083)	(0.081)
One or more non-biological children		0.044	0.056
		(0.125)	(0.135)
One or more coresident children (2001)		-0.012	-0.006
		(0.072)	(0.072)
Number of children		-0.000	-0.001
		(0.014)	(0.015)
Max diff. in adult children's schooling		-0.004	-0.003
		(0.008)	(0.009)
Difficulty with ADL (2001)			0.053
			(0.136)
Difficulty with IADL (2001)			0.002
			(0.153)
Help with ADL (2001)			-0.198
			(0.133)
Help with IADL (2001)			0.098
			(0.169)
Received $\geq$ 5,000p (2001)			-0.039
			(0.086)
Gave $\geq$ 5,000p (2001)			-0.125
			(0.242)
Help with ADL (last 3 mths)			0.041
			(0.089)
Help with IADL (last 3 mths)			-0.039
			(0.071)
Constant	0.078	0.098	0.101
	(0.081)	(0.118)	(0.133)
N	192	192	192

†p<0.10, * p<0.05, ** p<0.01

Source: MHAS 2001, 2003

Standard errors are in parentheses.

Dependent variable is indicator for unequal bequest.

Missing values for independent variables imputed using multiple imputation by chained equations.

Regressions include state-level fixed effects.

Table 3: Characteristics of sample children

	Parent Deceased between 2001 and 2003		Parent Alive in 2003	
	Mean	Std Dev	Mean	Std Dev
Male	0.49		0.50	
Age (2001)	43.1	12.0	31.7	10.3
Schooling (yrs)	7.5	4.7	8.8	4.3
Married (2001)	0.83		0.67	
Has children (2001)	0.85		0.67	
Financial situation $\geq$ Good (2001)	0.34		0.28	
Non-biological child	0.03		0.08	
Coresides with parent (2001)	0.15		0.27	
In different Mexican community (2001)	0.20		0.15	
Outside Mexico (2001)	0.10		0.11	
Assistance (2001):				
Helped with any ADL (past 3 mths)	0.06		0.01	
Helped with any IADL (past 3 mths)	0.10		0.01	
Gave $\geq$ 5,000p (past 2 yrs)	0.11		0.09	
Assistance before death:				
Helped with any ADL (last 3 mths)	0.19			
Helped with any IADL (last 3 mths)	0.16			
Contact measures (2001):				
Contact $\leq$ 1/yr	0.06		0.04	
Contact $\geq$ 1/day	0.15		0.18	
Parent left better than eq bequest share	0.05			
Assistance (2003):				
Helped with any ADL (past 3 mths)			0.01	
Helped with any IADL (past 3 mths)			0.01	
Gave $\geq$ 5,000p (past 2 yrs)			0.13	
Contact measures (2003):				
Contact $\leq$ 1/yr			0.04	
Contact $\geq$ 1/day			0.19	
Parent intended better than eq share (2003)			0.01	
Number of Observations	1144		55124	

Source: MHAS 2001, 2003

Missing values imputed using multiple imputation by chained equations.

Table 4: Results from linear probability model predicting a better than equal share of bequest for sample of children of deceased parents

	(1)	(2)	(3)	(4)	(5)
Male	0.019	0.020	0.028†	0.027†	0.032*
	(0.016)	(0.015)	(0.015)	(0.015)	(0.016)
Youngest	-0.012	-0.011	-0.013	-0.013	-0.002
	(0.020)	(0.020)	(0.020)	(0.020)	(0.021)
Oldest	-0.003	-0.003	-0.002	-0.002	-0.001
	(0.024)	(0.024)	(0.023)	(0.024)	(0.024)
Oldest Male	-0.035	-0.035	-0.033	-0.034	-0.032
	(0.032)	(0.032)	(0.032)	(0.032)	(0.033)
Least Schooling	-0.013	-0.013	-0.012	-0.011	-0.012
	(0.022)	(0.022)	(0.022)	(0.022)	(0.020)
Most Schooling	0.059**	0.059**	0.058**	0.057**	0.058**
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
Married (2001)	-0.001	0.001	0.000	0.001	-0.034
	(0.027)	(0.028)	(0.028)	(0.028)	(0.026)
Has Children (2001)	-0.002	-0.003	-0.000	-0.001	-0.022
	(0.033)	(0.033)	(0.033)	(0.033)	(0.031)
Best Financial Situation (2001)	0.055	0.056	0.050	0.064	0.057
	(0.045)	(0.045)	(0.046)	(0.045)	(0.044)
Worst Financial Situation (2001)	0.067	0.066	0.059	0.071	0.072
	(0.048)	(0.048)	(0.049)	(0.050)	(0.052)
Non-biological Child	-0.070	-0.071	-0.071	-0.073	-0.055
	(0.053)	(0.054)	(0.053)	(0.054)	(0.048)
Coresides with Parent (2001)	0.108**	0.106**	0.101**	0.111**	
	(0.034)	(0.038)	(0.038)	(0.037)	
In different Mexican community (2001)	-0.015	-0.015	-0.013	0.003	
	(0.026)	(0.027)	(0.027)	(0.029)	
Outside Mexico (2001)	0.011	0.011	0.016	0.037	
	(0.048)	(0.048)	(0.048)	(0.053)	
Helped with ADL (2001)		-0.032	-0.041	-0.040	-0.009
		(0.053)	(0.053)	(0.053)	(0.052)
Helped with IADL (2001)		0.033	0.007	-0.002	0.025
		(0.052)	(0.055)	(0.057)	(0.056)
Gave $\geq$ 5,000p (2001)		0.006	0.003	-0.000	0.000
		(0.043)	(0.043)	(0.043)	(0.041)
Helped with ADL (last 3 mths)			-0.002	-0.003	0.008
			(0.029)	(0.028)	(0.028)
Helped with IADL (last 3 mths)			0.069†	0.066†	0.067†
			(0.036)	(0.036)	(0.036)
Contact $\leq$ 1/yr (2001)				-0.072†	-0.084*
				(0.038)	(0.039)
Contact $\geq$ 1/day (2001)				0.040	0.014
				(0.029)	(0.026)
Constant	-0.009	-0.012	-0.022	-0.034	0.028
	(0.054)	(0.057)	(0.057)	(0.056)	(0.053)
N	1144	1144	1144	1144	1144

†p<0.10, * p<0.05, ** p<0.01

Source: MHAS 2001, 2003

Standard errors are in parentheses.

Dependent variable is indicator for better-than-average bequest.

Missing values for independent variables imputed using multiple imputation by chained equations.

Regressions include family-level fixed effects.

Table 5: Characteristics of respondents interviewed in both 2001 and 2003

	All		≥2 Children Had Assets in 2003	
	Mean	Std Dev	Mean	Std Dev
Has a spouse (2003)	0.68		0.74	
Male	0.46		0.49	
Urban	0.65		0.65	
Age (2001)	62.4	9.4	61.6	8.8
Schooling (yrs)	4.4	4.4	4.6	4.4
Interview by proxy (2003)	0.09		0.05	
Assets (2003):				
Total value	282,589	612,976	316,301	653,604
(median)	(107,391)		(146,641)	
Owned house	0.59	0.49	0.67	0.47
Owned business	0.21	0.41	0.24	0.43
More than 10,000p other assets	0.46		0.52	
One or more coresident children (2003)	0.68		0.72	
One or more non-biological children	0.12		0.12	
Number of children	5.48	3.15	5.95	2.86
Max diff. in adult children's schooling	4.72	3.81	5.11	3.68
Frac. with children in diff. fin. sits.	0.37		0.40	
Health and Assistance (2001):				
Difficulty with ADL (past 3 mths)	0.08		0.07	
Difficulty with IADL (past 3 mths)	0.14		0.13	
Help with ADL (past 3 mths)	0.03		0.02	
Help with IADL (past 3 mths)	0.08		0.06	
Received ≥ 5,000p (past 2 yrs)	0.24		0.25	
Gave ≥ 5,000p (past 2 yrs)	0.10		0.11	
Health and Assistance (2003):				
Difficulty with ADL (past 3 mths)	0.09		0.08	
Help with ADL (past 3 mths)	0.05		0.04	
Difficulty with IADL (past 3 mths)	0.14		0.13	
Help with IADL (past 3 mths)	0.13		0.13	
Received ≥ 5,000p (past 2 yrs)	0.33		0.35	
Gave ≥ 5,000p (past 2 yrs)	0.11		0.12	
Made bequest plans (2003)	0.11		0.12	
Unequal bequest plans (2003)	0.06		0.04	
Number of Observations	12315		9459	

Source: MHAS 2001, 2003

Missing values imputed using multiple imputation by chained equations.

All amounts are measured in Mexican pesos.

Table 6: Results from linear probability model predicting unequal bequest plans in 2003 for sample of surviving parents with positive assets in 2003

	(1)	(2)	(3)	(4)
Male	-0.004	-0.004	-0.003	-0.003
	(0.003)	(0.003)	(0.003)	(0.004)
Urban	-0.001	-0.001	-0.001	-0.001
	(0.006)	(0.006)	(0.006)	(0.006)
Age $\geq$ 77 (2001)	0.057**	0.058**	0.056**	0.054**
	(0.012)	(0.012)	(0.013)	(0.013)
Schooling 1-6 yrs	-0.002	-0.002	-0.002	-0.001
	(0.006)	(0.006)	(0.006)	(0.006)
Schooling 7+ yrs	-0.006	-0.005	-0.002	-0.001
	(0.007)	(0.008)	(0.008)	(0.008)
Interview by proxy (2003)	-0.014†	-0.015†	-0.015†	-0.007
	(0.008)	(0.008)	(0.008)	(0.013)
Owned house (2003)	0.001	0.001	0.001	0.000
	(0.004)	(0.004)	(0.004)	(0.004)
Owned business (2003)	-0.000	-0.000	0.000	0.001
	(0.005)	(0.005)	(0.005)	(0.005)
More than 10,000p other assets (2003)	0.010†	0.010†	0.011*	0.011*
	(0.005)	(0.005)	(0.005)	(0.005)
One or more nonbiological children		0.007	0.008	0.009
		(0.009)	(0.009)	(0.009)
One or more coresident children (2003)		0.003	0.003	0.003
		(0.006)	(0.006)	(0.006)
Number of children		0.000	0.000	0.000
		(0.001)	(0.001)	(0.001)
Max diff. in adult children's schooling		0.000	0.000	0.000
		(0.001)	(0.001)	(0.001)
Difficulty with ADL (2001)			0.004	0.001
			(0.011)	(0.011)
Difficulty with IADL (2001)			0.001	-0.001
			(0.008)	(0.008)
Help with ADL (2001)			0.005	0.006
			(0.021)	(0.021)
Help with IADL (2001)			-0.001	-0.002
			(0.014)	(0.014)
Received $\geq$ 5,000p (2001)			0.006	0.004
			(0.006)	(0.007)
Gave $\geq$ 5,000p (2001)			-0.011	-0.011
			(0.008)	(0.008)
Difficulty with ADL (2003)				0.015
				(0.014)
Help with ADL (2003)				-0.021
				(0.017)
Difficulty with IADL (2003)				0.019
				(0.013)
Help with IADL (2003)				-0.010
				(0.014)
Received $\geq$ 5,000p (2003)				0.013*
				(0.006)
Gave $\geq$ 5,000p (2003)				0.004
				(0.008)
Constant	0.040**	0.032**	0.030**	0.024*
	(0.006)	(0.010)	(0.010)	(0.010)
R-squared	0.006	0.006	0.007	0.009
N	9459	9459	9459	9459

†p<0.10, * p<0.05, ** p<0.01
Source: MHAS 2001, 2003
Standard errors are in parentheses.
Dependent variable is indicator for unequal planned bequest.
Missing values for independent variables imputed using multiple imputation by chained equations.
Regressions include state-level fixed effects.

Table 7: Results from linear probability model predicting a planned better than equal share of bequest for sample of children of surviving parents with positive assets in 2003

	(1)	(2)	(3)	(4)	(5)
Male	0.004**	0.004**	0.004**	0.004**	0.003**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Youngest	0.006**	0.006**	0.007**	0.006**	0.008**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Oldest	0.001	0.001	0.001	0.001	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Oldest Male	-0.002	-0.002	-0.002	-0.002	-0.002
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Least Schooling	-0.002	-0.002	-0.002	-0.002	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Most Schooling	0.002†	0.002	0.002	0.002	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Married (2001)	0.004†	0.004†	0.005*	0.005†	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Has Children (2001)	-0.006**	-0.006**	-0.006**	-0.006**	-0.008**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Best Financial Situation (2001)	-0.002	-0.002	-0.003	-0.002	-0.003
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Worst Financial Situation (2001)	-0.002	-0.002	-0.002	-0.002	-0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Non-biological Child	-0.004	-0.003	-0.003	-0.003	-0.006
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Coresides with Parent (2001)	0.015**	0.015**	0.014**	0.014**	
	(0.003)	(0.003)	(0.003)	(0.003)	
In different Mexican community (2001)	-0.001	-0.001	-0.000	0.000	
	(0.002)	(0.002)	(0.002)	(0.002)	
Outside Mexico (2001)	-0.001	-0.001	-0.002	-0.001	
	(0.002)	(0.002)	(0.002)	(0.002)	
Helped with ADL (2001)		-0.016†	-0.018*	-0.018*	-0.017†
		(0.009)	(0.009)	(0.009)	(0.009)
Helped with IADL (2001)		0.019*	0.017†	0.017†	0.019*
		(0.009)	(0.009)	(0.009)	(0.009)
Gave $\geq$ 5,000p (2001)		0.006*	0.004	0.004	0.004
		(0.003)	(0.003)	(0.003)	(0.003)
Helped with ADL (2003)			0.007	0.007	0.008
			(0.010)	(0.010)	(0.010)
Helped with IADL (2003)			0.020*	0.020*	0.022**
			(0.008)	(0.008)	(0.008)
Gave $\geq$ 5,000p (2003)			0.010**	0.009**	0.009**
			(0.003)	(0.003)	(0.003)
Contact $\leq$ 1/yr (2003)				-0.003	-0.006*
				(0.003)	(0.003)
Contact $\geq$ 1/day (2003)				0.001	-0.001
				(0.002)	(0.002)
Constant	0.005†	0.005	0.003	0.003	0.013**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)
R-squared	0.008	0.009	0.010	0.010	0.009
N	55124	55124	55124	55124	55124

†p<0.10, * p<0.05, ** p<0.01

Source: MHAS 2001, 2003

Standard errors are in parentheses.

Dependent variable is indicator for better-than-average planned bequest.

Missing values for independent variables imputed using multiple imputation by chained equations.

Regressions include family-level fixed effects.

Table 8: Results from linear probability model predicting a planned better than equal share of bequest for four sub-samples of children of surviving parents with positive assets in 2003

	Male Parent	Female Parent	Urban	Rural	Business	No Business
Male	0.006**	0.001	0.000	0.009**	0.006**	0.003†
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Youngest	0.005**	0.007**	0.006**	0.007*	0.005	0.007**
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)
Oldest	0.000	0.002	0.000	0.001	-0.000	0.001
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.002)
Oldest Male	-0.002	-0.003	0.000	-0.006	-0.003	-0.002
	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.003)
Least Schooling	-0.001	-0.002	-0.001	-0.004†	-0.002	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Most Schooling	0.001	0.003†	0.004†	-0.000	0.002	0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Married (2001)	0.005	0.005†	0.003	0.006†	0.009*	0.003
	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)
Has Children (2001)	-0.006*	-0.006*	-0.009**	-0.002	-0.005	-0.006*
	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.002)
Best Financial Situation (2001)	0.001	-0.006	-0.003	-0.001	-0.002	-0.003
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Worst Financial Situation (2001)	0.000	-0.005	-0.001	-0.004	-0.002	-0.002
	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Non-biological Child	-0.005	-0.000	-0.004	-0.001	0.006	-0.006
	(0.005)	(0.005)	(0.006)	(0.005)	(0.007)	(0.005)
Coresides with Parent (2001)	0.012**	0.015**	0.012**	0.017**	0.024**	0.011**
	(0.003)	(0.003)	(0.004)	(0.005)	(0.005)	(0.003)
In different Mexican community (2001)	0.000	0.000	-0.001	0.001	0.006†	-0.002
	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)
Outside Mexico (2001)	-0.003	0.000	0.000	-0.003	-0.000	-0.001
	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Helped with ADL (2001)	-0.010	-0.025†	-0.026**	-0.003	-0.010	-0.021†
	(0.014)	(0.014)	(0.009)	(0.022)	(0.015)	(0.011)
Helped with IADL (2001)	0.003	0.024*	0.017	0.017	0.005	0.020*
	(0.011)	(0.012)	(0.011)	(0.012)	(0.015)	(0.010)
Gave $\geq$ 5,000p (2001)	0.001	0.006*	0.005	0.003	0.000	0.005†
	(0.003)	(0.003)	(0.004)	(0.004)	(0.005)	(0.003)
Helped with ADL (2003)	0.016	0.003	-0.004	0.027	0.011	0.007
	(0.019)	(0.013)	(0.009)	(0.022)	(0.023)	(0.011)
Helped with IADL (2003)	0.032*	0.016†	0.012	0.032*	0.032	0.017*
	(0.015)	(0.010)	(0.010)	(0.013)	(0.024)	(0.008)
Gave $\geq$ 5,000p (2003)	0.010**	0.010**	0.010**	0.008*	0.007	0.010**
	(0.003)	(0.003)	(0.004)	(0.004)	(0.005)	(0.003)
Contact $\leq$ 1/yr (2003)	-0.006†	-0.001	-0.006	-0.001	-0.004	-0.003
	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)
Contact $\geq$ 1/day (2003)	-0.001	0.003	0.003	-0.002	-0.000	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)
Constant	0.003	0.004	0.007†	-0.001	-0.004	0.006
	(0.003)	(0.004)	(0.004)	(0.005)	(0.005)	(0.004)
R-squared	0.010	0.012	0.010	0.014	0.013	0.010
N	26545	28579	33283	21841	13678	41446

†p<0.10, * p<0.05, ** p<0.01

Source: MHAS 2001, 2003

Standard errors are in parentheses.

Dependent variable is indicator for better-than-average bequest.

Missing values for independent variables imputed using multiple imputation by chained equations.

Regressions include family-level fixed effects.

Table 9: Results from "between" and "within" models predicting a planned better than equal share of bequest for sample of children of surviving parents with positive assets in 2003

	Between			Within		
	(1)	(2)	(3)	(4)	(5)	(6)
Male	0.004**	0.003**	0.003**			
	(0.001)	(0.001)	(0.001)			
Youngest	0.006**	0.006**	0.006**			
	(0.001)	(0.001)	(0.001)			
Oldest	0.002	0.002	0.002			
	(0.001)	(0.001)	(0.001)			
Oldest Male	-0.002	-0.002	-0.002			
	(0.002)	(0.002)	(0.002)			
Least Schooling	-0.002	-0.001	-0.001			
	(0.001)	(0.001)	(0.001)			
Most Schooling	0.003**	0.003*	0.003*			
	(0.001)	(0.001)	(0.001)			
Non-biological Child	-0.002	-0.001	0.000			
	(0.003)	(0.003)	(0.003)			
Married	0.003	0.004†	0.004†	-0.004†	-0.003†	-0.003†
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Has Children	-0.006**	-0.005**	-0.006**	0.001	0.001	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Best Financial Situation	-0.005	-0.006†	-0.005†	-0.000	-0.000	-0.000
	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)
Worst Financial Situation	-0.006†	-0.006†	-0.005	0.001	0.001	0.001
	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)
Coresides with Parent	0.018**	0.017**	0.019**	0.001	0.001	0.004
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
Helped with ADL		0.004	0.004		0.010	0.010
		(0.011)	(0.011)		(0.007)	(0.007)
Helped with IADL		0.031**	0.030**		0.001	0.001
		(0.009)	(0.009)		(0.005)	(0.005)
Gave $\geq$ 5,000p		0.018**	0.017**		0.005**	0.005**
		(0.003)	(0.003)		(0.002)	(0.002)
In different Mexican community			-0.000			0.004*
			(0.002)			(0.002)
Outside Mexico			0.005*			0.005*
			(0.002)			(0.003)
Contact $\leq$ 1/yr			-0.010**			-0.003
			(0.004)			(0.003)
Contact $\geq$ 1/day			0.004*			0.002
			(0.002)			(0.001)
Constant	0.007**	0.004	0.003	-0.001*	-0.001*	-0.001*
	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)
R-squared	0.016	0.020	0.021	0.000	0.000	0.001
N	52443	52443	52443	52443	52443	52443

†p<0.10, * p<0.05, ** p<0.01

Source: MHAS 2001, 2003

Standard errors are in parentheses.

Dependent variable in between regressions is average of 2001 and 2003 indicators for better-than-average bequest.

Dependent variable in within regressions is difference of 2001 and 2003 indicators for better-than-average bequest.

Independent variables are averages in the between regressions and differences in the within regressions.

Missing values for independent variables imputed using multiple imputation by chained equations.