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Inter vivos transfers and intended bequests

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Abstract

Empirical work on intergenerational transfers has focused on distinguishing between altruistic and exchange motivated behavior. However, these two models are unable to explain the strong tendency for inter vivos transfers to be negatively related to the income of the recipient, while bequests bear no relationship to income. This paper presents a new framework for analyzing transfers from parents to children that is more consistent with observed behavior than are the altruistic and exchange models alone. In particular the model developed here predicts differing behavior with respect to inter vivos transfers and bequests due to liquidity constraints and uncertainty about the recipient's permanent income. The empirical work uses data from the Health and Retirement Study and the Asset and Health Dynamics Study. The patterns observed in these data are consistent with earlier findings that inter vivos transfers go disproportionately to less well-off children, while bequests are divided equally across children. Further, the results support the predictions of the model in that differences in inter vivos transfers arise from differences in current income, while differences in bequests result when indicators of the children's permanent incomes differ.

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JEL classification: D19; D64; D82; D91; J14

1. Introduction

A growing body of empirical evidence has demonstrated that parents make

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substantial financial transfers to their adult children (Kotlikoff and Summers, 1981; Gale and Scholz, 1994). These transfers may be made either as inter vivos transfers while the parent is alive, or as bequests. Certainly one could imagine scenarios wherein one type of transfer would be preferred. For example, a young adult just starting out on his own may be unable to borrow against future earnings and need immediate assistance from his parents. Conversely, a parent whose own needs or length of life is uncertain may wish to delay transfers as long a possible, making a final disbursement at her death. Despite the differences in timing, the two types of transfers are to some extent substitutes. It is therefore surprising that consistently different patterns of behavior have been observed for the two modes of giving. In past work, inter vivos gifts have been shown to be strongly compensatory with greater transfers going to less well-off children, while bequests are typically found to be divided equally across siblings, regardless of their incomes. Current models cannot reconcile these sharp differences in observed patterns, nor can they explain the absence of a relationship between a child's income and the amount of his inheritance.

This paper addresses these shortcomings in the literature. It is the first to develop a theoretical model of transfer behavior that treats inter vivos transfers and bequests as part of the same decision making process, but yields different predictions about the expected patterns for the two types of giving. As in the standard altruism model I assume that parents base bequests on the permanent incomes of their children. However, the model departs from previous work in that parents do not know permanent incomes with certainty, but rather hold beliefs about their distributions. These beliefs are updated in each period given realizations on current incomes, and the updated distributions are used to determine bequests. Bequests are therefore only indirectly related to the current incomes of children. In contrast, inter vivos transfers are assumed to be made in response to liquidity constraints and depend more directly on current income.

This paper uses two newly released data sets, the Health and Retirement Study (HRS), and the Asset and Health Dynamics Study (AHEAD), to test the predictions of the model. These surveys provide more detailed information on the prevalence and magnitudes of inter vivos transfers, and on the characteristics of the potential donors and recipients, than has been available in the past. Furthermore, AHEAD collects information on expected bequests and can therefore be used to study that aspect of transfer behavior.

In both surveys I find that parents make inter vivos transfers that disproportionately benefit less well-off liquidity-constrained children. In contrast, differences in inheritances are unrelated to differences in the incomes of children. Instead, equal bequests are commonplace, with deviations from equal giving associated with differences in the permanent incomes of children, as proxied by schooling attainment.

The remainder of the paper is organized as follows: In Section 2 I briefly summarize the recent literature on inter vivos transfers and bequests, paying

special attention to the empirical patterns noted in the past. In Section 3 I present an income updating model of transfer behavior and Section 4 discusses the data used to test the model. The empirical results are contained in Section 5, and Section 6 concludes.

2. Previous literature

Interest in transfer behavior has been driven primarily by a desire to explain the motivation behind these intergenerational linkages, and in doing so, to understand their distributional effects (c.f. Barro, 1974; Cox, 1987; Behrman et al., 1990; Altonji et al., 1992). If families transfer resources to improve the well-being of poorer members, then government transfer programs that target these same individuals may replace or crowd out familial assistance. Conversely, if transfers are payments made in exchange for services—a parent compensating a child for providing home health care, for example—then the impact of government programs on familial behavior is less clear.[1]

In some of the first empirical work examining inter vivos transfers, Cox (1987); Cox and Rank (1992) find evidence that parents give more to better-off children, behavior that reinforces economic differences across siblings, and that is inconsistent with altruistic behavior. However, more recent work has found that less well-off children benefit disproportionately from transfers (Altonji et al., 1997; Dunn, 1997; McGarry and Schoeni, 1995, 1997). These results are consistent with both altruistic and exchange models.

In contrast to the consistent negative relationship between inter vivos transfers and the incomes of recipients, no such relationship has been observed with respect to bequests. Studies of probate records (Menchik, 1980, 1988) and reports of existing wills (Dunn and Phillips, 1997) have repeatedly found that few parents make bequests that are correlated with the incomes of their children. Instead, an overwhelming majority of estates have been found to be divided equally.[2] Using IRS records, Wilhelm (1996) provides a detailed examination of the division of estates across children and finds that estates are divided approximately equally among children almost 90% of the time.

The prevalence of equal giving contradicts the predictions of the altruism model as well as models of exchange (e.g., Bernheim et al., 1985), but a satisfactory

[1] Other models of transfer behavior currently discussed in the literature suggest that transfers may be made for the purchase of specific items (the paternalistic model), or that the donor receives utility from the act of giving (the warm glow model).

[2] Earlier work by Tomes (1981, 1988) finds a relatively low rate of equal division of estates and a significant negative relationship between the share of the inheritance received by a child and his income. Menchik (1988) makes a persuasive argument questioning the quality of the data used in Tomes's study and reaches different conclusions using similar data.

alternative model has not been offered. Wilhelm models the phenomenon of equal bequests by using a constant fixed cost to represent the disutility obtained from unequal division. Rather than explaining the decision to make equal bequests, this specification begs the question as to the origin of this cost. Behrman et al. (1990) also propose a model that predicts equal division. In their 'separable earnings bequests model' a parent's utility from a bequest depends only on the amount given. With decreasing marginal utility, equal bequests will be made across children. This paper improves on these attempts and extends the standard altruism model to allow for a non-negative relationship between the incomes of the recipients and bequests.

3. Theoretical framework

The model developed here is set in a two-period framework in which the parent chooses how much to consume and how much to transfer to her child. The addition of a second period introduces a new dimension to the standard one-period problem—the parent must decide not only how much to transfer, but also when to make a transfer. Both liquidity constraints faced by the child, and uncertainty about the child's future income will affect the parent's decisions. If there are no liquidity constraints and the child's permanent income is known with certainty, the timing of transfers will not be an issue. However, if permanent income is revealed only gradually over time, then parents will prefer to withhold transfers for as long as possible in order to learn more about the child's income and more effectively allocate resources (Altonji et al., 1997). In contrast, liquidity constraints faced by the child provide an incentive for early transfers.

In the first period the parent decides how much to consume and how much to save for the second period. If the child is liquidity constrained in period one, the parent will also choose how much transfer to the child. In the second period the parent divides her period one savings between own consumption and period two transfers. Because the child's permanent income is never learned with certainty, bequests depend on parental expectations. Observed income of the child only partly determines permanent income and is therefore only weakly related to bequests.

3.1. The model

The standard specification of a parental utility function in an altruistic model is

$$U_p = U(c_p, V(c_k))$$

wherein the parent derives utility from her own consumption and from the utility of her child (Cox, 1987). I extend this model to three periods and assume that the

parent dies at the end of the second period while the child lives for one period beyond his parent. Assuming a zero interest rate and time rate of discount, the utility function of the parent is

$$U_{\mathrm{p}} = U(c_{\mathrm{p}_1}, V(c_{\mathrm{k}_1})) + U(c_{\mathrm{p}_2}, V(c_{\mathrm{k}_2})) + W(c_{\mathrm{k}_3})$$

where subscripts denote the period[3]. $W(\cdot)$ represents the parent's utility from the child's third period consumption.[4] Transfers in the first period will be referred to as inter vivos transfers, while transfers in the second period, the end of the parent's life, will be termed bequests.

To solve the dynamic problem the parent begins in the second period where she has assets, A, carried over from the first period, and chooses how much to consume, c_{p_2}, and how much to bequeath to her child, b. For simplicity the parent is assumed to have no second period income. Because the child outlives the parent, the child's permanent income Y^{p}, will not be known with certainty, by either the parent or the child, even in period 2. Instead I assume that a parent holds a prior belief about its distribution, where the prior depends on observable characteristics of the child. Denote the prior as $f(Y^{\mathrm{p}}|X)$ where X is a vector of characteristics of the child such as schooling, sex, and marital status. Observations on the income of the child in each period during which the parent is alive (Y_{k_1}) and (Y_{k_2}) provide information that the parent uses to update her belief about the distribution of Y^{p}.

In period two, the posterior distribution is denoted $f(Y^{\mathrm{p}}_2) = f(Y^{\mathrm{p}}|X, Y_{\mathrm{k}_1}, Y_{\mathrm{k}_2})$. The parent maximizes expected utility,[5]

$$E[U_{\mathrm{p}_2}] = \int_{Y^{\mathrm{p}}_2} [U(c_{\mathrm{p}_2}, V(c_{\mathrm{k}_2})) + W(c_{\mathrm{k}_3})]\, f(Y^{\mathrm{p}}_2)\mathrm{d}Y^{\mathrm{p}}_2$$
$$\text{subject to: } c_{\mathrm{p}_2} = A - b$$

and under the standard assumption that the child's consumption depends on permanent income,[6]

$$c_{\mathrm{k}_i} = Y^{\mathrm{p}}_2 + kb.$$

This formulation presumes that the child is not liquidity constrained: his

[3] Again this specification follows the standard model used in previous studies of transfers over two periods (Cox, 1990) with the addition of a third period during which the child consumes. Altonji et al. (1997) are more specific about the form of the utility function and assume that the parental utility function is additive in the utility the parent derives from her own consumption and that derived from her child's consumption (i.e. $U_{\mathrm{p}} = u(c_{\mathrm{p}_1}) + u(c_{\mathrm{k}_1}) + E[u(c_{\mathrm{p}_2}) + u(c_{\mathrm{k}_2})]$, where E is the expectations operator).

[4] This simplified notation subsumes the child's utility function, i.e. $W(c_{k_3}) = U(V(c_{k_3}))$.

[5] Note that because the parent never observes the child's period three income, the posterior distribution of permanent income Y^{p}_2 applies to consumption in both period two and period three.

[6] See Deaton (1992) for an analysis of the literature on consumption models.

consumption is equal to the sum of permanent income and a fraction of the bequest, denoted kb.[7]

Maximization of the above problem yields solutions

$$b^* = b(A, Y_{k_1}, Y_{k_2})$$

$$c^*_{p_2} = A - b^*$$
$$= c_{p_2}(A, Y_{k_1}, Y_{k_2}) .$$

For notational simplicity let $\Omega(A, Y_{k_1}, Y_{k_2})$ denote optimal second period utility. That is,

$$\Omega = \int_{Y^p_2} [U(c_{p_2}(A, Y_{k_1}, Y_{k_2})), V(Y^p_2 + kb(A, Y_{k_1}, Y_{k_2}))$$
$$+ W(Y^p_2 + kb(A, Y_{k_1}, Y_{k_2})] f(Y^p_2) dY^p_2 .$$

In the second step of the optimization procedure the decision returns to period one. First-period decision-making is somewhat more complicated in that there exists the possibility that the child is liquidity constrained. Consider first the case where the child is not constrained. Here there is no need for the parent to make transfers in period one, and her first-period optimization problem is to choose A and c_{p_1} to maximize expected utility, integrating over the distributions of permanent income and period two income, conditional on Y_{k_1}. Let $f(Y^p_1) = f(Y^p|X, Y_{k_1})$. The parent therefore maximizes

$$E[U_p] = \int_{Y^p,\ Y_{k_2}} [U(c_{p_1}, V(c_{k_1})) + \Omega(A, Y_{k_1}, Y_{k_2})] f(Y^p, Y_{k_2}|X, Y_{k_1}) dY_{k_2} dY^p$$
$$\text{subject to: } c_{p_1} = w_p - A$$

where w_p is the first-period income of the parent and the child's consumption is determined by permanent income as

$$c_{k_1} = Y^p_1 + kb^* .$$

Solving this maximization problem yields optimal values of A and c_{p_1}, where

$$A^* = A(w_p, Y_{k_1})$$

and

[7] Because the child receives any and all bequests in this period, the assumption of no liquidity constraints indicates that bequests are sufficiently large (or second period income itself is not so low) that the child can adequately smooth consumption. If the child is permitted to be liquidity constrained in period two the basic predictions of the model carry through.

$$c^{*}_{p_1} = w_p - A^*$$
$$= c_{p_1}(w_p, Y_{k_1}) .$$

The more interesting case is the one in which the child is liquidity constrained. Formally, a child is liquidity constrained if his attainable consumption is below the level that would be chosen given Y^p_1 and b^*. The probability a child is liquidity constrained is therefore equal to

$$Pr(Y_{k_1} + L < Y^p_1 + kb^*)$$

where L is a measure of the child's ability of consume beyond current income and b^* is determined as above under the assumption of no liquidity constraints.[8] The expected amount of the liquidity constraint is

$$E[Y^p_1 + kb^* - Y_{k_1} - L] .$$

The parent can respond to a liquidity constraint by making an inter vivos transfer t. The consumption of the child then becomes $Y_{k_1} + L + t$ and the parent chooses A and t to maximize the expected utility function

$$E[U_p] = \int_{Y^p,\ Y_{k_2}} [U(c_{p_1}, V(c_{k_1})) + \Omega(A, Y_{k_1}, Y_{k_2})] f(Y^p, Y_{k_2} | X, Y_{k_1}) dY_{k_2} dY^p$$
$$\text{subject to: } c_{p_1} = w_p - A - t$$
$$\text{and } c_{k_1} = Y_{k_1} + L + t .$$

This maximization yields solutions

$$A^* = A(w_p, Y_{k_1}, L)$$
$$t^* = t(w_p, Y_{k_1}, L)$$
$$c^{*}_{p_1} = w_p - A - T$$
$$= c_{p_1}(w_p, Y_{k_1}, L) .$$

Thus, period one transfers depend directly on Y_{k_1} through its role in determining liquidity constraints, while period two transfers (bequests) depend on Y_{k_1} only indirectly through the relationship between Y_{k_1} and permanent income.

[8] If the child can neither borrow nor save, L is zero. If he can save but not borrow, L is equal to the amount of his savings. If both saving and borrowing are permitted, L may be larger than current savings. Repayment of any loans is implicitly incorporated into period two consumption through its reliance on permanent income.

3.2. Specification of the updating mechanism

The importance of observed income in determining the distribution of permanent income will depend on how certain the parent is about her prior (the variance of the distribution) and how closely current income relates to permanent income. To illustrate how this updating mechanism might operate, consider the following example.

Suppose the prior, $f(Y^{\mathrm{p}})$, is normally distributed,[9]

$$f(Y^{\mathrm{p}}) \sim N(\mu + X\beta, \sigma^2)$$

where X is as before, σ^2 is the variance of the distribution and μ is a parent's expectation of the child's permanent income prior to the revelation of any characteristics in X. Suppose further that current income in each period is equal to the sum of permanent income, Y^{p}, and a transitory component Y_{t_i}, where the values of transitory income are independently and identically distributed over time such that

$$Y_{t_i} \sim N(0, \tau^2)\,.$$

Given the period one observation on income (where $Y_{\mathrm{k}_1} = Y^{\mathrm{p}} + Y_{t_1}$) Bayesian updating yields a posterior distribution of permanent income, $f(Y_1^{\mathrm{p}})$, such that

$$f(Y_1^{\mathrm{p}}) = f(Y^{\mathrm{p}}|X, Y_{\mathrm{k}_1}) \sim N\left(\left(\frac{\tau^2}{\tau^2 + \sigma^2}\right)(\mu + X\beta) + \left(\frac{\sigma^2}{\tau^2 + \sigma^2}\right)Y_{\mathrm{k}_1}, \sigma_1^2\right)$$

where $\sigma_1^2 = \sigma^2\tau^2/(\sigma^2 + \tau^2)$ is the updated variance. Thus, the mean of Y^{p} conditional on Y_{k_1}, is a weighted average of the mean of the prior distribution and the value of observed income. The weights given to the two components depend on the relative magnitudes of the variances σ^2 and τ^2. The more certain the parent is about her prior (the smaller is σ^2), the greater is $\tau^2/(\tau^2 + \sigma^2)$ and the greater the weight given to the prior. In the limit, where Y^{p} is known with certainty ($\sigma^2 = 0$), there is no updating, and permanent income in each period is equal to $\mu + X\beta$. Alternatively with a diffuse prior, where σ^2 is large relative to τ^2, the observation on income is more informative and receives greater weight in the posterior distribution than does the prior.

In the second period, the parent observes Y_{k_2} and again updates her belief about the distribution of Y^{p} such that

[9] The assumption of a normal distribution is for concreteness only. The model requires that the distribution of permanent income depends on prior beliefs and can be updated with observations on income. The normal distribution yields a convenient formula for this Bayesian updating but is not essential to the predictions of the model.

$$f(Y_2^p) = f(Y^p|X, Y_{k_1}, Y_{k_2})$$
$$= N\left(\left(\frac{\tau^2}{\tau^2 + 2\sigma^2}\right)(\mu + X\beta) + \left(\frac{\sigma^2}{\tau^2 + 2\sigma^2}\right)(Y_{k_1} + Y_{k_2}), \sigma_2^2\right)$$

where σ_2^2 is the updated variance.[10]

3.3. Predictions

If the child is not liquidity constrained in the first period there will be no inter vivos transfers—all transfers will be made as bequests. Because the parent is assumed to be altruistic, bequests will be negatively related to the child's permanent income. Moreover, because current income is only one of the components affecting permanent income, the relationship between current income and bequests will be weak and will depend on the relative magnitudes of σ^2 and τ^2. In the extreme, if current income provides no information about permanent income (for example if $\sigma^2 = 0$) then there will be no relationship between Y_{k_1} and bequests.

In cases where the child is liquidity constrained, the parent may make inter vivos transfers. Ceteris paribus, low current income for a child implies a greater probability and amount of liquidity constraints, so inter vivos transfers will be negatively related to the child's current income. In contrast, holding current income constant, greater permanent income implies a greater probability and amount of a liquidity constraint, so inter vivos transfers could be positively related to Y^p.[11] Finally, inter vivos transfers will be positively related to other indicators of liquidity constraints.

The relationship between bequests and current income for liquidity constrained children is more complicated. In the unconstrained case, a greater value of current income shifts the distribution of permanent income upward and therefore implies a (perhaps weak) negative relationship between current income and bequests. However, conditional on inter vivos transfers being made, if the current income of the child increases, the child's marginal utility of a dollar of inter vivos transfers

[10] By extending this process beyond two periods, it is apparent that the strength of the correlation between the expected value of permanent income and the expected value of the prior $(\mu + X\beta)$ declines with each observation on income, as does the importance of an additional observation on income. For example, while the child's schooling may initially be an important predictor of permanent income, as more and more observations on income become available to the parent, the relative importance of schooling will decrease. This prediction is difficult to test without panel data because I cannot control for the many observations on Y_k that are available to the parent, but unobserved by the researcher. I therefore will not focus on this aspect of the model.

[11] There is a second effect in that greater permanent income also implies a lower value of b^*. Because liquidity constraints are measured as relative to $Y_1^p + kb^*$, a lower value of b^* implies a smaller probability (and amount) of liquidity constraints, and through this mechanism, a smaller probability of inter vivos transfers.

decreases. The parent transfers less in period one, consumes more herself (increases c_{p_1}), and carries over a greater amount to period two (increases A). A greater amount of second period wealth increases both the parent's own consumption, c_{p_2}, and the amount of the bequest, b. The two effects—a change in the distribution of permanent income and a change in the period two budget set—operate in opposite directions and imply that the relationship between current income and bequests is ambiguous. In the extreme case where current income is uninformative about permanent income, the effect of current income on bequests will operate solely through the budget constraint and bequests will be positively related to current income.

To summarize the predictions of the model:

- Both the probability of receiving an inter vivos transfer and the amount of the transfer will be negatively related to the current income of a child and positively related to his permanent income.
- In families in which no inter vivos transfers are being made bequests will be negatively related to current income. However, because bequests depend on the distribution of permanent income, which is only partly determined by current income, this correlation will likely be weak.
- In families where inter vivos transfers are being made, the relationship between current income and bequests is ambiguous.

4. Data

The data requirements of this analysis are extensive. One needs information on both inter vivos transfers and bequests, on the characteristics of the children (the potential recipients), and on the characteristics of the parents (the potential donors). Because there likely exist unobserved measures of generosity or affection specific to families that are correlated with the explanatory variables, it is also important to be able to control for family effects.

The Health and Retirement Study (HRS) and the Asset and Health Dynamics Study (AHEAD) provide a unique opportunity to address these issues. The HRS surveys individuals born from 1931 to 1941, and AHEAD samples an older cohort born in 1923 or earlier. Both surveys also interview spouses of sample members, even if the spouse's age is outside the targeted range. The first interviews for the two surveys were in 1992 and 1993, respectively, when respondents were approximately 51–61 years old in the HRS and 70 and over in AHEAD. When appropriately weighted, both the HRS and AHEAD are representative of the non-institutional population for the target cohorts.[12] Because the surveys are

[12] Weighting is necessary because individuals in heavily black and Hispanic areas were over-sampled in both surveys.

conducted jointly, the survey instruments themselves share many of the same questions and are easily compared. The discussion here focuses on information useful in a study of transfer behavior. More general descriptions of the two surveys are available in Juster and Suzman (1995); Soldo et al. (1997).

HRS and AHEAD collect more detailed information on intra-family transfers than has been available in past surveys. Transfers to children are mentioned explicitly, with respondents asked to report transfers of $500 or more made to each child in the past year. There is also a substantial amount of information available for both the respondents and their children. Past studies often lacked information on one of the parties involved in the transfer, leading to an omitted variables problem and biased estimates. In addition to the detailed information about the respondents, the surveys also collect information (as reported by the parent) on each child's age, household income, schooling, employment status, marital status, number of own children (grandchildren to the respondent), and home ownership. This child-specific information makes it possible to identify the economic status of each (potential) recipient both on an absolute level, and relative to his siblings.

Along with the questions about inter vivos gifts, AHEAD asks respondents about their intentions with respect to bequests: Whether they have a will, whether they expect to leave a bequest, the probability the bequest is above some threshold, whether their children are listed as heirs if there is a will, and whether they provide equally for all children in their will. These questions have not been asked of other nationally representative samples, and when linked with information on income and wealth, these data have the potential for greatly improving our knowledge of inheritances.

4.1. Sample population

In the HRS the full sample consists of 7703 households. Limiting the sample to households with non-coresident children age 18 and over reduces the sample to 6205 families with 18 912 non-coresident adult children.[13] The initial sample in AHEAD consists of 6051 households leaving a sample of 4835 households and 14 249 children after imposing the same restrictions as in the HRS.

[13] For the analyses in this paper I select only those children who are age 18 or older and who do not live with the respondent. Transfers made to children under 18 are likely to be legally required payments such as child support and will therefore differ from the altruistic or exchange based transfers made to older children. I exclude coresident children for two reasons. First and foremost, the focus of the paper is on the effect of the child's income on transfers. In the HRS there is no income information for coresident children so these children cannot be included. In AHEAD some information is collected, but the measure differs from that for non-coresident children. The second reason for the exclusion is because of the difficulty of quantifying the value of shared food and housing. Certainly by providing room and board for an adult child a parent is making a substantial transfer. However, in neither data set do we know the value of this transfer or the amount which the child contributes to the household. Where appropriate I note the effect of including coresident children on the coefficient estimates.

In Table 1, the means of the variables to be used in the analysis are presented separately for the HRS and AHEAD samples. The top panel reports the means of a family-based sample with one observation for each HRS or AHEAD family. The largest differences between the HRS and the AHEAD data are as expected. Both income and wealth are greater for the HRS families than for the AHEAD families, consistent with a life cycle pattern in which assets are depleted during the

Table 1
Means of variables used in the analyses

	HRS		AHEAD	
	Mean	Std Err	Mean	Std Err
Respondent level information:[a]				
Age of head	57.43	0.06	77.71	0.08
Income (head and spouse)	41,214	616	21,790	349
Wealth (head and spouse)	239,885	5729	162,925	5137
Highest grade completed of head	12.14	0.035	11.24	0.085
Married	0.696	0.005	0.415	0.006
Number of children	3.02	0.020	2.92	0.025
Nonwhite (head)	0.148	0.004	0.155	0.005
Head or spouse in poor health	0.304	0.005	0.427	0.006
Number of observations	6205[c]		4835[c]	
Child level information:[b]				
Age	30.83	0.039	47.19	0.075
Total Family Income HRS				
less than $10,000	0.151	0.002	–	–
$10,000–25,000	0.293	0.003	–	–
greater than 25,000	0.402	0.003	–	–
Total Family Income AHEAD				
less than $20,000	–	–	0.118	0.002
$20,000–30,000	–	–	0.115	0.002
$30,000–50,000	–	–	0.220	0.003
greater than 50,000	–	–	0.227	0.003
less than $30,000	–	–	0.022	0.001
less than $50,000	–	–	0.040	0.001
greater than $30,000	–	–	0.055	0.002
Total Family Income missing	0.154	0.002	0.203	0.003
Owns home	0.462	0.003	0.750	0.003
Highest grade completed	13.02	0.014	13.30	0.021
Married	0.624	0.003	0.727	0.003
Has children (1 = yes)	0.634	0.003	0.834	0.003
Lives within 10 miles of parent	0.397	0.003	0.343	0.004
Male	0.501	0.003	0.493	0.004
Number of observations	18,912[c]		14,249[c]	

[a] Respondent level sample has one observation for each HRS/AHEAD family.
[b] Child level sample has one observation for each child of HRS/AHEAD family.
[c] Numbers of observations differs for some variables due to missing values.

non-working (low-income) years, as well as with cohort differences in lifetime wealth (Shorrocks, 1975). Mean income for the younger cohort is $41 214 compared to $21 790 for the older group. The corresponding values for wealth are $239 885 and $162 925.[14] The proportion of currently married households falls with age, from 70% in the HRS to 42% in AHEAD. The older AHEAD respondents are also more likely to be in poor health.

The statistics reported in the lower portion of the table are based on the sample of children of HRS and AHEAD respondents. Each non-coresident adult child contributes one observation to the sample. Thus a family with three children age 18 and over will contribute three observations. HRS children are younger than AHEAD children with a mean age of 31 compared to 47 in AHEAD. Consistent with the differences in age, HRS children are less well off financially in terms of home ownership and income. Forty-six percent of HRS children own a home compared with 75% of AHEAD children. The two surveys used different breakpoints in recording categorical values for a child's income, so an exact comparison between surveys is not possible, but the direction of the difference is obvious.[15] Approximately 50% of AHEAD children have incomes above $30 000 while only 40% of HRS children have incomes above $25 000. In the lower tail of the distribution, approximately 12% of AHEAD children have incomes below $20 000 while 15% of HRS children have incomes below $10 000. HRS children are also significantly less likely to be married or to have children of their own.

4.2. Patterns of transfers

The quantity of inter vivos transfers in each survey is large. As shown in Table 2, 29% of households in the HRS made an inter vivos transfer of $500 to at least one child and 13% of all children are reported to have been given a transfer. The numbers in AHEAD, at 25 and 13%, are surprisingly similar given the large differences in the age, income, and wealth, of the two samples. Mean transfers to each child (over all children receiving a positive amount) are $3013 in HRS, and $4215 in AHEAD. The difference between the median amounts is similar to the difference in means.

An unusual feature of the AHEAD survey is the information obtained on expected bequests. Much of our current knowledge about the distribution of estates comes from studies of the very wealthy (Wilhelm, 1996) or of limited geographic areas (Tomes, 1981; Menchik, 1980). The behavior of these selective samples

[14] Note that the HRS figures are in 1992 dollars while AHEAD figures are reported in 1993 dollars. The consumer price index increased by 3% from 1992 to 1993.

[15] In AHEAD in addition to the given categories of: less than $20 000, $20 000–$30 000, $30 000–$50 000 and $50 000 or more, respondents could also give a less specific answer by combining two intervals. For example, a respondent could answer that her child's income was less than $30 000 if she did not know if it was greater than or less than $20 000.

Table 2
Inter vivos transfers and bequests to children 18 and over in the HRS and AHEAD surveys

	HRS	AHEAD		AHEAD
Inter vivos transfers:			*Bequests:*	
Percent of families			Probability leave a bequest	
making a cash transfer			mean	0.55
to at least one child	28.9	24.6	median	0.50
			standard deviation	0.37
Percent of children				
receiving a cash			Probability leave inheritance>$10,000[a]	
transfer	13.4	13.1	mean	0.55
			median	0.50
Mean amount of non-zero			standard deviation	0.40
cash transfers	$3013	$4215		
			Probability leave inheritance>$100,000[b]	
Standard Deviation	5369	7961	mean	0.26
			median	0.00
Median amount	1000	1500	standard error	0.35

[a] Zero for those who report a zero probability of leaving a bequest (1164).
[b] Zero for those who report a prob of less than 0.30 for the probability of leaving $10,000 or more (1658).

might differ from that of the general population. In contrast, AHEAD is a nationally representative sample of the cohort born in 1923 or earlier and therefore provides a description of behavior across a wider distribution of individuals.

Respondents in AHEAD are asked to report, on a scale of 0–100, the subjective probability of leaving a bequest.[16] When rescaled to lie between zero and one, the average reported probability among those respondents with at least one non-coresident adult child is 0.55, with a median value of 0.50 (Table 2).[17] Furthermore, the inheritance will typically go, at least in part, to the children of the respondent. Eighty-seven percent (not shown) of those with a will name at least one child as a beneficiary.

While the expected magnitude of a bequest is not obtained in the survey,

[16] These probabilities (and those discussed below) should be thought of as incorporating current wealth, anticipated changes in wealth, and the mortality risk of the respondent. I control for age, health status, and current wealth holdings in subsequent analyses; thus conditional on these factors, differences in the reported probabilities will measure differences in expected decumulation of assets, reflecting, in part, the desire to leave a bequest.

[17] In the HRS respondents are asked whether or not they 'expect to leave a sizeable inheritance'. The possible answers are: yes, definitely; yes, probably; yes, possibly; probably not; no, definitely not. Of those respondents with non-coresident children, 43% gave one of the three affirmative responses. Because there is no way to define sizeable, it is impossible to say whether these respondents are behaving differently from the AHEAD respondents.

respondents are asked to report the probability (on a scale of 0–100) that they will leave $10 ,000 or more and the probability of leaving $100 000 or more.[18]

The reported probabilities suggest that a large number of respondents expect to leave a significant amount of money to their heirs. The mean probability of leaving more than $10 000 is 0.55, while the median is 0.50. The probability of leaving more than $100 000 at 0.26, is substantially lower.[19]

Using reported information on wills that are 'written and witnessed' from AHEAD I can draw conclusions about the eventual distribution of the estate. Although seemingly inconsistent with most theoretical explanations of transfer behavior, 83% of respondents who have a will, and who list children among the beneficiaries, report that their will treats all children 'about equally' (not shown). This figure is quite close to the 88% making 'approximately equal' bequests in Wilhelm's (1996) study based on data from the Internal Revenue Service.[20] The similarity between actual probate data and the reported provisions of wills in AHEAD is noteworthy. The fraction of the population desiring to make equal bequests may be even larger than these figures indicate. For individuals without a will, estates, by law, are divided equally among children if there is no surviving spouse. Individuals who are aware of this procedure, and who wish to leave identical bequests, may forego the expense (in terms of time, money and emotional energy) involved in writing a will, and leave it to the state to divide the inheritance.[21]

In contrast to the prevalence of identical bequests, only 25.3% of the AHEAD

[18] If a respondent reported a zero probability of leaving any estate at all, the questions about the amount of the estate were not asked. I assigned a value of zero to the probability of leaving $10 000 and to the probability of leaving $100 000 for these 1164 cases. In addition, if a respondent reported a probability of 0.30 or smaller for the probability of leaving $10 000 or more, she was not asked about the probability of leaving $100 000 or more. I also assign these additional 494 individuals a zero value for the latter probability.

[19] In Wilhelm (1996), the mean amount of a bequest (per child) was close to $250 000. The sample used in this paper and the Wilhelm sample are not comparable because the Wilhelm sample is based on estates filing an estate tax return and is therefore drawn from the uppermost tail of the wealth distribution.

[20] The definition of 'about equal' in AHEAD is left to the respondent. Wilhelm follows Tomes (1988) in defining 'approximately equal' as when ''the difference between the maximum and minimum sibling inheritance is no more than one-quarter of the mean inheritance per child'' (Wilhelm, 1996, p. 880). Obviously amounts bequeathed are not yet available in AHEAD so a similar measure cannot be constructed.

[21] If the decedent has both a spouse and children, a portion of the estate is typically reserved for the spouse with the remainder divided equally across children. The specific formulas regarding the division differ across states. A typical allocation would give the first $50 000 of the estate to the spouse along with one-half of everything above $50 000. Individuals who wish to leave their entire estate to their spouse therefore have an incentive to write a will even if they desire the estate to be divided equally across children should they outlive their spouse. It is therefore common for wills to specify one allocation should the spouse be alive and a differing allocation should the spouse predecease the individual making the will.

families who made at least one inter vivos transfer in the past year (and who have more than one child), transferred equal amounts to all children. The number making equal inter vivos transfers in the HRS is even lower, with just 6.4% of families with two or more children transferring equal amounts.[22]

The difference across surveys in the propensity to make equal transfers could be due to estate planning behavior. Because AHEAD respondents are older, they are more likely to be considering issues related to the distribution of their estates. Estates above a fixed amount ($600 000 in the survey years) are subject to tax, but there are simple means available to reduce the expected tax liability. In particular, an individual may make inter vivos transfers to reduce the amount of the eventual estate (Poterba, 1997; McGarry, 1999). Tax limits on inter vivos giving ($10 000 per person, per year) may result in equal transfers across children.[23] In the multivariate analyses below I will control for potentially taxable estates and thus allow behavior with respect to inter vivos transfers to differ for these wealthy individuals.

It should be noted that inter vivos transfers are measured for a single year. It could certainly be the case that the differences across siblings in the receipt of inter vivos transfers vary over a lifetime. Unfortunately I know of no data available to examine the intra-family variation in transfers over an extended period.[24]

5. Regression results

To test the predictions of the model I focus on the effect of a child's income on the transfer behavior of his parent. The model predicts that inter vivos transfers will be negatively related to the child's current income and positively related to factors that proxy liquidity constraints. In contrast, because bequests are determined by the permanent income of the child, and current income need not be strongly correlated with permanent income, the relationship between bequests and

[22] The portion of the sample transferring the same amount to all children is not sensitive to requiring exactly the same amounts. Respondents tend to report 'round' numbers for the amount of the transfer and further rounding does not substantially increase the prevalence of equal transfers within families. The mean difference between the largest and smallest amounts given to children in a particular family, among families who make at least one transfer, is $2560. The median difference is $1000.

[23] Individuals can bequeath an unlimited amount to their spouses free of estate taxes. There is therefore no tax incentive to make inter vivos transfers to a spouse. These funds could be transferred at death.

[24] Using the first two waves of data from the HRS, McGarry (1998a) shows that changes in inter vivos transfers across waves are negatively related to changes in a child's income. Thus the degree to which differences across siblings in inter vivos transfers are mitigated over time appears to depend on the extent to which differences in child incomes are lessened.

current income may be weak. Furthermore, for children who are receiving inter vivos transfers, current income may be positively related to bequests, a surprising result in a model based on altruistic behavior.

5.1. Family level analysis

Because nearly all the available information on bequests is reported at a family level, I begin by analyzing variation in inter vivos transfer and bequest behavior across families. Here, each family contributes one observation to the estimation. Current income for the children of the family is measured as the mean income calculated across siblings.[25] I use mean age and an indicator of whether all children in the family own a home as measures of potential liquidity constraints, and proxy permanent income with mean schooling.[26]

In addition to income and wealth, I include an indicator of whether the parent has assets over $600 000 (or over 1.2 million for a couple) in order to capture differences in behavior due to potential estate taxes. I also control for other characteristics of the parent that may be correlated with tastes or ability to make transfers, including age, race, sex, health status, and years of schooling.

5.1.1. Inter vivos transfers

Table 3 presents the results from a logit model for the probability a parent makes a transfer to at least one child. The lower the average income of children, the more likely it is that at least one child is liquidity constrained. Furthermore, because younger children are less likely to have a store of wealth to help smooth consumption than are older children, and are more likely to be on the upward sloping portion of their age–earnings profile, they will be more likely to be liquidity constrained, and low earnings will be more strongly tied to liquidity constraints. The estimated results are consistent with these predictions. In both the HRS and AHEAD samples the probability of an inter vivos transfer falls significantly as the mean income of children increases, but the effect is substantial-

[25] As noted in the discussion of Table 1, parents give categorical responses for the income of their children. To average income across children I assign each child a value of income equal the midpoint of his income category. For children of AHEAD respondents I also tried imputing a single value within each interval using the distribution of incomes of HRS respondents who similar in age to the AHEAD children. The results were substantially unchanged.

[26] Age could also act as a proxy for permanent income: If age-earnings profiles are upward sloping then holding current income constant, younger children likely have greater lifetime incomes. Home ownership may also be related to permanent income, although given the great variation in home prices and the large fraction of families who eventually own a home, it is probably better thought of as a measure of (the absence of) liquidity constraints.

Table 3
Logit estimates of the probability of making an inter vivos transfer

	HRS			AHEAD		
	Coeff	S. E.	Der[a]	Coeff	S. E.	Der[a]
Children's characteristics:						
Mean Income (10,000s)[b]	−0.196**	0.024	−0.035	−0.075**	0.023	−0.012
Mean Income missing	−1.347**	0.145	−0.243	−1.075**	0.170	−0.168
Mean age	−0.041**	0.009	−0.007	−0.015*	0.007	−0.002
Mean schooling	0.057**	0.021	0.010	0.070**	0.022	0.011
All children own home (0/1)	−0.194	0.109	−0.035	−0.249**	0.080	−0.039
Respondent's characteristics						
Income quartile						
1st-lowest	−1.133**	0.111	−0.205	−1.654**	0.161	−0.259
2nd	−0.634**	0.094	−0.115	−0.978**	0.118	−0.153
3rd	−0.348**	0.082	−0.063	−0.522**	0.100	−0.082
4th (omitted)	–	–	–	–	–	–
Wealth quartile						
1st-lowest	−0.812**	0.115	−0.147	−0.873**	0.141	−0.137
2nd	−0.368**	0.093	−0.066	−0.559**	0.116	−0.087
3rd	−0.091	0.085	−0.017	−0.342**	0.100	−0.054
4th (omitted)	–	–	–	–	–	–
Taxable estate	0.146	0.160	0.026	0.973**	0.247	0.152
Married	−0.202*	0.079	−0.037	−0.020	0.087	−0.003
Number of living children	0.060**	0.018	0.011	−0.050**	0.022	−0.008
Age of head (male in couple)	0.015*	0.008	0.003	0.013	0.009	0.002
Highest grade completed of head	0.065**	0.012	0.012	0.015**	0.006	0.002
Nonwhite	−0.217*	0.087	−0.039	−0.255**	0.123	−0.040
Head or spouse in poor health	−0.147*	0.074	−0.027	−0.259**	0.081	−0.040
Constant	−0.698	0.456		−0.763	0.614	
Number of Observations		6148			4749	
Mean of Dependent Variable		0.30			0.26	

[a] Derivatives are evaluated at the means of the right hand side variables.
[b] Mean income is obtained by assigning each child the midpoint of his income category and averaging across all children in the family.
** indicates significant at a 1 percent level, * indicates significant at a 5 percent level.
Also included is a dummy variable indicating a proxy response.

ly stronger in the HRS where the children are on average younger than in AHEAD. In the HRS an increase of $10 000 in the average income of children is associated with a 3.5 percentage point decrease in the probability of a transfer on a base probability of 30%, a change of 12%,[27] compared to a decrease of 1.2

[27] The effects are evaluated at the means of the right-hand side variables. A change of one standard deviation in mean income is equal to $15 000 in the HRS and $20 000 in AHEAD.

percentage points or 5% in AHEAD.[28] Similarly, the probability of making a transfer falls significantly with the mean age of children.[29]

If a parent does not know the income of her children, she is unlikely to know if they are liquidity constrained, and unlikely to make transfers in response to the constraint. Accordingly, the variable indicating that mean income of the children is missing has a large negative effect on the probability of making a transfer, reducing the probability by 24 percentage points in the HRS and by 17 percentage points in AHEAD.

The coefficient on schooling is positive and significantly different from zero in both surveys. Here schooling serves as a proxy for permanent income. Holding current income constant, greater permanent income implies a greater probability the child is liquidity constrained, and hence a greater probability of a transfer. An alternative explanation for the direction of the schooling effect is that it captures an unobserved measure of generosity of the parents. Parents who gave generously to support a child's education may also be generous with later transfers. I investigate this possibility later in fixed effect models.[30]

The variable indicating whether all children in the family own a home has a large negative effect in each survey. If all children do own a home it is unlikely that any is facing significant liquidity constraints and the probability of a transfer

[28] The results are unchanged if coresident children of AHEAD respondents are included in the regressions. Because AHEAD respondents are age 70 and over, it is likely that many of the shared living arrangements benefit a parent who needs financial or personal assistance. Coresident children of these respondents may therefore be less likely to receive transfers than coresident children of HRS respondents. Including these observations reduces the effect of the mean income of children slightly from 0.012 to 0.010 per $10 000 change.

[29] The greatest variation in the mean age of children comes from moving across samples. The difference in the average age of HRS and AHEAD children is 17 years while the difference between the 25th and 75th percentile of children's ages within survey is just 8 years in the HRS and 12 years in AHEAD. If I include an interaction of mean age and mean income of the children in each equation, the direction of the effect is consistent with the predictions, but the estimated coefficient is not significantly different from zero. To keep the interpretations of the estimated effects as straightforward as possible, I have excluded the interactions from the specifications presented here.

[30] Models of investment in the human capital of children also make predictions about the relationship between schooling and transfers. In an investment model, parents invest in the schooling of children until the marginal rate of return on the investment equals the market rate of interest. They make cash transfers only after this level of schooling is attained. An inter vivos transfer to a child who is not currently in school therefore signals that the parent has already invested optimally in schooling and suggests an above average level of schooling if some parents are constrained from investing to this extent. Alternatively, if the returns to schooling vary across children, parents may invest in the schooling of more able children and make cash transfers to those for whom schooling is a less good investment. The positive relationship exhibited here is consistent with the former explanation. See Behrman et al. (1990) for an excellent discussion of these models.

falls by approximately 4 percentage points in each sample, although the effect is significant only in AHEAD.[31]

The effects of the parent's characteristics accord with intuition: more educated, wealthier, and higher income parents are more likely to have made a transfer. Moving from the lowest to the highest income quartile increases the probability of a transfer by 20 percentage points in the HRS and 26 in AHEAD. Differences by wealth quartile are somewhat smaller. In AHEAD, where estate planning could be a factor, there is a substantial increase in the probability of a transfer for those with a potentially taxable estate, while this difference is insignificantly different from zero (although positive) in the HRS.[32] Marital status also has a significant effect. Holding household income and wealth constant, married individuals have fewer resources per person and are therefore less well-off financially than unmarried and less likely to make a transfer.

5.1.2. Bequests

For the predictions relevant to bequest behavior I use responses to questions in AHEAD that ask respondents to report, on a scale of 0–100: (i) the probability with which they expect to leave a bequest; (ii) the probability of leaving more than $10 000; and (iii) the probability of leaving more than $100 000.[33] I rescale the 101 integer values to lie between zero and one and estimate the three equations simultaneously using logistic transformations to take account of the boundedness of the left-hand side variables.[34] Recall that the effect of current income on bequests depends on whether children are currently receiving an inter vivos transfer. I therefore separately estimate the regressions for families that do and do not make an inter vivos transfer.

The first panel of Table 4 contains the coefficient estimates for families that do not make an inter vivos transfer.[35] The model predicts a weak negative relationship

[31] The absence of liquidity constraints could arise because of the child's own savings or because he has already received a large portion of intended lifetime transfers, allowing him to have purchased a home. Engelhardt and Mayer (1998) find that approximately 22% of those buying a home received help with the down payment, and among these individuals the assistance amounted, on average, to over 50% of the down payment.

[32] See Poterba (1997); McGarry (1999) for a more detailed discussion of the transfer behavior of the very wealthy.

[33] The probability questions were asked of both respondents in the case of married couples. When there are two responses for a family I use the average of the responses. The correlation between the answers of husbands and wives is approximately 0.60. The conclusions are unchanged if I use the response of the husband or the wife alone.

[34] Estimates using simple OLS regressions gave substantially similar results.

[35] The number of observations in Table 4 falls relative to Table 3 because proxy respondents were not asked these probability questions while there is information from proxy respondents about inter vivos transfers. (A dummy variable indicating a proxy response is included in the specifications in Table 3 and is not significantly different from zero.) I also lose 100 observations from the top panel and 39 observations in the bottom panel by requiring responses to all three probability questions.

Table 4
Nonlinear estimates of the probability of bequests by inter vivos transfer status

	Any Bequest			> $10,000			> $100,000		
	Coeff	Std Err	Deriv[a]	Coeff	Std Err	Deriv[a]	Coeff	Std Err	Deriv[a]
Panel A–Families not making an inter vivos transfer									
Children's characteristics:									
Mean Income (10,000s)[b]	0.034	0.019	0.008	0.034	0.021	0.008	0.013	0.021	0.000
Mean Income missing	−0.237*	0.121	−0.058	−0.295*	0.134	−0.071	−0.171	0.155	−0.009
Mean age	−0.003	0.005	−0.001	0.004	0.006	0.001	0.004	0.007	0.000
Mean schooling	0.045**	0.017	0.011	0.088**	0.020	0.021	0.090**	0.022	0.005
All children own home (0/1)	0.003	0.064	0.001	0.034	0.070	0.008	0.104	0.069	0.005
Number of observations		2937			2937			2937	
Mean of Dependent Variable		0.45			0.45			0.18	
Variance/Covariance matrix	$\sigma_1^2 = 0.11$, $\sigma_{1,2} = 0.08$, $\sigma_{1,3} = 0.03$, $\sigma_2^2 = 0.11$, $\sigma_{2,3} = 0.03$, $\sigma_3^2 = 0.07$								
Panel B–Families making an inter vivos transfer									
Children's characteristics:									
Mean Income (10,000s)[b]	0.048	0.030	0.009	0.138**	0.035	0.022	0.129**	0.033	0.019
Mean Income missing	−0.204	0.232	−0.040	−0.077	0.255	−0.012	0.124	0.304	0.018
Mean age of Children	0.016	0.009	0.003	0.020	0.010	0.003	0.017	0.011	0.003
Mean schooling	0.054	0.029	0.011	0.043	0.032	0.007	−0.007	0.035	−0.001
All children own home (0/1)	0.157	0.108	0.031	0.053	0.125	0.008	0.057	0.114	0.008
Number of observations		1039			1039			1039	
Mean of Dependent Variable		0.70			0.74			0.44	
Variance/Covariance matrix	$\sigma_1^2 = 0.09$, $\sigma_{1,2} = 0.07$, $\sigma_{1,3} = 0.04$, $\sigma_2^2 = 0.09$, $\sigma_{2,3} = 0.04$, $\sigma_3^2 = 0.10$								

[a] Derivatives are evaluated at the mean of the right hand side variables.

[b] Mean income is obtained by assigning each child the midpoint of his income category and averaging across all children in family.

** Indicates significant at a 1 percent level, * indicates significant at a 5 percent level.

Parental characteristics included but not shown are: income and wealth (quartiles), married, nonwhite, poor health, age, schooling, and a taxable estate.

between current income and bequests because of the correlation between current and permanent incomes. The estimated effect of income is insignificant in all three regressions although the direction of the effect is positive rather than negative as would be expected. Among the explanatory variables, only mean schooling has significant effects (the indicator for child's income missing is significant in one case). If schooling is a proxy for permanent income one would expect its effect to be negative. However, alternative explanations, either that mean schooling of the children is correlated with the generosity of parents, or that transfers indicate optimal investment in schooling (see Footnote 30), are consistent with this result. Mean age does not have a significant effect in either panel.

In families in which transfers are being made, an increase in current income, operating through the budget constraint, could increase bequests. In the second panel, the estimated effects of children's incomes are consistent with this prediction. The coefficients are positive in all three equations and significantly different from zero in the two equations for the amount of the bequest. The magnitudes, however, are small, as one might expect given the offsetting effect of an increase in the expected value of permanent income on the probability of a bequest. An increase of $10 000 in the mean income of children increases the probability of leaving $10 000 by just over 2 percentage points.[36]

The effect of schooling is smaller and insignificant in this set of regressions wherein all parents are currently making a transfers and can therefore be considered generous by some account and/or to have invested optimally in the schooling of children. It becomes negative in the $100 000 equation.

Parental income and wealth (not shown in the table) are also significant predictors of bequest behavior in both panels, but few other parental characteristics have any explanatory power.

5.1.3. Identical transfers

Although not explicitly discussed in the derivation in Section 3, the framework presented there provides predictions for the distribution of transfers within a family. Children with lower values for Y_{k_1} are more likely to be liquidity constrained, and ought therefore to be more likely to receive an inter vivos transfer than their siblings. Thus differences in inter vivos transfers will be correlated with differences in observed incomes and other factors determining liquidity con-

[36] An alternative explanation for the positive correlation between the probability of bequests and the income of children is that the income and wealth quartiles used in this specification are insufficient to capture the effects of parental resources, and that the positive coefficient is the result of the correlation between the resources of parents and children. I note first that this possibility does not explain the differing patterns for inter vivos transfers and bequests, nor does it explain the differing effects of children's income for those making inter vivos transfers and those who are not. Secondly, specifications using fourth-degree polynomials in the income and wealth of the parent, and specifications with piece-wise linear spline formulations did not yield materially different coefficients.

Table 5
Logit estimates of the probability of equal transfers

	Inter vivos transfers						Bequests		
	HRS			AHEAD			AHEAD		
	Coeff	Std Err	Deriv[a]	Coeff	Std Err	Deriv[a]	Coeff	Std Err	Deriv[a]
Children's Characteristics:									
Mean Income (10,000s)[b]	−0.051	0.088	−0.001	−0.076	0.062	−0.012	−0.006	0.038	−0.001
Difference[c] in Income (10,000s)	−0.254**	0.074	−0.007	−0.104*	0.048	−0.016	0.004	0.029	0.001
Mean age	−0.057	0.034	−0.002	−0.004	0.020	−0.001	−0.046**	0.012	−0.006
Difference age	−0.053	0.043	−0.001	−0.031	0.022	−0.005	−0.030**	0.011	−0.004
Mean schooling	0.240**	0.082	0.007	0.137*	0.067	0.021	0.100**	0.034	0.014
Difference schooling	−0.002	0.078	−0.000	0.013	0.053	0.002	−0.057*	0.026	−0.008
All children own home (0/1)	0.127	0.359	0.003	0.905**	0.212	0.142	0.485**	0.122	0.066
Respondent's characteristics:									
Income quartile									
1st-lowest	0.373	0.386	0.010	0.122	0.439	0.019	−0.051	0.218	−0.007
2nd	0.027	0.401	0.001	−0.876**	0.346	−0.137	0.048	0.181	0.007
3rd	0.057	0.307	0.002	−0.523*	0.254	−0.082	0.002	0.161	0.000
4th (omitted)									
Wealth quartile									
1st-lowest	−1.008*	0.503	−0.027	−0.267	0.401	−0.042	−0.204	0.207	−0.028
2nd	−0.608	0.367	−0.016	−0.546	0.326	−0.086	−0.155	0.174	−0.021
3rd	−0.698*	0.318	−0.019	−0.674**	0.250	−0.105	0.043	0.160	0.006
4th (omitted)									
Taxable estate	0.836*	0.379	0.023	0.160	0.391	0.025	−0.462	0.338	−0.063
Highest grade completed of head	−0.065	0.047	−0.002	0.032	0.021	0.005	−0.009	0.009	−0.001
Married	−0.490	0.289	−0.013	−0.205	0.219	−0.032	0.020	0.132	0.003
Number of living children	−0.672**	0.192	−0.018	−0.155	0.103	−0.024	−0.057	0.044	−0.008
Age of head (male in couple)	0.008	0.030	0.000	0.032	0.024	0.005	0.012	0.014	0.002
Nonwhite	0.293	0.357	0.008	−0.816	0.421	−0.128	−0.386*	0.196	−0.052
Head or spouse in poor health	−0.136	0.323	−0.004	0.512*	0.209	0.080	−0.304*	0.118	−0.041
Constant	−0.654	1.851		−4.515**	1.719		2.013*	0.940	
Number of Observations		1400			759			2372	
Mean of Dependent Variable		0.065			0.246			0.82	

[a] Derivatives are evaluated at the means of the right hand side variables.
[b] Mean income is obtained by assigning each child the midpoint of his income category and averaging across all children in the family.
** indicates significant at a 1 percent level, * indicates significant at a 5 percent level.
[c] Differences are defined as the difference between the highest value within the family.

straints. In contrast, bequests are hypothesized to be a function of the permanent income of the child, and differences across children in inheritances will therefore be a function of the differences in their permanent incomes. Current income plays a small role in determining the parent's expectation of permanent income and given that characteristics of the child (the *X*s) also matter, it need not be the case that the child with the lowest current income receives the largest bequest.

In this section I examine the probabilities of providing for children equally with respect to inter vivos transfers and with respect to bequests. Section 5.2 focuses on which children are the likely recipients. The first two sets of estimates in Table 5 are from logit models in which the dependent variable equals one if the parent treats all children equally with respect to inter vivos transfers. The final set of estimates are for a similar equation for the probability of making equal bequests using the AHEAD sample. Respondents with fewer than two children are excluded from analyses. In the case of inter vivos transfers, I also exclude those parents who do not make a transfer to at least one child so that parents making zero transfers are not counted as treating children equally.[37] In the equation analyzing bequest behavior I exclude those parents who do not have a will or who do not name at least one child in their will. The samples thus differ significantly across the two equations.[38] To examine the importance of differences across children I include in these regressions the difference between the highest and lowest values of child income, age and schooling.

With respect to inter vivos transfers, mean income has no effect on the probability of equal transfers, but the greater the difference in income between the highest- and the lowest-income child, the lower the probability of treating children equally. Each $10 000 difference in income is associated with a decrease of 0.7 percentage points or 12% in the probability of treating children equally in the HRS and 1.6 percentage points or 6% in AHEAD. Again it appears that current income has a greater relative effect in the HRS than in AHEAD.

If age is correlated with the probability of being liquidity constrained, either through savings or through its association with permanent income, one might expect greater variation in age to be associated with a lower probability of equal transfers. The estimated effects of differences in age are negative, but are not significantly different from zero in either sample. If all children own a home the

[37] Zero transfers to all children need not indicate a desire to treat children equally. Some parents making zero transfers may actually wish to transfer (differing) negative amounts to their children. Because it is not possible to transfer negative dollars (i.e. to require children to make a transfer to the parent) we observe equal transfers of zero dollars to each child, although the values of the underlying latent variables differ.

[38] I do not estimate these latter two equations simultaneously because I prefer to treat the two data sets identically and there is no information on estate division in the HRS. Also, there is only a small overlap between the samples for the two AHEAD equations, so most observations would contribute to only part of the likelihood function.

probability of equal treatment is increased, but the effect is significant only in AHEAD.

Differences in schooling which likely proxy differences in lifetime incomes have no effect on the probability of equal inter vivos transfers, but greater mean schooling is associated with a greater likelihood of equal gifts.

In the equation for the probability of equal bequests, neither mean income nor differences in the incomes of children affect the probability of equal bequests, but the variables measuring schooling and age do have significant explanatory power. The greater the differences in schooling levels, the more likely there are to be significant differences in the permanent incomes of the children, and the lower the probability of equal bequests. Similarly for differences in age. A greater mean age implies perhaps a better estimate of permanent income that allows parents to differentiate between children. The characteristics of the parent are relatively unimportant in explaining equal bequests, although the probability of equal treatment falls significantly if the parent is non-white or in poor health. This latter effect may indicate that children who provide care for an ill parent are reimbursed after the parent's death.

The differences in the estimated effects across the columns of Table 5 are striking. Differences in inter vivos transfers are strongly associated with differences in current income while differences in bequests are associated with differences in permanent incomes. It is difficult to reconcile these results with standard models but they are consistent with the updating model developed in this paper.

5.2. Child's point of view

I now turn to examine transfers from the point of view of the child, estimating both the probability a child receives an inter vivos transfer and the probability he receives a bequest. I use child-based samples from each survey in which each eligible child of a HRS or AHEAD respondent contributes one observation, and estimate separate equations for the HRS and AHEAD samples. The specifications include the child's current income as well as schooling, age, sex, home ownership, marital status, and indicators of own children and distance to parent's home.

It is likely that there are unobserved differences across families that are correlated with transfer behavior and with some of the right-hand side variables. For example, a parent who desires a high level of consumption for her child may have invested heavily in the child's schooling and may continue to provide generous transfers. In this case, schooling (and income) will be positively correlated with the unobserved error component. The results in Section 5.1 are consistent with this scenario in that schooling is consistently positively related to transfers. I therefore take advantage of multiple observations within families to estimate fixed effect models, using conditional logit specifications (Chamberlain, 1980) for the probability of receiving an inter vivos transfer and the probability of

being named in a will. Estimates for ordinary logit specifications are included for comparison.

5.2.1. Receipt of inter vivos transfers

The estimates for the probability of receiving an inter vivos transfer are presented in Table 6.[39] Consistent with the model developed here, the probability of receiving an inter vivos transfer varies inversely with a child's income in both data sets.[40] A $10 000 increase in the child's income reduces the probability of a transfer by 7 percentage points in the HRS and 5 percentage points in AHEAD.[41] The difference in magnitudes across the two surveys is similar to that observed in the family-level analysis. There is also a significantly lower probability of receiving a transfer if the parent cannot report the child's income.

Other indicators of liquidity constraints also affect the probability of receiving an inter vivos transfer. Older children and children who own a home are less likely to be liquidity constrained and less likely to be the recipient of a transfer than their siblings.

If parents are emotionally close to one child, that child may live near the parent and may also be more likely to receive transfers. The estimated effects suggest that geographical proximity is positively associated with transfers. Alternatively, this effect could be due to an exchange regime in which a child who lives nearby is better able to provide assistance to the parent and is reimbursed accordingly.

All else constant, HRS and AHEAD children with children of their own have lower per capita income and a higher marginal utility of income, and are therefore more likely to receive transfers. However, because transfers to grandchildren are combined with transfers to children in the surveys, the strong positive coefficient on the variable indicating the existence of grandchildren could simply be capturing the fact that parents give generously to grandchildren.

Holding household income constant, married couples also have less income per person, and may therefore be more likely to be liquidity constrained than a single individual in the same income category. However, the estimated effect operates in the opposite direction: married children are less likely to receive transfers than unmarried children. This result may indicate the importance of extended families. Married children have a second set of parents (in-laws) who can potentially provide assistance; thus any particular parent may be less likely to provide assistance in a given period. Alternatively, married couples may be less likely to

[39] Similar estimates are reported in McGarry and Schoeni (1995, 1997).

[40] The derivatives are evaluated at the mean of the right-hand side variables. The mean value of the fixed effect is obtained by choosing the value that equates the mean sample probability of receiving a transfer with predicted probability at the means of the other variables.

[41] If coresident children are included in the AHEAD sample the effect of a $10 000 increase in income is unchanged.

Table 6
Probability child receives an inter vivos transfer

	Fixed Effect Logits						Ordinary Logits					
	HRS			AHEAD			HRS			AHEAD		
	Coeff	S.E.	Der[a]	Coeff	S. E.	Der[a]	Coeff	S.E.	Der	Coeff	S. E.	Der[a]
Child's Characteristics:												
Income ($10,000s)[b]	−0.303**	0.029	−0.070	−0.229**	0.033	−0.051	−0.203**	0.018	−0.020	−0.088**	0.018	−0.008
Income missing	−0.940**	0.265	−0.216	−1.095**	0.287	−0.246	−1.204**	0.128	−0.116	−0.866**	0.136	−0.081
Age	−0.104**	0.011	−0.024	−0.037**	0.009	−0.008	−0.061**	0.006	−0.006	−0.018**	0.005	−0.002
Male	−0.037	0.078	−0.009	−0.185	0.104	−0.042	−0.029	0.050	−0.003	0.005	0.058	0.000
Own their own home	−0.307**	0.101	−0.071	−0.291*	0.143	−0.066	−0.239**	0.064	−0.023	−0.251**	0.084	−0.024
Live within 10 miles	0.415**	0.093	0.096	0.367**	0.129	0.083	0.185**	0.054	0.018	0.204**	0.062	0.019
Currently married	−0.224*	0.097	−0.052	−0.023	0.140	−0.005	−0.252**	0.063	−0.020	−0.246**	0.081	−0.023
Has at least one child	0.476**	0.100	0.110	0.869**	0.163	0.196	0.251**	0.062	0.022	0.377**	0.086	0.036
Completed schooling	0.008	0.027	0.002	0.025	0.030	0.006	0.045**	0.015	0.004	0.068**	0.016	0.006
Number of Observations	4,015			2,074			18,045			13,511		

[a] Derivatives are evaluated at the means of the right hand side variables.

[b] Mean income is obtained by assigning each child the midpoint of his income category and averaging across all children in the family.

** indicates significant at a 1 percent level, * indicates significant at a 5 percent level.

Ordinary logit regressions also include the following parental characteristics: age, race, marital status, number of children, health, schooling, income, wealth, an indicator of a potentially taxable estate, and a constant term.

be liquidity constrained because they have a second potential worker to buffer income shocks.

Contrary to results from earlier tables, in this fixed-effect specification additional years of schooling have no effect on the probability of a transfer. However, when the family specific component is omitted in the ordinary logit regressions (rightmost set of estimates), additional years of schooling are positively related to the receipt of inter vivos transfers. This result suggests that characteristics particular to the family and correlated with schooling, such as generosity, may be responsible for the positive relationship between schooling and transfers observed elsewhere.

5.2.2. Receipt of bequests

Using the AHEAD sample, I now examine whether the variables predicting the receipt of a bequest differ from those predicting the receipt of inter vivos transfers (Table 7). According to the model, bequests should not depend on current liquidity constraints, while factors proxying permanent income will play a prominent role. In the fixed effects logit analysis, only those families in which not all children are named in the parent's will contribute to the likelihood function. Because such treatment is rare, the sample size in this analysis is much smaller than in the previous tables and the reader should note that the sample differs significantly from the survey population, at least in its bequest behavior. I therefore discuss the results only briefly. Much more useful for testing the updating model would be

Table 7
Probability of receiving a bequest, children of AHEAD respondents

	Fixed Effect Logit			Ordinary Logit		
	Coeff	S. E.	Der[a]	Coeff	S.E.	Der[a]
Child's Characteristics:						
Income[b]	−0.008	0.053	−0.002	−0.007	0.016	−0.001
Income missing	−0.424	0.402	−0.105	−0.241*	0.115	−0.046
Age	−0.028*	0.013	−0.007	−0.009*	0.004	−0.002
Male	−0.173	0.165	−0.043	−0.121**	0.045	−0.023
Own their own home	−0.223	0.223	−0.056	0.188**	0.067	0.036
Live within 10 miles	0.585**	0.209	0.146	0.085	0.056	0.016
Currently married	−0.159	0.222	−0.040	0.072	0.064	0.014
Has at least one child	0.187	0.243	0.046	−0.082	0.073	−0.016
Completed schooling	0.130**	0.243	0.032	0.072**	0.014	0.014
Number of Observations		752			11,185	

[a] Derivatives are evaluated at the means of the right hand side variables.

[b] Mean income is obtained by assigning each child the midpoint of his income category and averaging across all children in the family.

** indicates significant at a 1 percent level, * indicates significant at a 5 percent level.

Ordinary logit regressions also include the following parental characteristics: age, race, marital status, number of children, health, schooling, income, wealth, taxable estate and a constant.

information on the fraction or amount of an estate earmarked for each child, but this information is not available in the surveys.

Even among this select group who differentiate among children to the extent that one or more child is entirely omitted from the will, the probability that a particular child is named is not related to the child's income. The estimated effect is not significantly different from zero in either the fixed effects or the ordinary logit regressions.

Older children are somewhat less likely to be named in a will; older children may have already received an inheritance, parents may favor younger children, or younger children may be more likely to provide care to an ailing parent (McGarry, 1998b). Children who live within 10 miles of the parent are significantly more likely to be named in the will, with the probability of receiving bequests higher by 15 percentage points. As was the case with inter vivos transfers, this effect may indicate a special parent–child closeness, or alternatively, evidence of exchange.

Ignoring the fixed effects, there is a significantly positive relationship between both owning a home and years of schooling and being named in a will. These effects disappear when unobserved differences across families are controlled for, again consistent with family differences in generosity.

6. Conclusions

The lack of a correlation between the division of estates and the incomes of the (potential) recipients has been a puzzle to economists. While standard models of altruistic or exchange driven behavior are consistent with patterns of inter vivos giving, they fail to explain observed bequest behavior. This paper addresses this issue. It presents a unified model that predicts different behavior for inter vivos transfers and bequests, and tests the model using a data from the HRS and AHEAD surveys.

In the model the different predictions for inter vivos transfers and bequests derive from the existence of liquidity constraints and the evolution of permanent income. Because inter vivos transfers are made in response to liquidity constraints, they are strongly related to current income. Bequests, however, depend solely on the permanent income of the child, and through an income updating process, depend only partially on current income. As in the standard altruism model, the model developed in this paper predicts a negative relationship between the current income of children and inter vivos transfers. However, the model goes further and predicts that in families currently making inter vivos transfers, bequests may be positively related to the current income of children, a prediction that is not obtained from the standard altruism model.

The theoretical model is well supported by the empirical results. While the effect of current income on inter vivos transfers is negative and significantly different from zero, there is no significant relationship between bequests and current income

for those families not making an inter vivos transfer. However, for families in which a transfer is made, bequests are positively related to the current income of children. Furthermore, the probability of differentiating among children with respect to inter vivos transfers is positively related to differences in the current incomes of children, while differences in bequests are unrelated to differences in current incomes. In contrast, unequal treatment with respect to bequests is related to differences in schooling levels.

This paper also adds to the literature on transfers by examining the bequest behavior of a nationally representative sample and by analyzing inter vivos giving using these same individuals. Because of data limitations past studies of bequests have focused either on the behavior of the wealthiest segment of the population, or on samples from single geographical regions. Furthermore, probate studies have been unable to comment on the inter vivos transfers of these same individuals. The differing patterns observed for inter vivos transfers and bequests could therefore be an artifact of the different populations used to study the two behaviors. Perhaps surprisingly, the pattern of bequest behavior observed in my data is virtually identical to that found in previous studies: parents overwhelmingly divide estates equally among children. Even among the substantial fraction of parents making unequal inter vivos transfers, equal bequests are the norm.

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