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On the Demand for Grandchildren: Tied Transfers and the Demonstration Effect

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Abstract

It is argued that parents provide help with housing downpayments in order to encourage the production of grandchildren, and that such a subsidization emanates from the "demonstration effect:" a child's propensity to furnish parents with attention and care can be conditioned by parental example. Parents who desire such transfers in the future have an incentive to make transfers to their own parents in order to instill appropriate preferences in their children. This generates a derived demand for grandchildren since potential grandparents will be treated better by their adult children if the latter have their own children to whom to demonstrate the appropriate behavior. Empirical work indicates behavior consistent with subsidization of the production of grandchildren and the demonstration effect.

Kurzfassung

Es wird argumentiert, dass Eltern Unterstützung bei der Anzahlung einer Wohnung gewähren, um die Erzeugung von Enkelkindern zu fördern, und dass solch eine Subventionierung aus dem „Demonstrationseffekt“ hervorgeht: Die Neigung eines Kindes, die Eltern mit Aufmerksamkeit und Fürsorge zu versehen, kann durch das elterliche Beispiel konditioniert werden. Eltern, die solche Transferleistungen in der Zukunft wünschen, besitzen einen Anreiz, Transferleistungen an ihre eigenen Eltern zu erbringen, um damit ihren Kindern die entsprechenden Verhaltensweisen beizubringen. Dies erzeugt eine abgeleitete Nachfrage nach Enkelkindern, da potentielle Großeltern von ihren erwachsenen Kindern besser behandelt werden, wenn letztere ihre eigenen Kinder haben, denen sie das entsprechende Verhalten vorführen. Empirische Untersuchungen deuten auf ein Verhalten hin, dass im Einklang mit der Subventionierung der Erzeugung von Enkelkindern und dem Demonstrationseffekt steht.

1 Introduction

A fifth of all first-time homebuyers in the United States receive help with their housing purchases from relatives, mainly parents. This help is substantial, averaging over half the required downpayment (Engelhardt and Mayer, 1994). Parental assistance with housing downpayment is an example of a private transfer earmarked for the purchase of a particular good, that is, it is a "tied transfer". Such transfers, though common, pose a difficulty for theories of private transfers. Theories of altruistic giving predict that a parent can do no better to enhance the well-being of the recipient child than to give cash with no strings attached. Any other monetary transfer could impose on the child a utility-depressing constraint. Theories of exchange-related giving, where the transfer is payment for future child services, similarly predict that the child would prefer cash. It is an efficient means of remuneration, leaving the child free to acquire his most preferred consumption bundle.

Several ideas have been advanced to explain tied transfers. One idea is that preferences are "paternalistic," in the sense that donors care about the composition of the recipient's consumption. Another idea is that although tied transfers need not be paternalistic, altruistic parents give their children illiquid assets, such as education and housing, to prevent the children from over-consuming and being in perpetual need of parental assistance. A third idea is based on liquidity constraints. Adult children are likely to face severe borrowing constraints when trying to purchase a home. If private transfers were designed to overcome acute liquidity constraints, we would expect them to occur upon the purchase of a home when the constraints are likely to be particularly severe.

In related work[1] we point out that each of these explanations of tied transfers has considerable shortcomings and that a deeper analysis of the underlying motives for these transfers can shed new light on how parents and their adult children interact. In this paper we study such a motive. We argue that parents provide help to their children with housing because housing is complementary with the production of grandchildren. Drawing on our idea of the "demonstration effect" in intergenerational transfers (Cox and Stark, 1996) we suggest a reason as to why parents would want to subsidize the production of grandchildren. We focus on the possibility that a child's conduct is conditioned by the parents' example. Parents may want to take advantage of the child's learning potential by engaging in care provision for their *own* parents when children are present and can observe their parents' behavior. Parents who expect to require attention, care, and old-age support have an incentive to behave in a distinct exemplary manner. Such behavior gives rise to a derived demand for *grandchildren,* because potential

[1] An appendix to this paper "Liquidity Constraints and Private Transfers" is available from the authors upon request.

grandparents know that they will be treated better by their own children if conditioning of grandchildren is at work.

We empirically explore the interaction between tied transfers, liquidity constraints, and the demonstration effect by studying newly available data from the National Survey of Families and Households (NSFH) in the United States. This survey contains a variety of measures of private transfers between parents and their adult children as well as considerable information concerning intergenerational relations. We find that tied transfers appear to be driven in part by the transfer recipient's fertility plans and concerns about the adequacy of the housing situation for the bearing and raising of children. In addition, we find gender differences in the intensity with which unmarried adult children are subsidized for the production of grandchildren: the plans and concerns of single male respondents have an especially large impact on housing transfers. Further, among grandparents and potential grandparents there are gender differences in the propensity to give housing transfers. We show that these patterns are consistent with predictions of the demonstration-effect approach. Thus, our analysis provides a rationale for the demand for grandchildren, a relationship that has largely been ignored both in economics and in demography.

In Section 2 we outline the demonstration-effect argument and briefly present and discuss several empirical implications pertaining to the argument. In Section 3 we present preliminary considerations concerning tied transfer behavior and baseline results. In Section 4 we draw on the argument of Section 2 to explore, test, and provide a novel explanation for the incidence and the patterns associated with intergenerational housing downpayment transfers. We obtain considerable support for the demonstration-effect hypothesis. In Section 5 we provide concluding remarks.

2 The Demonstration Effect

2.1 Analytical Considerations

The demonstration-effect approach seeks to explain the provision of care, companionship, and other forms of assistance and attention that adult children provide to their parents. This is achieved by expanding the domain of analysis of intergenerational interaction from two generations to three: we focus on the possibility that the child's conduct is conditioned by parental example, and that parents take advantage of their children's learning potential by providing attention and care to their *own* parents when children are present to observe and are amenable to be impressed. We refer to this parental behavior as the "demonstration effect." The idea that attention and care of parents is aimed at instilling appropriate conduct in children generates an array of insights and hypotheses concerning intergenerational relationships. One such prediction is that would-be grandparents have an incentive to subsidize the "supply" of grandchildren.

Consider a family comprised of members of three generations: a child (K), a parent (P), and a grandparent (G). Each person lives for three periods, first as a K, then as a P, and finally as a G. P wants K to help in the next period when P becomes a G and K becomes a P. To demonstrate to K the appropriate way to behave in the next period, P provides visible help to G when K is around to watch and be conditioned. It follows that aid from P to G depends positively on the presence of K.[2]

Our theory predicts assistance from young to old even if the young are selfish. Thus, we can explain such assistance without relying on altruism, which may well be tenuous in light of biological considerations[3] and existing evidence. Note that if informal care-giving by family members living outside the recipient's household is motivated by altruism, expansion of formal care-giving should reduce informal care-giving. Not so, however, if the motive is demonstration. Pezzin, Kemper, and Reschovsky (1996) report that in a test of a generously-expanded public financing of home care for disabled elderly recipients conducted in the United States from 1982 to 1985 (sample size of 2,955 care givers), the public home-care provision resulted *"... in only*

[2]Note that conventional theories of the allocation of time and money within the family could well predict the opposite effect, since young children place demands on the parent's time and income, so that the competing presence of young children would *reduce* the assistance that P gives to G. For additional discussion of the demonstration effect and empirical evidence, see Cox and Stark (1996), Ribar and Wilhelm (2002), and Wolff (2001).

[3]Hamilton's (1964) theory of inclusive fitness predicts that parental altruism toward children contributes more to inclusive fitness than altruism that works the other way around. In the words of Dawkins (1976) "In a species in which children have a longer average life-expectancy than parents, any gene for child altruism would be laboring under a disadvantage."

small reductions in the overall amount of care provided by informal care-givers to unmarried persons and no reductions for married persons". This evidence of limited or no substitution of formal care for informal care is inconsistent with the altruistic motive for transfers.

Neither does our argument rely on "strategic bequests" to prompt transfers from adult children to their parents (Bernheim, Shleifer, and Summers, 1985). Although strategic considerations may play a role in some families, they cannot account for instances in which care is given to parents who did not accumulate appreciable quantities of bequeathable wealth, or where such care occurs when testamentary discretion is prohibited by law.

To see how imitative behavior of children induces transfers from parents to grandparents and how the demonstration effect gives rise to a derived demand for grandchildren, consider a setup based on Bergstom and Stark (1993) and on Cox and Stark (1996).

Assume, for simplicity's sake, and to begin with, a single-parent, single-child family. The parent, P, seeks to maximize the expected value of her utility, $U(x,y)$ where x is what the maximizer does for her mother, G, and y is what the maximizer's daughter, K, does for the maximizer, P. Suppose that with probability $0 \le \pi \le 1$ a daughter will simply imitate her mother's action, while with probability $1-\pi$ the daughter will choose an action to maximize her expected utility, aware though that her own daughter may be an imitator. Thus, a mother, P, chooses to maximize:

$$EU(x,y,\pi) = \pi U(x,x) + (1-\pi)U(x,y) \qquad (1)$$

where U is a twice-differentiable utility function with negative marginal utility from the first argument ($U_1 < 0$, because caring for G requires exertion of effort) and positive marginal utility from the second argument, ($U_2 > 0$, because receiving care from K is beneficial). To derive P's choice of x we differentiate (1) with respect to x to obtain:

$$EU_1 = \pi(U_1^I + U_2^I) + (1-\pi)U_1^S \qquad (2)$$

where subscripts denote partial derivatives, superscript I denotes utility if K is an imitator, that is, $U^I \equiv U(x,x)$, and superscript S denotes utility if K is a selfish maximizer, that is, $U^S \equiv U(x,y)$. From the first-order condition for maximization,

$$-[\pi U_1^I + (1-\pi)U_1^S] = \pi U_2^I. \qquad (3)$$

The left-hand side of (3) is the marginal cost of transferring to one's parent, while the right-hand side is the marginal benefit from receiving, which, in turn, is equal to π times the marginal utility of receiving from one's child. Thus, the likelihood of *not* being imitated ($\pi < 1$) taxes

one's transfer to one's parent. Let us denote the solution to the maximization problem as x^*. We can express the solution as a function of the exogenous variables, so that $x^* = x^*(y,\pi)$.

In the context of the present inquiry, the following two implications of this framework are of particular interest. First, the mother's equilibrium choice of care for G is increasing in her daughter's probability of imitation π. ($\partial x^*/\partial \pi > 0$.) Intuitively, a higher probability that care to G will be imitated raises the marginal benefit of providing such care. To see this formally, note that from (2) it follows that

$$EU_{13} = U_1^I + U_2^I - U_1^S \qquad (4)$$

and from (3) it follows that

$$-\left[U_1^I + \frac{U_1^S}{\pi} - U_1^S\right] = U_2^I, \text{ and}$$

$$\frac{-U_1^S}{\pi} = U_2^I + U_1^I - U_1^S. \qquad (5)$$

From (2) we have $EU_{11}dx^* + EU_{12}dy + EU_{13}d\pi = 0.$ For $dy = 0$ and using (4) and (5),

$$\frac{dx^*}{d\pi} = \frac{-EU_{13}}{EU_{11}} = -\frac{U_1^I + U_2^I - U_1^S}{EU_{11}} = -\frac{-U_1^S}{\pi EU_{11}} = \frac{U_1^S}{\pi EU_{11}} > 0, \qquad (6)$$

recalling that $U_1^S < 0$ and that the sufficiency condition implies $EU_{11} < 0.$

Clearly, the prevalence of imitative behavior benefits G. This prevalence requires not only that with some strictly positive probability K will imitate, but also, and of course, that K exists. Let us then drop the assumption of a single-child family. If there is no child around who could imitate, $\pi = 0$. In this case (1) becomes:

$$EU(x,y) = U(x,0), \qquad (1')$$

which, because $U_1 < 0$, is maximized with $x = 0$. Since the demonstration effect is inoperative, no transfers from P take place. *We infer that G will prefer P to have a child than to be childless*. Alternatively, let us examine the case of a family with n children. If $n > 1$, a given act of transfer will be imitated by each of these observing children. If each child behaves in the same manner, we have:

$$EU(x,y,\pi,n) = \pi U(x,nx) + (1-\pi)U(x,ny), \qquad (1'')$$

$$EU_1 = \pi U_1^I + \pi U_2^I n + (1-\pi)U_1^S . \qquad (2')$$

Then, P's choice of x, x^{**}, is x that solves:

$$-[\pi U_1^I + (1-\pi)U_1^S] = \pi U_2^I n . \qquad (3')$$

Comparing equation (3') with equation (3) – the case of only one child, since the marginal benefit is now higher (the marginal benefit curve shifts up by n to intersect the marginal cost curve at a higher x), $x^{**} > x^{*}$. Demonstration is more "productive" in the presence of several children than in the presence of only one child, and hence more is being transferred by P to G.[4] *We infer that G will prefer P to have several children*.[5] Assuming that G controls resources that can be used to induce the production of children by P, it follows that G would want to subsidize P's production of K. One way to subsidize the production of grandchildren is to give help in the form of housing, which is likely to be complementary with fertility. While our analysis does not yield bounds on this subsidy, it points to its existence: an expected gain should be accompanied by willingness to incur a cost.

Our approach rationalizes, then, a derived demand for grandchildren that heretofore has been disregarded or treated in an *ad hoc* manner. Standard theories of fertility begin with a specification of the parent's preferences and constraints, while the preferences and choices of grandparents are apparently ignored.[6]

2.2. Evidence Concerning the Demonstration Effect

A necessary condition for the demonstration effect to work is for early life-cycle events to affect behavior later on. Imitative behavior must be prevalent. Thus, the first issue to consider is whether early childhood experience affects behavior in adulthood. In particular, if a child

[4] In the words of Hogan, Eggebean, and Clogg (1993, p. 1432) "…parent-child exchanges of support are most common when dependent grandchildren are present… Thus, the most appropriate focus for research on intergenerational support is on lineages that contain grandchildren".

[5] We interpret x loosely, that is, as a "system of values", a composite commodity – the caring and giving of attention to parents. Children who are *inculcated* to provide care and attention will find it hard not to do so. With the giving and caring trait in place, the likelihood of free-riding when n>1 (reliance on other children providing) is low. Indeed, P may reason that whereas her children, as non-inculcated maximizing adults, may resort to free-riding behavior, grown-up children will not be so inclined if instilled with the caring trait when young. The possibility of free riding is further mitigated by the concern that a free-riding behavior by K upon becoming P will be imitated (having been so demonstrated) by P's own children.

[6] Grandparents are not anywhere mentioned, for example, in the recent survey of fertility behavior by Hotz, Klerman, and Willis (1997).

observes his or her parents making transfers to his or her grandparents, will this observation affect the child's future transfer behavior?

In our working paper (Cox and Stark, 1996) we have explored this issue using household micro-data, retrospective case studies, and controlled experiments. What follows is a brief summary of this preliminary work. Illuminating evidence comes from the first wave of the National Survey of Families and Households (NSFH), conducted in the United States between March 1987 and May 1988. The survey contains information on 13,008 households (Sweet, Bumpass and Vaughn, 1988). The NSFH was suitable for our initial exploration of imitative behavior because it contains information about in-kind transfers provided by children to their parents, as well as retrospective information on early life-cycle experiences. We found that early transfer experience did indeed affect subsequent transfer behavior. Survey respondents were asked if a grandparent had ever moved in with the family when the respondent was a child (under 19 years old). They were also asked if their *own* parents had ever moved in with them when the respondents headed their own households. The incidence of sharing housing with parents was 27 percent higher for the respondents whose grandparents had moved in when the respondents were children.

Of course, these unconditional means may have captured much more than the intergenerational transmission of preferences. They could well reflect a correlation in budget constraints. But a statistically significant, positive effect of grandparent coresidence held up even when we controlled for the earnings and net worth of the respondents, and for the parents' permanent income. Early grandparent co residence increased the probability that the respondent's parent(s) had moved in by an amount similar to the unconditional figures above. Still, these findings are open to criticism because of the omission of a potentially important variable – the income of the grandparents. Suppose the grandparent moved in with the parent because the former was quite poor. With positive intergenerational correlation in incomes, the coresidence of the grandparent could be picking up the effects of unobservables in parental income. Yet the NSFH contains information that further helps to mitigate the problem of intergenerational correlation of incomes. Since our approach is concerned with the formation of *preferences*, we looked at a variable that measured the willingness of respondents to make transfers to their parents. Respondents were asked if they agreed or disagreed with the following statement: "Children should let aging parents move in with them when the parents are too old to live on their own." The five possible responses ranged from "agree strongly" to "strongly disagree." We recognize that there can be considerable differences between what people say and what they do, but the respondents were not likely to have overstated their generosity for the sake of impressing the interviewer because the respondents filled out a questionnaire in private. Further, as long as any response error is uncorrelated with the grandparent coresidence variable, the orthogonality condition will be satisfied. Ordered probit, controlling for respondent and parental characteristics, revealed the same results as those discussed above: having a grandparent move in when the respondent was young positively and significantly affects attitudes concerning house sharing with parents.

While these results must be interpreted cautiously, we note that there are forces that could have affected attitudinal responses in an opposite direction. Having a grandparent move in likely diverts family resources from the child, exerting a negative influence on the willingness to have parents move in. Yet despite possible influences such as this, we found a positive effect. Our findings are consistent with evidence that habit plays an important role in consumer behavior (see Becker, 1992; Heien and Durham, 1991). Exposure to repeated, especially regular attention and care by parents to grandparents could implant a "habit" of care-giving in adulthood.

We have extensively reviewed findings from the psychology, demography, and sociology literature and found considerable evidence consistent with our micro-data-based evidence reported above. We found demographic evidence that events experienced during childhood impinge strongly on conduct in adult life and that the family context in which children grow up is important. Teenage fertility and divorce are two examples.[7] Daughters of teenage mothers have been found to face significantly higher risks of teenage childbearing than daughters of older mothers. Patterns of marriage and childbearing behavior tend to be repeated intergenerationally (Kahn and Anderson, 1992). Children of divorced parents appear more prone to divorce than those whose parents stay married.

Even if researchers using household micro-data could control perfectly for budget-constraint variables, there are reasons why intergenerational congruence in behavior and attitudes might not necessarily imply parental influence as a *causal* mechanism. Parent-child attitude similarity could be generated, for example, by the media, genetics or even child influences on parents (Glass, Bengston and Dunham, 1986). While household micro-data studies are not informative about the causal nature of attitude transmission, our review of controlled, laboratory experiments of social psychologists did point to a causal mechanism between parental role models and child imitators. Bandura (1986) cites several laboratory studies showing that children mimic punishment techniques inflicted on them when given an opportunity to punish others. And numerous controlled experiments cited by Eisenberg and Mussen (1989) indicate that children's pro-social behavior - giving gifts to others, for example - is enhanced when role models increase their own pro-social behavior.[8]

We started our analysis of the demonstration effect by posing the following question: assuming that by setting an example parents can influence the preferences of their children, is

[7]Further examples of imitative behavior that we reviewed in our preliminary search of the extant literature include: parenting techniques (Sears, Maccoby, and Levin,1957); child abuse (Bandura, 1986, p. 265); affectional closeness (Rossi and Rossi, 1990), and early family relationships and assistance (Whitbeck, Simons, and Conger, 1991). These findings are consistent with Becker's (1992) prediction that through habit formation, early life events can have a significant impact on behavior later in life.

[8]For example, in a typical study (Rosenhan and White, 1967), fourth- and fifth-graders face a situation in which they must decide whether to donate some of their winnings from a game to charity. The treatment group is shown the example of a "model" (that is, an adult who demonstrates, solely by example, the norm of giving). These children were more likely to contribute than those in the control group, which had no such model. Rosenhan and White also found that repeated examples reinforce the impact of the model on imitative behavior.

there evidence that parents use this leverage to enhance their own well-being? We addressed this issue by investigating the effects that children of respondents have on the "services" that respondents provide to their own parents. The hypothesis is that in line with the results of our theoretical work, the *presence* of children will increase the quantity of services that respondents provide to their parents.

We measured services by respondent-parent contact (visits and telephone calls) as, for example, did Bernheim, Shleifer, and Summers, and we employed a long list of controls (both respondent characteristics and parental characteristics) in our estimating equation. In addition to these regressors we added a dummy indicating whether the respondent's household was childless, and the number of children by broad age categories (4 and under, 5 to 18, and older than 18). Having a child increased parent-child contact by 7 percent. Further, we found that contact was sensitive to the age of children. For example, having a child older than 18 increased contact by 14 percent. But we also found that having several younger children reduced contact (mostly visits), presumably because of increased costs. Yet another possible reason is that having several children lessens the need for parents to use the demonstration effect. Suppose parents want a child to provide attention and care when the parents reach old age. If the likelihood that *a* child will give care is independent, or largely independent, of the presence of other children, and if there is some random, independent probability of a child being of a "caring type," then a larger number of children translates into a higher such likelihood.

Presumably, visits are more effective as a means of setting an example than telephone calls. If this is so, and the demonstration effect is important, then the *composition* of contact should be affected by the presence of children. We found some evidence in support of this prediction. The fraction of contact comprised of visits was higher for households with a child than for childless households. Further, the fraction of contact is not linear in the number of children. Presumably because of cost considerations, for example, having more than three children aged 5 to 17 was associated with a lower fraction of visits.

We found that respondent contact with parents was responsive to income and prices. As could be expected with regard to a time-intensive activity, higher earnings reduced contact. We considered distance as a proxy for the price of contact. As expected, distance exerted a negative effect on respondent-parent contact. But the elasticity of contact with respect to distance was quite low in absolute value, which is in line with findings from other data sources (for example, Klatzky, 1971). This suggests that there are few substitutes for parent-respondent contact. (Supplementary evidence on this issue is provided by Hill (1970), who interviewed three generations of 85 families about financial and in-kind transfers exchanged between generations. He found that survey respondents accorded to non-familial sources of in-kind aid and contact, such as clergy or social workers, quite a low preference ranking compared to familial sources.)

The evidence appears to be consistent with the idea that parents cannot buy attention (or attention of the right type) in the marketplace. Presumably, with regard to a service as special as

filial attention, the market can provide only poor substitutes. Moreover, by its very nature, attention is personal and intimate, and as such is difficult to define. Therefore, the transaction costs associated with an arrangement to have attention supplied from outside the family are bound to be quite high.

Parental income was inversely related to contact, contrary to the findings of Bernheim, Shleifer, and Summers. This finding is intriguing because it suggests that the promise of a bequest conditional on desirable behavior as measured by contact may not be an important determinant of parent-child contact. Indeed, the parental income effect is consistent instead with the idea that contact may in part be motivated by altruism. However, part of the parental income effect may have to do with the demonstration effect as well. If market consumption and attention received are substitutes, richer parents have a smaller incentive to instill filial loyalty. This reasoning could also explain the finding of Bernheim, Shleifer, and Summers that parental pension wealth was inversely related to child-parent contact.

While the NSFH data cannot be brought to bear directly on the demonstration effect, a recent special module of a different household survey, the Health and Retirement Study (HRS), can.[9] A large component of the HRS was designed for learning about family behavior, and in this regard it is akin to the NSFH. Further, since the HRS is concerned with aging issues it includes information pertaining to the care of elderly parents by their adult children. The most recent wave of the HRS, conducted in the year 2000, featured a special module that asked a random sub-sample of respondents directly about their motivation to provide for their parents.

Specifically, respondents were given the following instructions:

> *"These next statements are about your parents. If your parents are deceased, please think back to when they were alive. Please tell me if you agree, disagree or are neutral about how well each statement applies to you."*

In response to the statement *"I (do/did) for my parents what they did for their parents,"* the most frequent category was "*agree*": 46 percent of the 1,086 households. The least frequent was "*disagree*" (25 percent), and the remaining respondents' answers were categorized "*neutral*." This is direct evidence that patterns of transfers to the elderly tend to be repeated intergenerationally by a significant proportion of households.

While missing from the question above is any element of demonstration, another question in the module was phrased in such a way as to ask respondents about what they *saw* their parents do for their own parents. Again the response categories were "*agree*", "*neutral*", or "*disagree*",

[9] The HRS was first conducted in 1991, with interviews of 12,652 respondents from 7,702 U.S. households. Because it was designed for analyzing issues related to retirement and aging, at least one respondent per household was within the 50-to-60 age bracket. The HRS has been conducted every two years since 1991 and it contains special modules of questions on specific issues for sub-samples (usually around 10 percent) of respondents. The information discussed below is drawn from a special sub-module in the fifth wave of the survey, which dealt with respondent motivation for the provision of care to parents.

but this time the statement was cast in the negative: "*I (won't/didn't) do for my parents what I saw my parents do for their parents."* There was a higher concordance here between the generations: 52 percent of the respondents disagreed with this statement, and only 11 percent agreed. (As before, the response of the remainder was categorized "*neutral*"). Only a small minority report willfully doing something different than what they observed their own parents do. While these responses deserve further scrutiny, the simple percentages reported appear to provide compelling, direct evidence that the demonstration effect is at work in the provision of care by adult children to their parents.

3 Preliminary Considerations and Baseline Findings

Prior to empirically exploring, in Section 4, the demonstration-effect rationale for housing downpayment transfers, we consider several conventional explanations that pertain to tied transfers and to housing downpayments.

3.1 Tied Transfers

Perhaps the earliest mention of tied transfers in modern-day economic theory is a section in Becker's (1974) seminal paper on altruism and social interaction. Becker posits that tied transfers stem from the donor's desire to encourage consumption by the recipient of "merit" goods, such as education and housing. Becker emphasizes a result that parallels simple textbook analyses of vouchers – that earmarked giving is not immune to problems of fungibility. On the one hand, if the recipient is contributing to the purchase of the targeted good, the donor might as well give a general cash transfer; tied transfers and cash transfers are equivalent. On the other hand, if tied transfers force the recipient to choose a different consumption bundle than he or she would have chosen upon receipt of a cash transfer, then the transfers are worth less to the recipient than their cash value. In this case, the donor must be motivated by more than unvarnished altruism, since he could have improved the recipient's well-being by removing the strings attached to the transfer. Pollak (1988) argues that "paternalistic" preferences, that is, concerns over the composition of the recipient's consumption, are a self-evident fact of family life. For example, most parents would not be pleased to learn that their contributions toward their child's college tuition were spent at a luxury car dealership rather than at the bursar's office. While the fact of paternalistic preferences is unassailable, however, we think that it is worth probing more deeply into the *origins* of such preferences. Pollak offers a number of several explanations, including parental concerns about status and about the child's long-run interests, but in our view his list of underlying motivations for paternalistic preferences is far from complete.

Becker and Murphy (1988) and Bruce and Waldman (1991) advance still another explanation for tied transfers. They call attention to the Samaritan's dilemma, a problem that confronts altruists who interact repeatedly with their beneficiaries. Parental safety nets can lead to moral hazard, whereby children, knowing that they can be bailed out, work too little or spend

too much.[10] Parents might seek to counter such behavior by making educational transfers, or transfers of illiquid assets such as housing, in an attempt to determine the child's saving.

While we agree that giving transfers for educational purposes might be an effective strategy for dealing with the Samaritan's dilemma, we are skeptical about a similar explanation with regard to housing. Bruce and Waldman's model contains only one asset, but in reality the fungibility across several assets could thwart parental attempts to control their children's saving. For example, transfers for housing downpayments might simply "crowd out" the child's own financial saving. There is some evidence that is consistent with this effect. Engelhardt and Mayer (1998) use data from a random sample of recent home buyers in 18 major U.S. cities and find that households who received help with housing downpayments had savings rates that were 40 to 50 percent lower than those who did not. Guiso and Jappelli (2002) examine an Italian survey of income and wealth and find that receiving help with housing downpayments is associated with a one- to two-year reduction in the time spent saving for home ownership. And while it is possible, as Engelhardt and Mayer point out, to partially explain some of this relationship as transfers being targeted to inherently low savers, there is an additional problem with the argument that housing transfers represent an attempt by paternalistic parents to lower their children's consumption. The purchase of a house is likely to be associated with increases in other forms of spending, such as purchases of consumer durables, and a larger living space is likely to lead to increased ongoing expenses on heat, other utilities, and upkeep.

A third explanation for tied transfers in the form of housing downpayment is that the transfers are a response to liquidity constraints faced by recipients. Artle and Varaiya (1978) and Engelhardt (1996) call attention to the fact that downpayment requirements can create liquidity constraints for households. Lending institutions require that homebuyers pay a percentage of the value of the house as a downpayment, and the minimal percentage typically ranges from 5 to 20 percent.[11] In addition, homebuyers are usually required to pay brokerage fees, legal fees, loan origination fees, title search fees, and so on. Engelhardt, and Artle and Varaiya show that if a household's user cost of owning is less than that of renting, but the household does not yet have the necessary downpayment funds, it will be liquidity-constrained until it saves the amount of the downpayment. Engelhardt finds that household consumption is depressed prior to the purchase of a house, supporting the idea that downpayment requirements cause households to be liquidity constrained.

[10]For detailed analyses of the inefficiencies that can arise from altruistic preferences, see Bernheim and Stark (1988), and Bergstrom (1989).

[11]Engelhardt (1996) summarizes the general reasons for the downpayment requirement: it makes homeowners share the risk associated with a fall in the value of the house; and it gives homeowners a stake in the property, thus mitigating moral hazard problems associated with maintenance of the house. Furthermore, lenders confronted with imperfect information about the borrowers' probability of default and by adverse-selection problems might use the downpayment requirement as a device for screening out borrowers who are less likely to repay.

If the required downpayment truly creates a liquidity constraint, then perhaps the 'tied' nature of housing transfers is more apparent than real. The fact that transfers take the form of help with the downpayment is in a sense coincidental. They might just as well be viewed as cash transfers. What matters though is timing; liquidity constraints become particularly severe when the household is striving to amass enough cash to qualify for a mortgage. The earmarking of parental transfers for housing might have more to do with parental concerns about children's liquidity constraints than with housing *per se*.

3.2 Data

As already mentioned, the 13,008 NSFH households were initially interviewed between March 1987 and May 1988.[12] A follow-up to this first wave of the NSFH was conducted between July 1992 and May 1994. The NSFH is aptly suited for studying the determinants of tied transfers because it contains information on help with housing downpayments as well as cash transfers in general. We use information from both waves of the survey, but focus on intergenerational transfers that took place during the second wave (NSFH-II). The main reason for this attention is that in the next section of the paper we are interested in finding out how *subsequent* help with housing downpayments is related to the housing concerns cum fertility plans reported in the self-enumerated questionnaire in the *first* wave of the survey. In addition to questions about *inter vivos* transfers, the NSFH contains extensive information about family structure and parental characteristics which we use to construct measures of parental permanent income. A telephone interview with one randomly selected parent of the respondent was conducted in NSFH-II. This interview was similar to but shorter than the main respondent interview and resulted in 3,348 completed parental questionnaires.

There was significant attrition (3,000 households) between the first and second waves of the survey. A third of these attriters had either died or were too ill to answer the survey. Most of the remaining two thirds were either refusals or households that could not be traced. (See the Appendix "Criteria Used to Determine the Final Sample.")

Since our focus is on interhousehold transfers between parents and children, we deleted respondents who were co residing with a parent or with an in-law or who had no living parents or in-laws. We also eliminated cases with inconsistent or incomplete information about the spouse, missing or inconsistent housing information, missing information on respondent's age or education, missing information about private transfers, or missing information about fertility plans. We also deleted respondents aged 65 or older and any households who had insufficient

[12]The original release of the first wave of the NSFH contained 13,017 households, but subsequently 9 observations were found to be invalid and were deleted from the file.

information for calculating permanent income. These sample selection criteria leave us with a sample of 5,461 households.

3.3 Variables

3.3.1 Dependent Variables

General Transfers. We estimate probit equations for the incidence of both "general" transfers and help with housing downpayments. So-called general transfers include both cash and miscellaneous transfers in-kind. Survey respondents were asked to report on gifts and loans received from friends and relatives. After being reminded that they were being asked about transfers originating from outside the household, each respondent was asked:

> *"In the last 12 months have you (or your wife/or your husband) received a gift worth more than $200 at any one time from anyone not living with you at the time? Include gifts of items such as a car, furniture, jewelry, or stocks, as well as gifts of money."*

The respondent was then asked to identify the donor (for example, a parent, a brother) and report the amount received. Next, he or she was asked a similar set of questions regarding loans, and a final set of questions were asked about transfers received for "day-to-day expenses or educational expenses".[13] We aggregated across these categories and netted out any corresponding transfers given to parents or in-laws, so that we can deal with net inflows.

Housing Transfers. Survey respondents were asked a series of questions about home purchases made since they were interviewed in the first wave of the NSFH. They were asked if they purchased a home. Homebuyers were asked what were the total purchase price and the amount of their downpayment. They were then asked about help with downpayments: "Did you receive any financial gifts or loans from relatives or friends to help you buy or build this home?" Respondents were asked to name up to three sources of help (for example, parents, in-laws, siblings), and report separately the amounts of gifts and loans received toward the purchase of the house.

Descriptive statistics for private transfer receipts, fertility plans, and housing concerns are provided in Table 1. Inter alia, the Table shows that housing transfers are quite large, especially

[13]The transfer modules in NSFH-II are unusual in that both the respondent and his or her spouse are given exactly the same questionnaire with identical wording (that is, each is asked about transfers that he (she) or his (her) spouse received). The wording of the questionnaire therefore implies that having either respondent or spousal information is sufficient for measuring transfers. In practice, however, there were several instances in which one spouse reported a transfer and the other did not. In these cases, it was assumed that the household received the positive transfer that was reported.

when compared to general transfers. The latter occur for a little over a fifth of the 5,461 households in our sample (Table 1, part I). About a fifth of the 1,819 households purchasing a house between survey waves received a housing-related transfer (Table 1, part II). Among recipients, however, the average housing transfer was five-and-a-half times larger than the average general transfer ($23,506 versus $4,289) Not surprisingly, both forms of transfer are highly skewed, but the disparity in their magnitude holds for median values ($9,000 versus $1,300) as well. (Table 1, parts I and II).

An additional way to put the value of the housing transfers in perspective is to compare them to the value of the required downpayment. Both the mean and median of housing transfers exceeded, respectively, the mean and median of required downpayments (Table 1, part II). More than half of the recipients of housing transfers – 183 out of 345 – received financial help greater than the required downpayment.

3.3.2 Explanatory Variables

Respondent Permanent Income. Permanent income, that is, age-standardized earnings purged of transitory error components, is estimated using earnings data from both waves of the NSFH. Standard Mincerian earnings functions are estimated where individual log-earnings are regressed on education, a cubic in age, occupational dummies, region, race, and marital status. Most individuals have two earnings observations, so we can identify fixed effects for them. For others, we use the technique of King and Dicks-Mireaux (1982), which relies on outside information about earnings error components, to construct permanent income measures.[14]

Parental Permanent Income. The first wave of the NSFH contains information on parental schooling, occupation, and age. We use this information to impute parental income from earnings functions estimated within the NSFH sample. We also use parental earnings information obtained from the respondent's parent interviews.

3.4 General Transfers, Housing Transfers, and Liquidity Constraints

An appealing explanation of *inter-vivos* transfers is that they are used to help recipients overcome borrowing constraints (Ishikawa,1974; Cox,1990; Engelhardt, 1996). Do private transfers appear to respond to liquidity constraints? How do housing-related transfers compare to the more general-purpose transfers?

[14]Although a long panel would be desirable for measuring permanent income, even a two-year panel, such as ours, can significantly mitigate measurement error from transitory earnings. Details pertaining to the construction of the respondents' permanent income, the estimation of the earnings functions, and to the imputations of parental permanent income are provided in Appendix "The Construction of Permanent Income," available upon request.

To draw inferences about the connection between liquidity constraints and private transfers, we use an empirical specification proposed in Cox (1990), which makes a distinction between the private-transfer effects of current and of permanent incomes of potential recipients. These alternate measures of income are predicted to have opposite effects on private transfer receipt, with the effect of current income being negative, and the effect of permanent income being positive. The intuition for the first result is that a rise in current income alleviates the liquidity constraint and lessens the need for a private transfer. The intuition for the second result is that with current income constant, a rise in permanent income increases desired consumption; since private transfers help close the gap between desired consumption and current income, transfers rise.

In addition to current income and permanent income, our empirical model includes age interactions with the current earnings and permanent incomes of respondent households and parental households. The idea is that liquidity constraints are more likely to be binding for younger households so that the divergent transfer effects of current income versus permanent income would be more pronounced for them as opposed to their older counterparts. Further, following Zeldes (1989), we enter an additional indicator of liquidity constraints – whether the household's financial assets fell short of two months' worth of earnings, which we also interact with age. We also include demographic attributes of the household: whether it is headed by a single female, the marital status of the respondent, and race.[15] Finally, we include the number of living parents and in-laws.

General Transfers. We estimated and present in Table 2 a probit equation for incidence of general transfers received. The pattern of coefficients in Table 2 conforms to the liquidity-constraint hypotheses: the probability of transfer receipt is inversely related to current earnings and positively related to the measure of permanent income, and these effects attenuate with age. For a household headed by a 25-year-old, an increase in earnings from the 25th to the 75th percentile is associated with nearly a 3 percentage-point reduction in the probability of receiving a transfer. The equivalent increase in the household's permanent income is associated with a 2 percentage-point increase in the probability of receipt (although this effect is only on the margin of statistical significance). Being liquidity constrained according to Zeldes' (1989) criterion, that is, holding financial assets amounting to less than a sixth of current yearly earnings, is associated with an increase in the probability of transfer receipt of over eight percentage points. Like the effects of earnings and permanent income, the effects of having low financial assets on the probability of transfer receipt diminishes with age, and each of these effects becomes negligible as the household reaches its forties. The measure of parental permanent income enters positively and its value is quite large. An increase in per-capita parental income from the 25th to the 75th percentile is associated with more than a 9 percentage-point increase in the probability of

[15]Cox (1987) discusses the importance of demographic characteristics of households and their role in underlying transfer motives.

receiving a transfer.[16] Having an additional living parent increases the probability of transfer receipt by 4 percentage points, as does being married. Consistent with many other studies of *inter vivos* transfers, households headed by single females are more likely to receive a transfer (+5 percentage points) while black households are less likely to receive a transfer (-10 percentage points).

Housing Transfers. A similar probit, now applied to the receipt of housing transfers, is presented in Table 3. Gauging the responsiveness of housing transfers to liquidity constraints is somewhat more complicated than gauging the responsiveness of general transfers because the former are given only to home-purchasers, a select sub-sample whose income and other attributes could be expected to differ from those of the overall population. In particular, by virtue of being able to purchase a house, they are apt to be less likely to face liquidity constraints than those who did not purchase a house.[17] Estimates of the responsiveness of housing transfers to liquidity constraints must take into account the fact that such transfers take place only for the sub-sample of households who have purchased a home. Accordingly, we focus on housing transfers among the sub-sample of home-purchasers.

The estimation results for housing transfers are presented in Table 3 (which parallels the framework used in Table 2). The first column of Table 3 contains a simple probit estimation for housing transfers, estimated conducted for the sample of home-purchasers. The second column of Table 3 contains estimates that take account of possible selection bias associated with the decision to purchase a home.[18]

We find little evidence of liquidity-constraint effects for housing transfers. For example, having low financial assets relative to earnings appears to matter little for the receipt of housing transfers. None of the terms associated with low financial assets or permanent income are even

[16] An alternative specification reinforced these results. Rather than estimating permanent income, we included its determinants, such as years of schooling, and permanent income indicators such as the average earnings associated with the occupations of the respondent and spouse, and age. As in Table 2, the probability of transfer receipt fell with earnings, and the effect attenuated with age. Average occupational earnings, an indicator of permanent income, was positively associated with the probability of transfer receipt, again attenuating with age. Years of education of the household head together with the age interaction term are jointly highly significant and positive. And, consistent with the liquidity constraint hypotheses, transfers are targeted to younger households. These results are contained in Appendix ("Additional Results"), available upon request.

[17] For example, the average current earnings of home purchasers is substantially higher than that of non-purchasers - $54,510 versus $40,924.

[18] The second-column estimates in Table 3 are from a nested probit model in which the decision to purchase a house is modeled jointly with the receipt of housing transfers. The specification of the purchase decision is guided by considerations discussed in Henderson and Ioannides (1986) and Ioannides and Kan (1996). See Table 3 for a list of the covariates in the housing decision equation. Estimates of the first-stage probit are contained in Appendix ("Additional Results"), available upon request. The direction of the selection bias is negative, which accords with our priors. (For example, unobservables, such as having a good credit rating, would likely be positively related to home purchases but inversely related to help with downpayments.) But the estimated selection effect is only on the margin of statistical significance, and there is little difference between the coefficients in the adjusted and non-adjusted estimations.

marginally significant in Table 3.[19] Further, these results do not appear to be the artefact of possible attenuation bias from measurement error in income or assets.[20]

Thus we conclude that the conventional approach to explaining private transfers, which relies on considerations of liquidity constraints, does not perform well.[21] Does the raw tabulation in Table 1, part III, that suggests that housing concerns intersected with fertility plans are associated with receipt of housing transfers, point to a different explanation? Can the demonstration-effect approach better explain the patterns of intergenerational transfers in the form of housing downpayments?

[19] When we base our liquidity-constraint variable on Wave 1 values rather than on Wave 2 values so as to measure constraints prior to home purchase, we find that receipt of housing transfers is insignificantly related to liquidity constraints for the younger, two thirds of the households in the sample. For the remaining and older one third of the households, receipt of housing transfers is positively and significantly related to being financially strapped. This finding is not in line with conventional views that attribute liquidity constraints particularly to younger households who presumably had a lesser opportunity to establish reputation in credit markets. (See, for example, Hayashi, 1985; Jappelli, 1990). In addition, disaggregation by region – a measure of exogenous variation in housing prices – did not uncover any systematic evidence of a liquidity-constraint effect on housing transfers. This result may not be all that surprising. It could have been argued that (especially when it comes to purchasing a house) liquidity constraints exhibit geographical variation since house prices exhibit considerable locational variation. However, the incidence of a liquidity constraint that households wishing to buy a house face may not be systematically and positively related to the price of a house since households in, say, rural areas where house prices are low, also have low incomes.

[20] The NSFH data contain extensive information reported by interviewers concerning the quality of the interview, which allows us to investigate directly the issue of measurement problems. Interviewers were asked a battery of questions concerning the comprehension, cooperation, and interest among respondents, the rapport between interviewer and respondent, and the extent of interruptions during the interview. Each component of interview quality was gauged on a Likert scale from 1 to 7. We focused on the sub-sample of interviews rated in the two best Likert classifications for all criteria associated with interview quality (n=1,224). The estimation results for this sub-sample are similar to those reported in Table 3 and are provided in Appendix ("Additional Results"), available upon request.

[21] An alternative specification of transfer behavior reinforces the findings in Tables 2 and 3. We estimated a bivariate model describing the transfer/no transfer decision, and, conditional on a transfer, whether it was housing related or not. Conditional on a transfer taking place, the probability that it takes the form of a housing transfer is increasing in recipient household income, consistent with the idea that it is general transfers that tend to be targeted to liquidity-constrained households. These results are contained in Appendix ("Additional Results"), available upon request.

4 Transfers for Housing Downpayments and the Demonstration Effect

We weave together our demonstration-effect approach to intergenerational transfers with our interest in explaining tied transfers in the form of help with house purchases. Our key idea is that tied transfers for housing constitute an encouragement or an inducement by would-be grandparents, or grandparents, to their adult children for the production of grandchildren. The demand of would-be grandparents for grandchildren is derived from the interaction among members of three generations that we have delineated in Section 1.

When children express both a desire to have children and a concern that their existing housing facilities constitute a barrier to having children, a tied transfer in the form of downpayment assistance, as compared to a pure cash transfer, neither compels the recipients to revise their consumption bundle nor raises their utility by less. Unlike a housing downpayment transfer made prior to the children having children, a promise of a cash transfer subsequent to having children suffers from two drawbacks. First, the promise of an *ex post* cash transfer cannot mitigate a present-day binding housing liquidity constraint. Second, there is a natural desire to acquire or install the prerequisites for bearing and rearing children prior to having children. Especially because having children is irreversible, would-be parents can reasonably be expected to be averse to the risk of producing children only to find out thereafter that they are unable to adequately house them. The intersection of the importance attached to a "correct" sequence and the binding liquidity constraint render an arrangement of children first and cash rewarded thereafter largely untenable.

4.1 Basic Results

We augment our estimating equation for housing help by using a series of variables related to fertility plans and to housing concerns. In the main interview of the first wave of the NSFH, survey respondents were asked to report their intentions for having children. The questions about fertility plans were asked of female respondents aged 39 or younger, single male respondents aged 44 or younger, and any married male respondents whose spouse or partner was aged 39 or younger. Respondents were asked *"Do you intend to have (a/another) child sometime?"* Respondents were also asked how sure they were of their intention.

The same age groups of respondents filled out a self-enumerated questionnaire that dealt with considerations in the decision to have another child. The module began with the statement:

> *"Below is a list of things that some people consider when having a child or having another child. Please circle how important you feel each is to you at the present time."*

Respondents were given a Likert scale ranging from one (not at all important) to seven (very important) for a variety of factors presumed to influence fertility decisions. Among these was housing, or more precisely, "Being able to buy a home or a better home." We chose the top two numerical responses to signify that the respondent was concerned about housing in the fertility decision. We then created a series of dummy variables related to fertility plans, the certainty with which those plans were held, and concerns about housing. Specifically, we created the following eight dummies:

Want child (sure), concerned about housing
Want child (unsure), concerned about housing
Want child (sure), unconcerned about housing
Want child (unsure), unconcerned about housing
Don't want child (unsure), concerned about housing
Don't want child (sure), concerned about housing
Don't want child (unsure), unconcerned about housing
Don't want child (sure), unconcerned about housing

The reference category comprises those respondents who were not asked the questions, and presumably the probability of having a child is quite low for this group, so that, for all intents and purposes, we will the refer to this category as the infertile group. We entered the dummies in the probit analysis for housing transfers received.

Our underlying idea here is that parents who are keen to set in motion or to amplify demonstration-effect behavior will be more willing to provide housing downpayment assistance when they know that the fertility outcome is relatively certain as opposed to when it is not. Note that the "want child (sure), concerned about housing" category is not one of a decisive want. Had the want been absolute, would housing have constituted a binding concern? The thought that parents would better assist the unsure, tilting them in the desired direction while leaving the sure to themselves since they will end up producing children regardless, is not all that appealing; the former may still not be prompted to produce children, and the latter's binding constraint is unearthed.

Our basic results are presented in Table 4. In line with a key prediction of the demonstration-effect approach viz., – that parents are more inclined to offer assistance to their children when the assistance is more likely to entail the production of grandchildren, we find that the fertility-plan/housing-concern variables have a large impact on the probability of receiving a

housing transfer. Those respondents who report that they are sure that they want a child, and for whom housing looms large in the fertility decision, are nearly twice as likely to receive a housing transfer as those who are sure that they do not want a child and are less concerned about housing. The estimates from the probit analysis in the first column of Table 4 indicate that the predicted probability of receiving a housing transfer for a household whose respondent is sure that he/she wants a child and is concerned about housing (and whose other variables are set at sample means) is 25 percent, compared to 13.6 percent for a respondent who is sure that he/she does not want a child and is unconcerned about housing. The predicted probability for the reference category, that is, those who presumably are not likely to be able to have children, is 11.1 percent. The corresponding pattern from the nested probit in the second column of Table 4 is nearly identical.[22]

The dummies for responses concerning fertility plans and housing concerns can be approximated by a linear pattern. We re-estimated the probits in Table 4 substituting a linear summary measure of fertility plans and housing concerns. We recoded the dummies so that the one reflecting the highest "needs" (want child for certain, concerned about housing) was given a value of eight, the lowest (don't want a child for certain, unconcerned about housing) was coded as one, and the reference category was coded as zero. These results imply predicted probabilities that are similar to those alluded to above.[23]

We also added information about the number of children in the household as regressors in Table 4. We included a dummy indicating if there were no children in the household, as well as a quadratic in the number of children. The probability of receiving housing transfers responds to the number of children in a nonlinear way. With other variables set at sample means, the probability of transfer receipt is higher when the household has two children than if it has one child, but it is highest when the household has no children. For example, homebuyers with two children are two and one-half percentage points more likely to receive than those with one, and one-half a percentage point less likely to receive than those with no children.

[22] Could our estimated relationship between fertility plans cum housing concerns and housing transfers be spuriously generated by a plausibly heritable, and omitted, preference characteristic, namely, altruism? Could it be that our findings emanate from us encountering altruistic parents – who are readily available to provide housing transfers – having children whose altruistic inclination renders them more likely to want to parent children? The first wave of the NSFH contains useful information on subjective feelings of closeness toward parents. Respondents were asked to rate the quality of their relationships with their parents and with their in-laws on a Likert-type scale of 1 ("very poor") to 7 ("excellent"). Assuming that these measures reasonably capture the extent of intrafamilial altruism, we replicated Table 4, including this time these measures. Our results remained unchanged. Furthermore, the measures themselves, while positive, were not statistically significant.

[23] The linear restriction generated a $\hat{\chi}^2$ of 2.85 (ordinary probit) and a $\hat{\chi}^2$ of 2.80 (nested probit), versus $\chi^2_{.05}$ of 14.07. The marginal impact on the probability of transfer receipt of this summarized measure is 1.4 percentage points (asymptotic t-value = 3.59).

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We note though that the said responses are small relative to the fertility-plan/housing-concern variables discussed above.[24]

4.2 Differences by Sex

Our approach leads us to expect gender differences in the incentive to undertake the demonstration-effect actions because men and women have substantially different life expectancies: in the U.S. the difference between the life expectancies of females and males is nearly seven years. Moreover, since wives are usually younger than husbands, husbands are much more likely than their wives to have a spouse present to take care of them when they become aged and infirm; compared to men, women are more likely to have to rely on children rather than on spouses for attention and care in old age. Since women have a longer expected horizon than men over which to reap the benefits from inculcating children, they have more to gain from exercising demonstration, and therefore a stronger incentive than men to engage in demonstration. There is abundant existing evidence consistent with this idea. Women provide much more help to elderly parents than men. For example, Stoller (1983) finds that daughters provide twice as much help to parents as sons do. Further, these differences are not fully explained by differential time valuation, because they are obtained even after controlling for wages (for example, Kotlikoff and Morris, [1989]).

These considerations imply that women would need less subsidization than men for the production of children, since they have a considerably stronger incentive to use the demonstration effect. Hence we expect that would-be grandparents or grandparents would be more responsive to the fertility plans and concerns of sons than of daughters.

[24] One possible objection to our single-equation specification is the simultaneity between fertility plans/housing concerns and housing transfers. Indeed, our framework implies causality in both directions: would-be grandparents respond to the plans and concerns of the parental generation, but such plans and concerns themselves can be influenced by housing transfers. In our data, however, the reporting of plans and concerns, which is given in the first wave of the NSFH, substantially pre-dates the purchase of a house, which occurs subsequent to the wave 1 interview. The time elapsing between these two events averages a little under three years, with a maximum of seven years. Because of the sequencing we treat the plans/concerns variable as predetermined, that is, we assume that the measure is independent of subsequent disturbances in the probit. We conducted a test for weak exogeneity following the procedure derived by Smith and Blundell (1986), and found evidence strongly supportive of this assumption. We included a residual vector obtained from an auxiliary regression of summarized plans/concerns on a vector of Wave 1 measures including respondent age, male and female labor force status and earnings, home ownership and housing equity, number of children, female headship, marital status, male and female education levels and financial assets. It was not possible to reject the hypothesis of weak exogeneity of the plans/concerns variable for the parameters of the equation for receipt of housing transfers even at the .25 level.

Another reason for expecting differential subsidization by gender has to do with the custody of children in the event of a marital breakup.[25] Consider the case of a G with an unmarried P-daughter and an unmarried P-son. Suppose that parents are not interested in the quality of the marriage of their son or their daughter *per se*, but that a higher quality marriage will be associated with a lower likelihood of marital breakup, and that resources bundled with P positively affect the quality of the P's marriage. Thus, giving more resources to a daughter, thereby enhancing the quality of her marriage, brings no returns in terms of retaining children upon a marital breakup, assuming that in the case of a marital breakup it is the mother rather than the father who retains the children. However, giving more resources to a son, thereby enhancing the quality of his marriage *will* bring returns in terms of retaining children because the likelihood of marital breakup will be lower. A P who retains the children is more likely to engage in demonstration-effect activities than a P who does not.

We investigated separately the effects of the summarized plans/concerns variable on the probability of receiving housing help for married couples versus single females and versus single males (Table 5). In line with the predictions of the demonstration-effect approach, we found that fertility plans/housing concerns had a much larger impact for single males than for single females, for whom the estimated impact of the variable is almost negligible.

4.3 The Transfer Behavior of Husbands' Parents and Wives' Parents

One possible criticism of the results presented so far is that the estimated effects of fertility plans and housing concerns on parental help with housing could in large part be due to parental altruism. Such plans and concerns may reflect the needs of children to which altruistic parents respond by making the appropriate transfers. Yet parental altruism as a motive for housing transfers to children should not be expected to differ by children's fertility plans, only by children's housing needs. Since differentiation by fertility plans is in evidence, altruism may not be the underlying motive for housing transfers. One possible way to test for the presence of altruistic motives for transfers is to focus on married couples and look at the separate effects of the income of husbands' parents versus the income of wives' parents. The altruism hypothesis predicts that the parents of a person whose spouse's parents are rich are likely to give less – a standard case of the "crowding out" of private transfers predicted by the altruism model.[26] We

[25] A recent study using data from a survey conducted in 1995 indicates that one-third of all first marriages in the United States end within 10 years (Bramlett and Mosher, 2001).
[26] See also, for example, Andreoni (1989).

investigated the receipt of help with housing for husbands and wives separately in Table 6.[27] For husbands, we find that the income of in-laws is inversely related to the probability of receiving help from one's own parents with housing, as the altruism model predicts, but the estimated impact is not statistically significant. But for wives, we find that the income of in-laws is *positively* and significantly related to the probability of receiving help from own parents with housing, a result that is in contrast to the altruism model. We conclude that the results we find for the connection between fertility plans *cum* stated housing concerns and transfers are not simply an artifact of altruistic preferences.[28]

Additional results reported in Table 6 lend support to the demonstration-effect idea. Recalling the argument that since women have a longer life expectancy than men, they have more to gain from an operative demonstration effect, we entered as separate regressors dummy variables that capture the living situation of the parents: whether the parents are together or whether the father or mother is alone. (The reference category is that the parents are both alive but are separated.) We find that, consistent with the prediction of the demonstration-effect approach, having a mother living alone raises the probability of receiving help with housing, compared to the other categories. For example, for husbands, having a mother living alone rather than a father living alone raises the probability of receiving help with housing by 7.1 percentage points (significant at the .1 level). For wives, the impact is qualitatively similar, but larger: 22.8 percentage points (significant at the .01 level). These demographic effects are consistent with the idea that it is women, and even more so women who experience vulnerability, who are more interested in cultivating the familial bonds that lead to future transfers. Again, these results would not be generated by the standard altruism model, which makes no prediction one way or the other concerning the differential altruism of mothers versus fathers.

[27] We employ a bivariate probit technique to account for the correlation in unobservables between husbands and wives, which turns out to be large and precisely estimated. Such a specification precludes us from controlling for the selection bias associated with home ownership, because the resulting multivariate probit model would present practical difficulties from the computational problems associated with trivariate integration. Note, however, that in the nested models in Tables 3 through 6, estimated selection bias from the home ownership decision is never significant at conventional levels.

[28] If what motivates parents to furnish their children with housing assistance is a desire to have the children engage in demonstration-effect activities, then we would expect the assistance not only to activate such an engagement but also to render it more likely. Specifically, does house purchasing associated with the receipt of downpayment assistance, as compared to house purchasing not associated with the receipt of downpayment assistance, result in children locating themselves closer to their parents? It turns out that home purchasers tended to move further away from the parents: about 110 miles further away from the husband's parents and about 60 miles further away from the wife's parents, on average. But those receiving help with housing did not move that far: those helped by the husband's parents moved only 50 miles away from their parents; those helped by the wife's parents moved 30 miles away. These reduced distances are not statistically significant at conventional levels, however.

4.4 Complementary Results

We have investigated several additional empirical issues.[29] First, we looked at transfer *amounts* in addition to transfer *incidence*. As is often the case with private transfers, the estimations of amounts are less precise than the estimations of incidence. Further, we investigated the connection between fertility plans and housing concerns, and general transfers. Following the hint of Table 1, part III, we estimated an analogue of Table 4 for general transfers and found that wanting a child and being concerned about housing were positively related to the probability of receiving a general transfer, though the estimated effects are less pronounced or less precisely estimated than those for housing transfers. We also estimated an analogue of Table 5 for general transfers and found that fertility plans and housing concerns did not interact with gender in the same way as housing transfers. A key feature of our argument concerning housing transfers is that they represent a transfer targeted to assets that could improve the quality of the marriage and the likelihood of the presence of children. We do did not find the same pronounced differences in the interaction of fertility plans/concerns and gender for general transfers, indicating that these transfers do not behave in the same way as housing transfers.

[29]The results are contained in Appendix ("Additional Results"), which is available upon request.

5 Complementary Reflections and Concluding Remarks

By expanding the domain of analysis from two generations to three, we cast the issue of tied transfers in a new light. We achieve this by pursuing the idea that transfers for housing constitute a means for inducing the production of grandchildren which grandparents deem desirable in light of the demonstration effect. In addition to a new perspective of tied transfers, our approach provides a novel way of looking at the involvement of grandparents in the fertility decisions of their children.

Most fertility models either ignore would-be grandparents or grandparents, or relegate them to the shadows. For example, Easterlin's (1973) approach to fertility, whereby parental expectations and preferences are shaped by grandparents' wealth, does not assign an active role to grandparents. It is the grandparents' *wealth*, rather than their actions, which influences fertility. Becker (1991) accords a similarly tangential role to grandparents in fertility decisions: "One would expect the number of children to depend, *perhaps only indirectly*, on the income of grandparents." (p. 199, emphasis added). In Becker's treatment of desired fertility, grandparent's income serves only as a proxy of unobserved parental earning abilities. As in Easterlin's model, grandparents play no active role in the determination of the number of grandchildren.

An approach to fertility which could predict an active role for grandparents is that of evolutionary biology, but this approach suffers from a number of shortcomings. Evolutionary theory posits that an individual's motivation is to maximize "extended fitness," that is, one's own expected number of surviving offspring plus the relatedness-weighted sum of the fitness of one's relatives. The probability of a given gene being shared between a grandparent and a grandchild is one-fourth, certainly close enough to impel grandparents to be "helpers at the nest." But the low levels of fertility in industrialized countries suggest that extended fitness is a dubious maximand. To a first approximation, the progeny-maximizing birth strategy would be to have as many children as possible, the effects of this strategy on child quality notwithstanding (Kaplan, 1994; Bergstrom, 1996). In the words of Kaplan, p.784: *". . . it is likely that the low fertility behavior and high adult consumption levels characteristic of modern industrial society will not be explained by models of current fitness maximization."*

Our demonstration-effect approach attributes an active role to the would-be grandparents or grandparents. There is an ever-growing body of evidence that in traditional societies as in modern societies, grandparents make substantial contributions to the production and the rearing of grandchildren. Kaplan (1994) studied three traditional societies and found that the increased demands for food generated by the arrival of children were not met solely by members of the

parent generation—grandparents provided as well. Cardia and Ng (1997), using recently available evidence from the Health and Retirement Survey in the United States, report substantial contributions of time-related transfers from grandparents in the form of child care. Such behavior parallels the tied transfers to which we have referred.

We are not dismissive of the argument that individuals want to have grandchildren because they like grandchildren, just as we will not be dismissive of the argument that people marry out of love. But while there is a rich literature on the economics of marriage, there is no literature on the "economics of grandchildren." We seek to contribute to the development of such a literature by alluding to a vector of attractions, each capable of inducing a demand for grandchildren, even though we single out for close scrutiny a particular element in this vector. (Elements that could be included in this vector are: having grandchildren serves as a catalyst of bringing families closer together; having grandchildren induces "demonstration-effect" behavior; having grandchildren is joyous.) The admission of several attractions renders it necessary to devise discriminating tests. Such tests are not difficult to come by. Consider, for example, the joy-of-having-grandchildren attraction versus the demonstration-effect attraction. If grandchildren are demanded regardless of demonstration-effect considerations, then we would not expect would-be grandparents to be more attentive to the constraining factors for having grandchildren that sons face as opposed to daughters. Or, if would-be grandparents were motivated by purely altruistic considerations, there would have been no reason for them to be more forthcoming in providing help with a downpayment when the child chooses to live closer (which is a good predictor of the child's intention or inclination to engage in "demonstration-effect" behavior). Yet we see from Table 5 that living closer to the parent does indeed increase the probability of receiving a housing transfer.

Demonstration type behavior is not the only possible means of conditioning future conduct. An alternative would be for parents to rely on schools or churches as a means of inculcating child loyalty. Yet indeed, demographic patterns for religious participation appear to be *explained* by the demonstration effect.[30] In addition, anecdotal evidence from Israel pertaining to adults with no living parents (the generation whose parents were lost in the Holocaust) indicates that these adults disproportionately participated in parent-teacher committees, and attended religious services together with their children more frequently and regularly than adults with living parents.

Can transfers from children tomorrow be prompted by transfers to children today? The prospect or process of "direct reciprocity" may not work out as intended, for several reasons. If

[30] In fact, in light of the arguments about sex differences in life expectancy noted above, we would expect women to be disproportionately engaged in the moral training of children. Empirical studies of religious participation (Azzi and Ehrenberg, 1975; Ehrenberg, 1977) are consistent with this expectation; women are disproportionately involved even after controlling for intervening determinants such as wage differences. These studies also indicate that participation increases with the number of school-aged children.

transfers are costly and if the children's move is the second and last in a sequence of (two) moves, the children may have no incentive to reciprocate. The notion that, since the children obviously observe their parents transferring to them they will surely be inclined to transfer to their parents because observation translates into inclination, can be problematic. If the act of the parents is replicated (as stipulated, for example, by the demonstration-effect approach), then giving to the children today can be followed and mimicked by the children, upon becoming adults, giving to their children tomorrow. The combination of inculcation and replication can well result in transfers down rather than back. Transfers can be decomposed into two constituent parts: the act of the transfer and the direction of the transfer. Children who are exposed to their parents transferring to them can "reciprocate" by engaging in the act without replicating the direction. The possibility that transferring to children today results in the children, upon becoming adults, transferring to their children tomorrow, could best be eliminated if the children will not have children themselves. Yet the evidence presented in this paper suggests that the transfer to children is aimed at supporting them producing children rather than at discouraging them from doing so.

Our approach can help resolve a controversy between two schools of thought in demography: one which advocates the idea that fertility demands are determined by the desire for old-age security that children provide (Caldwell, 1976), and another which argues that the demand for children is driven by evolutionary forces (for example, Turke, 1989). These two strands of thought make conflicting predictions regarding the direction of flows of resources and aid between generations: the first predicts a resource flow from young to old; the second predicts a resource flow from old to young. The debate has become somewhat stymied because of the preponderance of evidence indicating that resources flow in *both* directions. Such two-way flows of transfers are precisely what is predicted by our demonstration-effect approach. Resources flow downward, in the form of tied transfers, to encourage the production of grandchildren, and flow upward, in the form of help and assistance, as parents attempt to inculcate the appropriate values in their children. Moreover, when adult children provide their parents with attention and care they simultaneously provide their children with exemplary conduct. By expanding the domain of analysis from the standard two-generation format to three generations, we can explain disparate phenomena such as the connection between tied transfers and the production of grandchildren, and shed additional light on the multigenerational family as an arena in which the transfer of resources, the provision of services, and the formation of preferences are causally interlinked.

Table 1: Some Descriptive Statistics

I. General Transfers

	Number	Percent
Households in the sample	5,461	100.00
Households who received general transfers	1,178	21.57

	Mean	Median
Value of general transfer among recipients	$4,289	$1,300

II. Housing Transfers

	Number	Percent	(Percent of Subsample)
Households in the sample	5,461	100.00	---
Households who purchased a house between survey waves	1,819	33.31	(100.00)
Households who received help with house purchase	345	6.32	(18.97)
Households whose help exceeded the required downpayment	183	3.35	(10.06)

	Mean	Median
Value of housing transfer among recipients	$23,506	$9,000
Required downpayments	$17,120	$8,000

III. Fertility Plans and Housing Concerns

	Recipients of housing transfer		Nonrecipients of housing transfer	
	Number	Percent	Number	Percent
Households who purchased a house between survey waves	345	100.00	1,474	100.00
Households who are sure that they want a(nother)child	129	37.39	327	22.18
Households who want a(nother) child and have housing concerns	71	20.58	144	9.77

Source: Authors' tabulations from the NSFH.

Table 2: The Incidence of General Transfers

Dependent Variable: Transfer Receipt (1=Yes, 0=No)

	Marginal Effect	Asymp. t-val.	Variable mean
Respondent Characteristics			
Current earnings	-0.020 X 10-4th	-2.16	45,483
Permanent income	0.014 X 10-4th	1.29	41,426
Current earnings x age(a)	0.050 X 10-6th	2.17	1,830,111
Permanent income x age	-0.028 X 10-6th	-1.00	1,639,971
Financial assets < 1/6th earnings	0.167	3.39	0.39
Fin. assets < 1/6th earn. x age	-0.003	-2.62	14.59
Per-capita parental income(b)	0.107 X 10-4th	11.09	14,170
Number of living parents + inlaws	0.044	5.96	2.36
Married, spouse present	0.043	1.99	0.65
Female-headed household	0.049	2.13	0.25
Black	-0.096	-5.43	0.13
Constant	0.024	-20.55	1.00
Number of observations	5,461		
Recipients	1,178		
Nonrecipients	4,283		
Log-likelihood	-2615.19		
Chi-squared	464.64		
Dependent variable mean	0.22		

Source: Authors' tabulations using the NSFH.

(a) 'x age' denotes variable interacted with age of household head.

(b) Income of parents plus in-laws divided by the number of living parents plus in-laws.

Table 3: The Incidence of Housing Transfers

Households Who Purchased a House between Survey Waves
Dependent Variable: Transfer Receipt (1=Yes, 0=No)

	Probit		Nested Probit		
	Marginal Effect	**Asymp. t-val.**	**Marginal Effect**	**Asymp. t-val.**	**Variable mean**
Respondent Characteristics					
Current earnings (000's)	0.002	0.98	0.001	0.87	54.51
Permanent income (000's)	0.002	0.85	0.001	0.62	48.58
Current earnings (000's) x age/100	-0.006	-1.14	-0.004	-1.09	20.68
Permanent inc.(000's) x age/100	-0.003	-0.55	-0.002	-0.40	18.15
Financial assets < 1/6th earnings	-0.025	-0.29	-0.025	-0.29	0.37
Fin. assets < 1/6th earnings x age	0.002	0.86	0.002	0.92	13.37
Per-capita parental income (000's)	0.008	4.63	0.006	4.44	15.61
Number of living parents/inlaws	0.044	3.46	0.036	3.07	2.70
Married, spouse present	0.007	0.18	0.007	-0.10	0.75
Female-headed household	0.045	1.00	0.041	0.94	0.17
Black	-0.110	-2.89	-0.092	-2.52	0.06
Constant	0.020	-10.36	0.021	-5.83	1.00
Number of observations		1,819		1,819	
Recipients		345		345	
Nonrecipients		1,474		1,474	
Log-likelihood		-813.57		-3777.93	
Chi-squared		139.97		77.92	
Dependent variable mean		0.19		0.19	

Source: Authors' tabulations using the NSFH.
Note: The nested probit adjusts for the sample-selection bias associated with restriction of the sample to homebuyers. Purchasing a house, and receiving a housing-related transfer are estimated jointly. Variables entered in the house-purchase equation are earnings, permanent income, financial assets, dummies for financial assets missing and for low financial assets, a quadratic in the age of the household head, per-capita parental income, number of living parents/in-laws, family size, the amount of housing equity in wave 1, marital status (married, divorced, married since wave 1), female headship status, race (Black), dummy indicating missing value for wave 1 home equity, a dummy for inter-city migration since wave 1, dummies for job change (respondent and spouse) since wave 1, and dummies for attaining a job (respondent and spouse) since wave 1. Estimated correlation between unobservables in the house-purchase equation and housing-transfer equation: -0.245, std. err. = 0.125. The probit equation for house purchase is given in Appendix (“Additional Results”), available upon request.

Table 4: The Incidence of Housing Transfers

Households Who Purchased a House Between Survey Waves
Dependent Variable: Transfer Receipt (1=Yes, 0=No)

	Probit		Nested Probit		
	Marginal Effect	**Asymp. t-val.**	**Marginal Effect**	**Asymp. t-val.**	**Variable mean**
Respondent Characteristics					
Current earnings (000's)	0.002	0.90	0.001	0.81	54.51
Permanent income (000's)	-0.0002	-0.09	-0.0003	-0.24	48.58
Current earnings (000's) x age/100	-0.005	-1.07	-0.004	-1.03	20.68
Permanent income (000's) x age/100	0.002	0.32	0.002	0.42	18.15
Financial assets < 1/6th earnings	-0.080	-0.96	-0.066	-0.94	0.37
Fin. assets < 1/6th earnings x age	0.004	1.62	0.003	1.66	13.37
Per-capita parental income (000's)	0.007	4.23	0.005	4.09	15.61
Number of living parents/inlaws	0.039	3.10	0.032	2.79	2.70
Married, spouse present	0.031	0.74	0.025	0.47	0.75
Female-headed household	0.071	1.51	0.059	1.43	0.17
Black	-0.107	-2.89	-0.089	-2.57	0.06
No children	0.110	1.84	0.091	1.89	0.30
Number of children	0.103	2.09	0.085	2.15	1.44
Number of children squared	-0.025	-2.42	-0.021	-2.46	3.67
Fertility-Plan & Housing-Concern Variables					
Want child (sure), concerned	0.164	3.92	0.136	3.77	0.12
Want child (unsure), concerned	0.114	2.97	0.092	2.85	0.12
Want child (sure), unconcerned	0.081	2.24	0.065	2.15	0.13
Want child (unsure), unconcerned	0.070	1.90	0.056	1.84	0.12
Don't want child (unsure), concerned	0.079	1.58	0.061	1.49	0.05
Don't want child (sure), concerned	0.045	0.76	0.036	0.74	0.03
Don't want child (unsure), unconcerned	0.092	1.90	0.077	1.90	0.05
Don't want child (sure), unconcerned	0.032	0.67	0.025	0.64	0.05
Constant	0.004	-8.79	0.023	-6.29	1.00

Table 4 (cont.):

Number of observations	1,819	1,819
Recipients	345	345
Nonrecipients	1,474	1,474
Log-likelihood	-799.21	-3764.04
Chi-squared	168.69	98.57
Dependent variable mean	0.19	0.19

Source: Authors' tabulations using the NSFH.

Note: The nested probit adjusts for the sample-selection bias associated with restriction of the sample to homebuyers. Purchasing a house, and receiving a housing-related transfer are estimated jointly. Variables entered in the house-purchase equation are earnings, permanent income, financial assets, dummies for financial assets missing and for low financial assets, a quadratic in the age of the household head, per-capita parental income, number of living parents/in-laws, family size, the amount of housing equity in wave 1, marital status (married, divorced, married since wave 1), female headship status, race (Black), dummy indicating missing value for wave 1 home equity, a dummy for inter-city migration since wave 1, dummies for job change (respondent and spouse) since wave 1, and dummies for attaining a job (respondent and spouse) since wave 1. Estimated correlation between unobservables in the house-purchase equation and housing transfer equation: -0.214, std. err. = 0.126. The probit equation for house purchase is given in the Appendix “Additional Results,” available upon request.

Table 5: The Incidence of Housing Transfers

Households Who Purchased a House Between Survey Waves
Fertility-Plan Cum Housing-Concern Variable Entered Interactively
Dependent Variable: Transfer Receipt (1=Yes, 0=No)

	Probit		Nested Probit		
	Marginal Effect	**Asymp. t-val.**	**Marginal Effect**	**Asymp. t-val.**	**Variable mean**
Respondent Characteristics					
Current earnings (000's)	0.002	1.07	0.001	0.97	54.54
Permanent income (000's)	-0.0003	-0.15	-0.0004	-0.35	48.59
Current earnings(000's) x age/100	-0.006	-1.21	-0.004	-1.16	20.69
Permanent inc.(000's) x age/100	0.002	0.30	0.002	0.43	18.15
Financial assets < 1/6th earnings	-0.059	-0.72	-0.050	-0.70	0.37
Fin. assets < 1/6th earnings x age	0.003	1.39	0.003	1.43	13.33
Per-capita parental income (000's)	0.007	4.26	0.005	4.16	15.62
Number of living parents/in laws	0.036	2.86	0.029	2.52	2.70
Married, spouse present	0.195	2.28	0.176	2.14	0.75
Female-headed household	0.400	2.57	0.340	2.57	0.17
Black	-0.092	-2.41	-0.075	-2.04	0.06
Distance	-0.15	-2.07	-0.130	-2.25	-0.08
Number of siblings	-0.013	-2.46	-0.010	-2.36	5.87
Childless	0.125	1.89	0.104	1.97	0.30
Number of children	0.101	2.12	0.083	2.19	1.44
Number of children squared	-0.024	-2.35	-0.019	-2.41	3.67
Fertility-Plan & Housing-Concern Variables					
Plans & Concerns (P&C)	0.012	1.55	0.009	1.51	3.68
P&C x Single female	-0.013	-1.48	-0.011	-1.62	0.53
P&C x Single male	0.037	1.99	0.030	1.99	0.31
P&C x Distance	0.023	1.33	0.017	1.23	-0.27
P&C x Siblings	0.001	0.99	0.001	0.98	21.66
P&C x Childless	-0.005	-0.71	-0.004	-0.78	1.06
Constant	0.000	-6.07	0.019	-4.99	1.00

Table 5 (cont.):

Number of observations	1,817	1,817
Recipients	344	344
Nonrecipients	1,473	1,473
Log-likelihood	-786.16	-3745.35
Chi-squared	191.05	107.79

Source: Authors' tabulations using the NSFH.

Note: The nested probit adjusts for the sample-selection bias associated with restriction of the sample to homebuyers. Purchasing a house, and receiving a housing-related transfer are estimated jointly. Variables entered in the house-purchase equation are earnings, permanent income, financial assets, dummies for financial assets missing and for low financial assets, a quadratic in the age of the household head, per-capita parental income, number of living parents/in-laws, family size, the amount of housing equity in wave 1, marital status (married, divorced, married since wave 1), female headship status, race (Black), dummy indicating missing value for wave 1 home equity, a dummy for inter-city migration since wave 1, dummies for job change (respondent and spouse) since wave 1, and dummies for attaining a job (respondent and spouse) since wave 1. Estimated correlation between unobservables in the house-purchase equation and housing transfer equation: -0.268, std. err. = 0.130. The probit equation for house purchase is given in Appendix (“Additional Results”), available upon request.

Table 6: The Incidence of Housing Transfers

Households Who Purchased a House Between Survey Waves
Bivariate Probit Analysis: Transfers to Husbands and Wives Estimated Separately
Dependent Variable: Transfer Receipt (1=Yes, 0=No)

	Husbands			Wives		
	Marginal Effect	Asymp. t-val.	Variable mean	Marginal Effect	Asymp. t-val.	Variable mean
Respondent Characteristics						
Current earnings (000's)	-0.004	-1.32	61.51	-0.002	-0.55	61.51
Permanent income (000's)	0.004	1.13	55.61	0.003	0.85	55.61
Current earnings (000's) x age/100	0.009	1.03	23.12	0.005	0.52	23.12
Permanent inc.(000's) x age/100	-0.009	-0.94	20.53	-0.012	-1.02	20.53
Financ. assets<1/6 earnings	-0.112	-1.04	0.39	-0.084	-0.72	0.39
(Financ. assets<1/6 earnings) x age	0.005	1.49	13.51	0.003	0.84	13.51
Black	0.023	0.38	0.04	-0.079	-1.36	0.04
Distance from parents	0.008	0.17	-0.13	-0.019	-0.39	-0.11
Number of own siblings	-0.015	-2.74	3.38	-0.012	-2.25	3.24
Have no children	0.164	1.70	0.15	0.082	1.02	0.15
Number of children	0.093	1.52	1.81	0.049	0.89	1.81
Number of children squared	-0.021	-1.60	4.59	-0.012	-1.08	4.59
Fertility plans--housing concerns	0.016	3.33	3.93	0.011	2.34	3.93
Parental Variables						
Per-capita parental income (0000's)	0.068	3.25	1.588	0.053	2.25	1.598
Father alone	-0.051	-1.14	0.084	-0.048	-0.88	0.066
Mother alone	0.038	0.78	0.267	0.202	3.30	0.217
Parents together	0.025	0.70	0.520	0.059	1.67	0.571
Parent in bad health	-0.061	-2.16	0.182	0.021	0.7	0.182
In-law Variables						
Total in-law income (0000's)	-0.007	-0.99	2.365	0.016	2.44	2.319
Distance from in-laws	0.004	0.07	-0.112	0.165	2.70	-0.127
Constant	0.010	-4.66	1.000	0.015	-4.34	1.000
Estimated correlation of unobservables			0.41			
Estimated standard error of correlation			0.10			
Observations			806			
Recipients		111			107	
Nonrecipients		695			699	
Log-likelihood			-562.27			
Chi-squared			104.64			
Dependent variable mean		0.138			0.133	

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Appendix

Criteria Used to Determine the Final Sample

Original NSFH wave 1 sample size:			13,008
Attrition from wave 1 to wave 2:		3,000	
Reasons for attrition:			
Too ill	276		
Deceased	763		
No way to retrieve data	5		
Refusal turned tracing	22		
Nonusable partial	48		
Not complete by end of study	174		
Final household refusal	5		
Final language barrier	7		
All tracing exhausted	733		
Clean-up tracing dead-end	13		
Final refusal	972		
Not completed	4		
Inconsistent or incomplete information about spouse		156	
Spouse's wage missing		1	
Missing amounts for value of house purchase, capital gain, or downpayment		3	
Housing downpayment inconsistent with purchase price		10	
Residing with parent		544	
Respondent's age missing		6	
Discrepancies in respondent information on age or gender between surveys		48	
Inadequate information for calculation of permanent income		14	
All parents and in-laws are deceased		3,444	
Head's education missing		16	
Respondent aged 65 or older		132	
Missing information on private transfers		105	
Missing information about ability to have, or desire for more children		68	
Final sample size			5,461

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