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Motives for Private Income Transfers

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Private income transfers are becoming increasingly recognized as a key aspect of the U.S. economy. The majority of private income transfers occur inter vivos (i.e., between living persons), but very little is known about this type of transfer behavior. This paper tests alternative hypotheses concerning motivation for inter vivos transfers. Two motives are considered: altruism and exchange. Evidence presented here casts doubt on the altruistic model of transfer behavior. Observed patterns for inter vivos transfers are more consistent with exchange-related motives. This finding has important implications for the effects of public transfer programs on the distribution of economic well-being.

What motivates individuals to transfer income to family members or friends? Are these transfers made because of feelings of love and altruism? Alternatively, could these transfers be part of a transaction that contains a quid pro quo? This paper tests alternative hypotheses about the motivation for private transfers. Two motives are considered: altruism and exchange. In the altruistic framework, advanced

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by Becker (1974), a benevolent individual (say the parent) cares about the well-being of other individuals (the children). In the exchange model (Bernheim, Shleifer, and Summers 1985) the parent makes transfers to the children in return for services received from them.

These alternative motives for transfers—altruism versus exchange—can imply radically different outcomes for public policies that redistribute income. As Barro (1974) and Bernheim et al. (1985) have noted, for example, the "Ricardian equivalence" conclusion implied by Barro's argument regarding the connection between government borrowing and private consumption depends on the motives for private transfers. An economy with altruistic households could neutralize the forced intergenerational transfer associated with government borrowing by adjusting their own private intergenerational transfers. This neutralization requires altruism. If transfers are motivated by exchange, the neutrality result will not hold.

The same argument applies to the influence of social security on consumption behavior. If households are altruistically linked, the changes in private intergenerational transfers could undo the forced intergenerational transfers associated with social security, breaking the connection between social security and consumption behavior. Again, altruism is necessary for this result.

Though social security and debt-financed fiscal policy are the most frequently cited examples of public transfers that could be neutralized by altruistically motivated transfers, many more examples can be added to the list. Public spending for education, food stamps, Aid to Families with Dependent Children, and minimum wage legislation are policies whose outcomes depend on the motivation for private transfers. Bernheim and Bagwell (1985) show that intergenerational altruism has profound implications not only for the distributional role of government but also for the role of market prices in resource allocation.

Although it is clear that the issue of private transfer motives is critical, the existing literature that addresses this problem empirically is in its early stages. Further, existing empirical investigations of family transfers are almost solely limited to bequest behavior. The bulk of private transfers in the United States, however, occurs inter vivos (i.e., between living persons [Cox and Raines 1985]). Because of data limitations, there are few investigations of inter vivos transfers, and none has set out to test alternative theories of such transfer behavior.

This paper uses a new data set that contains information about inter vivos transfers to test transfer motives. The layout of the paper is as follows: first, existing work relevant to the question of transfer motives is reviewed; second, predictions of altruistic and exchange-related transfer behavior are compared; and third, implications of

these models are tested using a microdata set that contains information on inter vivos transfers. The empirical results below cast doubt on the altruism hypothesis and conform more closely to the exchange hypothesis. The final section discusses the implications of the empirical work.

Existing Work

Existing research focuses almost exclusively on bequest behavior, and substantial disagreement exists regarding the nature of private transfer motives. The private transfer literature contains three separate strands of thought.[1] The first line of research is an outgrowth of Becker's (1974) research on social interactions. The family is characterized as an income-equalizing institution, and private transfers are motivated by altruism. Models that postulate altruistic behavior include those of Ishikawa (1975), Becker and Tomes (1979), James Adams (1980), and Menchik and David (1983). Tomes (1981) tested the altruistic hypothesis using bequest data. He found that bequests perform a compensatory role; the bequest received is inversely related to recipient income. This supports the altruist hypothesis.

A second strand of research is concerned with measuring the way bequest behavior affects wealth mobility. This approach (e.g., Blinder 1973; Menchik 1979, 1980) generally takes an agnostic view of the family objective function; bequests, for example, need not respond to the characteristics of potential recipients. One question that has been investigated in this context is the nature of "bequest rules" (i.e., primogeniture vs. equal sharing). Menchik (1980) found that bequests tend to be shared equally among siblings. This evidence for equal sharing (particularly between sibling pairs of opposite sex, for whom earnings differentials may exist) casts some doubt on the notion that bequests are compensatory.

Further, David and Menchik (1985), using a rich source of data including information on social security wealth and bequests, found that bequest behavior was unaffected by the increment in lifetime wealth created by social security. This evidence contradicts Barro's (1974) neutrality hypothesis.

A third and more recent body of research treats family members as nonaltruistic; transfers represent payments made in exchange for

[1] Since this paper is concerned with resource transfers among family members and friends, the literature on charitable contributions is not referenced here. Most models of private charity assume altruistic motives for private giving (e.g., Schwartz 1970; Roberts 1984). For alternative views, however, see Reece (1979) and Nelson (1984).

services provided by family members. Nonaltruistic family behavior has recently been investigated in a variety of contexts including annuity insurance (Kotlikoff and Spivak 1981; Kotlikoff, Shoven, and Spivak 1986), household production (Manser and Brown 1980; McElroy and Horney 1981), insurance against shortfalls in income (Kaufman 1982), and labor supply decisions (McElroy 1985). Lucas and Stark (1985) considered both altruistic and self-interested motives for migrant remittances. Bernheim et al. (1985) applied an exchange model to bequest behavior. They found empirical support for the bequests-as-exchange model. Services provided by children, measured by the frequency of visits and telephone calls, are found to be positively related to the size of the potential estate. Further, the estimated relationship between services and potential estate depends on the number of children in the family. Larger potential bequests are associated with more services in multiple-child families but not in single-child families (where competition among potential recipients is presumably less intense). The finding is intriguing, and their bequests-as-payment model is a new and different approach to family transfer behavior.

Tomes (1981), however, found an inverse or zero relationship between recipient-decedent contact and bequests received. He concluded that "this result presents prima facie evidence against the pure 'child-services' model of inheritance (i.e., with no altruism)" (p. 946). Tomes's unusual finding suggests that the bequests-as-payments question may not be completely settled.

We know less about inter vivos transfer behavior because of a lack of data. Lampman and Smeeding (1983) present trends in private transfers using aggregate data obtained from numerous sources and found a declining trend in private transfers relative to public transfers. As we shall see below, this evidence could be consistent with both altruistic and exchange motives for transfers. Kurz (1984) and Cox and Raines (1985) found limited, but not overwhelming, support for altruistic inter vivos transfer motives. Though inter vivos transfers have received less attention in the literature compared with bequests, this type of transfer accounts for the majority of all private transfers.[2]

Before exploring the data, however, the first task is to determine what sorts of relationships one would expect to see in the data under alternative motives for transfer behavior.

[2] Kotlikoff and Summers (1981) estimated a 1974 bequest-transfer flow of $28.9 billion, implying a bequest figure of just over $40 billion in 1979 dollars. The aggregate value of inter vivos transfer receipts implied by the President's Commission on Pension Policy survey examined below is $63 billion in 1979 dollars (see Kurz 1984).

A Model of Private Transfers

In this section, a model containing both altruistic and exchange motives for private transfers is examined. Consider two individuals, a transfer donor (say the parent) and a transfer recipient (the child). The parent cares about the well-being of the child. In addition, the child provides services to the parent. The nature of these services will be discussed below. The parent's utility function is

$$\underset{(+)(+)\quad(+)(-)}{U_p = U_p(c_p, \quad s, \quad V(c_k, \quad s))}, \tag{1}$$

where U_p = parent's level of well-being, c_p = parent's consumption, s = services provided by the child to the parent, V = child's level of well-being, and c_k = child's consumption. The sign of each first partial derivative is shown beneath each argument in the utility function. The parent is altruistic so that $\partial U_p/\partial V > 0$. Both parent and child consumption are assumed to be normal goods. Assume that the child dislikes providing services so that $\partial V/\partial s = V_s < 0$.

The budget constraints for this problem are

$$c_p \leq E_p - T \tag{2}$$

and

$$c_k \leq E_k + T, \tag{3}$$

where E_i, $i = p, k$, denote parent and child incomes and T denotes transfers from parent to child.

A final constraint must be introduced into the parent's maximization problem. The change in child utility from entering into the transfer-services relationship with the parent must be nonnegative. The child's "threat point" utility level is

$$V_0(E_k, 0). \tag{4}$$

This is the level of utility associated with providing no services and consuming out of own income. The nonnegativity constraint is

$$V(c_k, s) \geq V_0(E_k, 0). \tag{5}$$

Assume that constraints (2) and (3) are binding. When these constraints are substituted into (1), the Lagrangian for the parent's maximization problem is

$$L = U_p(E_p - T, s, V(E_k + T, s)) + \lambda(V(E_k + T, s) - V_0(E_k, 0)). \tag{6}$$

The parent's problem consists of choosing s and T to maximize (6). The Kuhn-Tucker conditions are

$$\frac{\partial L}{\partial T} = -U_c + U_v V_c + \lambda V_c \leq 0, \quad T\frac{\partial L}{\partial T} = 0, \tag{7}$$

$$\frac{\partial L}{\partial s} = U_s + U_v V_s + \lambda V_s \leq 0, \quad s\frac{\partial L}{\partial s} = 0, \tag{8}$$

$$\frac{\partial L}{\partial \lambda} = V(E_k + T, s) - V_0(E_k, 0) \geq 0, \quad \lambda\frac{\partial L}{\partial \lambda} = 0. \tag{9}$$

The first case I will consider below is one in which the parent is effectively altruistic. Assume interior solutions for s and T and that the child's utility gain from the transfer-service arrangement is strictly positive ($\lambda = 0$). Transfers are used to equate the parent's marginal utility of consumption, U_c, with the child's marginal utility of consumption from the parent's perspective ($U_v V_c$, where $U_v = \partial U_p/\partial V$). The value of child services is chosen such that the parent's marginal utility of services, U_s, is equated with the child's marginal disutility of services from the parent's perspective ($U_v V_s$). The second case I will consider is the case in which constraint (5) is binding ($\lambda > 0$). In this case, transfer behavior is governed by the exchange motive.

What is the nature of the "services" that the child provides to the parent? One type of service is help with home production, such as babysitting, running errands, and other forms of housework. These kinds of services, however, would in many cases have clear market substitutes. I am concerned mainly with a more subtle type of service that entails the behavioral constraints associated with attention to parents (Bernheim et al. 1985), companionship, and conforming to parental regulations.[3] This type of service, which involves behavioral control, might not have close market substitutes, particularly if the donor is concerned specifically with the behavior of the recipient. An increase in services causes a decrease in the child's well-being (e.g., a rise in services impinges on the child's independence).[4] In addition, assume that the child's utility falls at an increasing rate as services increase.

[3] In the purely altruistic version of the model, in which services do not enter explicitly, the child's behavior can still be modified by the existence of transfers. The child, e.g., would refrain from actions that simultaneously raise his income and reduce the parent's income by a larger amount (see Becker 1974, 1981).

[4] An alternative formulation, in which services do not enter the utility function directly but instead involve a sacrifice of time, generates results that are virtually identical to this "services-as-a-bad" formulation. Further, time-intensive services, such as help with home production, are more likely to have close market substitutes. I am concerned mainly with child services that do not have close market substitutes.

A. *Altruism*

In the regime in which constraint (5) is not binding, the child is more than compensated for providing services: the parent is effectively altruistic. The comparative statics properties of the model in the altruist regime are as follows:

$$\frac{\partial T}{\partial E_k} < 0, \quad \frac{\partial s}{\partial E_k} \gtrless 0,$$
$$\frac{\partial T}{\partial E_p} > 0, \quad \frac{\partial s}{\partial E_p} \gtrless 0, \quad \frac{\partial s}{\partial E_p} = \frac{\partial s}{\partial E_k}. \tag{10}$$

The term of primary interest is the first, $\partial T/\partial E_k$. It can be rewritten as

$$\frac{\partial T}{\partial E_k} = -1 + \frac{\partial T}{\partial E_p}. \tag{11}$$

Expression (11) contains two components. First, with family income $(E_p + E_k)$ held constant, an increase in the child's income implies a dollar-for-dollar reduction in the transfers he receives. An increase in the child's income implies higher family resources, however; the cutback in transfers received will be less than dollar for dollar because the income elasticity of transfers given is positive. But the total expression $\partial T/\partial E_k$ is always negative as long as parental consumption is a normal good.

In the altruistic regime, parental demand for services depends on aggregate family income, not on the distribution of its components. The reason for this is that, with operative, altruistically motivated transfers, parent and child consumption levels are invariant with respect to changes in the endowments E_p and E_k when $E_p + E_k$ is held constant. With constant consumption levels, conditions (7) and (8) imply a constant level of services. Therefore, $(\partial s/\partial E_p) - (\partial s/\partial E_k) = 0$. In the altruistic regime, therefore, services can rise or fall with increases in child income. In the case in which parental utility is separable and U_v is constant, $\partial s/\partial E_k = \partial s/\partial E_p = 0$.

B. *Exchange*

We can contrast altruistic behavior with exchange behavior by analyzing the model when constraint (5) is binding. In the exchange regime, the last dollar transferred from parent to child does not equalize marginal utilities of consumption. With $\lambda > 0$, condition (7) implies that $U_c < U_v V_c$. Instead, transfers provide compensation for child services.

We can compare comparative statics results in the exchange regime with those of the altruistic regime to determine whether possible dif-

ferences in predictions exist. The comparative statics for the exchange regime can be interpreted more easily by expressing transfers as the product of services and an implicit average price of services, p:

$$T = ps. \tag{12}$$

In addition, assume for the moment that the parent's utility function is additively separable. The comparative statics results are as follows:[5]

$$\begin{aligned} &\frac{\partial T}{\partial E_k} \gtreqless 0, \quad \frac{\partial s}{\partial E_k} < 0, \quad \frac{\partial p}{\partial E_k} \gtreqless 0, \\ &\frac{\partial T}{\partial E_p} > 0, \quad \frac{\partial s}{\partial E_p} > 0, \quad \frac{\partial p}{\partial E_p} > 0. \end{aligned} \tag{13}$$

The most important results are those related to the child's income. Unlike the altruism case, transfers need not necessarily decline with increases in the child's income. An increase in the child's income causes a decline in the quantity of services transacted, so that $\partial s/\partial E_k < 0$. For $\partial p/\partial E_k > 0$,[6] the sign of the expression

$$\frac{\partial T}{\partial E_k} = \frac{\partial s}{\partial E_k} p + \frac{\partial p}{\partial E_k} s \tag{14}$$

will determine whether an increase in the child's income causes a rise or fall in transfers received. The expression $\partial T/\partial E_k$ will be positive when $\partial p/\partial E_k > 0$ and $(p/s)(\partial s/\partial p)$ is less than unity in absolute value.

The intuition behind this result is straightforward. A heuristic illustration is given in figure 1.[7] An increase in E_k causes the child's supply of services to shift upward and to the left, which implies a movement along the parent's demand curve for services. The child's supply curve shifts upward because an increase in income causes his marginal utility of consumption to fall. He requires more consumption to be compensated for providing a given level of services. The increase in E_k results in a lower quantity of services and a higher payment per service. In this example, an increase in transfers occurs if $EGFC$ exceeds $ABCD$.

[5] For a detailed derivation see App. A.

[6] The derivation of $\partial p/\partial E_k$ contains three terms: two positive and one negative. A sufficient (though not necessary) condition for $\partial p/\partial E_k > 0$ is that $pV_0' > -V_s$. With parental income compensation, $dE_p = sdp$, $\partial p/\partial E_k$ is unambiguously positive. Simulation with logarithmic and isoelastic forms of the utility function for a variety of parameter values always produced positive values for $\partial p/\partial E_k$ so that, while the partial cannot be signed, the negative term contained therein was numerically small in the simulation experiments.

[7] This graphical analysis is heuristic because it neglects the income effect that is associated with a change in the implicit price of services.

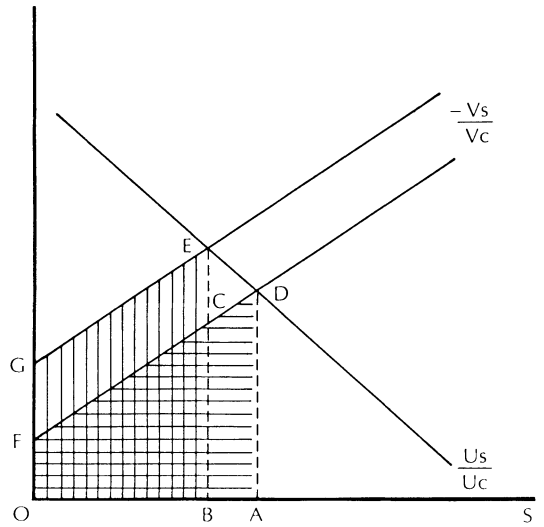

FIG. 1.—Effects of a rise in E_k on services and transfers. Horizontal hatches refer to initial transfers. Vertical hatches refer to transfers after E_k rises.

The sign of $\partial T/\partial E_k$ depends on both supply and demand behavior; the expression $(p/s)(\partial s/\partial p)$ is a reduced-form elasticity. An important determinant of the sign of $\partial T/\partial E_k$ is the parent's elasticity of demand for child services.[8] More inelastic demand generates larger values for $\partial p/\partial E_k$ and smaller values for $\partial s/\partial E_k$. In other words, $\partial T/\partial E_k$ is likely to be positive if the nature of child services is such that substitutes are difficult to obtain.

Relaxing the separability assumption does not change the main conclusion of this section.The comparative statics results for the more general form of the parental utility function still imply the possibility that $\partial T/\partial E_k > 0$, which is impossible under altruism.[9]

Despite the dual motives for private transfers that are embedded in

[8] In the special case of constant elasticity supply and demand functions, the parental demand elasticity is the sole determinant of the sign of $\partial T/\partial E_k$. In this case, $\partial T/\partial E_k$ is positive with inelastic parental demand and negative with elastic parental demand.

[9] Relaxing separability introduces four cross partials into the analysis: U_{cs}, V_{cs}, U_{cv}, and U_{vv}, where subscripts denote arguments in the utility function (e.g., $U_{cs} = \partial^2 U/\partial c_p \partial s$). If these cross partials have the following sign configuration—$U_{cs} > 0$, $V_{cs} < 0$, $U_{cv} > 0$, $U_{vv} > 0$—the comparative statics results in (13) are unchanged. This sign configuration appears to be the most intuitively plausible for nonseparable utility. An increase in s raises parental marginal utility of consumption and lowers the child's marginal utility of consumption, e.g. Deviations from this sign pattern could cause partials that are signed in (13) to become unsigned. A large positive value of V_{cs} could cause $\partial s/\partial E_k$ to be positive, e.g.

the parental utility function, only one motive is effective at the margin. Transfers are determined by the comparative statics associated with either the altruistic case or the exchange case, depending on whether constraint (5) is binding. In the exchange regime, the parent is inframarginally altruistic. A windfall to the child, dE_k, will increase the parent's well-being by $U_v V_0' dE_k$, where V_0' is the child's marginal utility of consumption evaluated at the threat point. But the windfall also increases required compensation for a given level of services since the child's threat point utility rises.

In each regime, the parent dominates the bargaining arrangement. This is implicit in the altruistic case since the household maximizes the altruist's utility function. The dominant-parent assumption is explicit in the exchange case because the child receives his threat point utility. This assumption is needed to model altruism and exchange in a single framework; this bargaining rule is inherent in the traditional Becker (1974, 1981) analysis of altruism.[10]

In the exchange regime the dominant-parent assumption implies that the child is no better off in exchange than in being independent. Replacing the assumption with the Nash bargaining framework[11] produces a more realistic result: the child improves his well-being in the exchange relationship. Further, like the dominant-parent assumption, the Nash framework implies the possibility of observational inequivalence with altruism; $\partial T/\partial E_k$ can be positive.[12] Becker's altruism results cannot be obtained in a Nash context, however.[13] While Nash bargaining produces more realistic results, the dominant-parent framework allows us to examine altruism and exchange in a single model. The dominant-parent assumption is not necessary for analyzing exchange behavior, but it is a necessary assumption in Becker's altruism model.

C. *The Transfer Decision*

So far we have been concerned with interior solutions for private transfers. But private transfers are determined in two stages: the

[10] See Manser and Brown (1980, p. 32) and Pollak (1985, p. 599) for a discussion of this point.

[11] The Nash solution to the problem is the pair (s, T) that maximizes $N = (U_p - U_0)(V - V_0)$, where U_p, V, and V_0 are as defined in the text and $U_0 = U(E_p, 0, V(E_k, 0))$.

[12] The Nash comparative statics results are contained in an appendix available on request.

[13] The reason why the altruistic results cannot be obtained in a Nash framework is that transfers exceed the point at which U_c and $U_v V_c$ are equated. Even without exchange of services, the child's bargaining pushes transfers to the point at which $U_c > U_v V_c$. As a result, altruistic comparative statics results are not implied by this model.

decision to make a transfer and, given that the transfer occurs, the transfer amount. Let us now focus on the former stage, the transfer decision.

Consider first a case of pure exchange ($U_v = 0$). Will a transfer from parent to child take place? The answer depends on whether gains from trade for the parent exist at the initial endowment point $U(E_p, 0)$, $V(E_k, 0)$. If the parent's marginal rate of substitution (MRS) of transfers for services is greater than the child's at the endowment point, a transfer will take place; otherwise, $s = T = 0$. The child's MRS at the endowment is his supply price for the first unit of services, and the parent's MRS at the endowment is his demand price for the first unit of services. Let us denote the child's MRS at $s = 0$ as $(dT/ds)_k^\circ = P_k^\circ$ and the parent's MRS at $s = 0$ as $(dT/ds)_p^\circ = P_p^\circ$. A transfer will take place if $P_p^\circ > P_k^\circ$. The latent variable that determines the transfer decision is

$$\bar{t} = P_p^\circ - P_k^\circ, \tag{15}$$

and $T > 0$ iff $\bar{t} > 0$, $T = 0$ otherwise. It can be shown (see App. A) that

$$\frac{\partial \bar{t}}{\partial E_k} < 0, \frac{\partial \bar{t}}{\partial E_p} > 0. \tag{16}$$

Intuition for these results comes from the following observations. An increase in the parent's income causes his marginal utility of consumption at the endowment point to fall. With a higher income, the parent is willing to sacrifice more consumption to obtain the first unit of services. An increase in the child's income causes his marginal utility at the endowment point to fall as well. With a higher income level, the child requires more consumption in order to be compensated for providing the first unit of services. The child's supply price can rise to the point at which he prices himself out of the bargaining arrangement.

Whether transfers are motivated by altruism, exchange, or both, the sign pattern of the comparative statics results for the transfer decision is the same. To see this, consider a reformulation of the transfer problem based solely on altruism:

$$\max_T U_p = U_p(c_p, V(c_k)) \tag{17}$$

subject to (2) and (3).

Define person i's endowment marginal utility of consumption as the marginal utility of consumption when consumption expenditures equal own earnings. In symbols let us denote this endowment marginal utility as $(\partial U/\partial c_i)^\circ$, $i = p, k$. A transfer will take place if $(\partial U/\partial c_p)^\circ < (\partial U/\partial c_k)^\circ$. Otherwise, a transfer will not occur because if the endow-

ment marginal utility of the child is less than or equal to that of the parent, the additional utility that the parent gains from making a transfer is insufficient to compensate him for forgone own consumption. We can write an expression for the latent variable that determines the transfer decision as

$$t^* = \left(\frac{\partial U}{\partial c_k}\right)^\circ - \left(\frac{\partial U}{\partial c_p}\right)^\circ, \tag{18}$$

and $T > 0$ iff $t^* > 0$, $T = 0$ otherwise. Assuming diminishing marginal utility of consumption for parent and child implies that

$$\frac{\partial t^*}{\partial E_k} < 0, \frac{\partial t^*}{\partial E_p} > 0. \tag{19}$$

The latent variable that determines the transfer decision is inversely related to the child's income level and positively related to the parent's income level.

Despite the difference in transfer motives, the comparative statics results for the transfer *decision* are the same whether transfers are motivated by altruistic or exchange considerations. This finding is important because it implies that information on transfer decisions alone is insufficient for making inferences about transfer motives.

D. *Summary of Predictions*

In the empirical implementation, we will be concerned mainly with the relationship between the recipient's income and transfers received. A summary of the predictions concerning this relationship from the alternative models of transfer behavior is as follows:[14]

	Effect of an Increase in E_k on	
	prob($T > 0$)	T given $T > 0$
Altruism	−	−
Exchange $\left(\frac{p}{s}\frac{\partial s}{\partial p}\right)$:		
> -1	−	+
$= -1$	−	0
< -1	−	−

[14] The reduced-form elasticities are negative, i.e., $\partial p/\partial E_k > 0$. For $\partial p/\partial E_k < 0$, $\partial T/\partial E_k < 0$.

Empirical Implementation

A. Data

Empirical evidence about inter vivos transfer behavior is scarce because data on these transfers are rarely collected. Recently, a data set containing inter vivos transfer information has become available. The data set used to test the alternative transfer hypotheses is the President's Commission on Pension Policy (PCPP) survey. It contains a special module in which survey respondents report various types of inter vivos transfers. The commission's main objective was to measure the adequacy of retirement resources, but a representative cross section of households was surveyed. In addition to the unique source of inter vivos transfer data, the survey contains other information (e.g., income from various sources and demographic data) relevant for testing the hypotheses outlined above. The survey information used below was collected in August 1979, and the data for income generally cover the first 8 months of 1979.

The PCPP survey contains three types of observations. The first unit of observation is the household, defined as a group of persons living at the same address. The 1979 survey contains information for 3,440 households, which were broken down into 4,605 "family units." A primary family unit contains a head and, if present, a spouse and children under the age of 18 who live at home. In the case of owner-occupied housing, the head of the primary family unit is the homeowner. All other individuals in the household aged 18 and over were considered members of separate secondary family units.[15] The third type of observation is the person. The survey covers 6,578 persons. Information was collected for each person aged 18 and over, but not for those younger than age 18.

Observations in the file are arranged by family units. For multifamily unit households, it is possible to match secondary family units to their primary counterparts. The structure of the data set is summarized in table 1. The survey contains 846 multifamily unit households and, therefore, 846 primary family units. A primary family unit is associated with one or more secondary family units. "Independent family units" and "single-family unit households"—interchangeable terms—are family units that by themselves constitute a household.

Information on transfers was collected on a family unit basis. A

[15] Suppose, e.g., that a household consists of a homeowner, spouse, three children (aged 12, 18, and 23), and a grandparent. The primary family unit would consist of the homeowner, spouse, and 12-year-old child. The household would contain three secondary family units: the 18-year-old, the 23-year-old, and the grandparent. If the 23-year-old had a spouse, the spouse would be counted as part of the 23-year-old's family unit.

TABLE 1

COMPOSITION OF THE PCPP DATA SET

Type of Observation	Number
Households	3,440
Multifamily unit households	846
Single-family unit households	2,594
Family units	4,605
Primary family units	846
Secondary family units	1,165
Independent family units	2,594
Persons	6,578

private transfer takes place if income or gifts in kind are transferred from one family unit to another. Transfers among members of the same family unit (either interspousal transfers or transfers to children under age 18) have not been counted in the survey.

The heads of family units were first asked to report any payments received in the past month for mortgages, utility bills, property taxes or property insurance, and food. They were then asked to report on an additional set of transfers received from January 1979 through August 1979. These included bill payments (such as medical bills or legal fees) not reported in the monthly categories mentioned above, contributions toward the purchase of durable goods, transfers for education, trust funds, stocks and bonds, gifts of durable goods or property, cash, inheritances, and miscellaneous transfers received. Then the respondents were asked to report any transfer given to individuals outside the immediate family unit during January–August 1979. The categories for inter vivos transfers given match the categories for 8-month transfers received. For the "monthly" items, however (i.e. utilities, food, etc.), information is available only for receipts and not transfers given.

The exact transfer categories matter little to the extent that transfers are fungible. It is important to note, however, the categories that are not included in the transfer information. One important transfer omitted is the implicit rental value of housing that accrues to secondary family units that are sharing living arrangements with primary units. Further, family unit heads were not explicitly asked to report payments for room and board in shared living arrangements. Indirect evidence about each of these transfers is available in the data set, however. Another private transfer category that is not included in this module is alimony or child support payments.

The PCPP data set offers a unique opportunity to test for alternative motives for private transfers. Sources of data for inter vivos trans-

fers are notoriously scarce, which presumably accounts for the limited number of empirical inquiries in this area. The PCPP survey represents one of the few attempts to obtain information on inter vivos transfers.

B. *Estimates*

The estimation strategy focuses on the two basic comparative statics results derived in each of the two inter vivos transfer regimes: altruism and exchange. The first question to be examined is, What is the connection between income levels and the transfer event? Both the altruism and exchange cases of the model predict an inverse relationship between the potential recipient's income and the probability of receiving a transfer. The second question to be explored is, Given that a transfer is received, what is the relationship between the recipient's income and the transfer amount received? Here the altruism regime and the exchange regime need not be observationally equivalent because, conditional on a transfer taking place, the exchange regime admits a positive relationship between the recipient's income and transfers received.

Let the latent variable that determines a transfer receipt for the ith family unit be denoted by t_i, where $t_i > 0$ if and only if the family unit receives a transfer. The equation for t_i is given by

$$t_i = \mathbf{a}_0\mathbf{Z}_i + a_1E_{ki} + a_2E_{pi} - \mu_i, \tag{20}$$

where E_{ki} and E_{pi} denote own and donor incomes, respectively, $\mathbf{Z}_i$ is a vector of other characteristics that may influence the probability of receiving a transfer, and μ_i is a normally distributed error term with mean zero. The sign hypotheses for the transfer receipt equation in each transfer model are $a_1 < 0$, $a_2 > 0$. The vector $\mathbf{Z}_i$ contains years of education, age, and marital status, gender, and race dummies.

The probit estimates are presented in table 2. (A list of variable means is presented in App. B.) Equation (20) is estimated for all nonstudent family units.[16] The variable Income in column 1 is the family unit's total income from earnings, financial income, retirement, and public assistance income. The estimated probit coefficient for income is negative and significant at the .1 level. This estimate is consistent with both altruism and exchange. At sample means, a

[16] The word "student" is convenient shorthand for "family units that receive a transfer for education." The intertemporal aspects of the transfer problem are not explored in this paper so that the 179 family units receiving educational transfers have been deleted from the sample. Family units receiving educational transfers represent about 4 percent of the entire sample.

TABLE 2

PROBIT ESTIMATES (Dependent Variable: Transfer Receipt)

VARIABLE	ESTIMATED COEFFICIENT (1)	(2)
Income	$-.345 \times 10^{-5}$	...
	(−1.56)	
Labor income	...	$-.516 \times 10^{-5}$
		(−2.11)
Years of education	$.340 \times 10^{-2}$	$.435 \times 10^{-2}$
	(.34)	(.43)
Age	$-.120 \times 10^{-1}$	$-.124 \times 10^{-1}$
	(−8.14)	(−8.33)
Marital status (1 if married, 0 otherwise)	−.351	−.326
	(−5.31)	(−4.82)
Gender (1 if female, 0 if male)	.287	.286
	(5.30)	(5.28)
Race (1 if black, 0 otherwise)	−.228	−.228
	(−2.96)	(2.95)
Mean income, survey block	$.304 \times 10^{-4}$	$.311 \times 10^{-4}$
	(3.84)	(3.94)
Constant	−.928	−.927
	(−5.59)	(−5.61)
Recipients	641	641
Nonrecipients	3,785	3,785
Observations	4,426	4,426
ln L	−1,703.9	−1,702.9

NOTE.—Transfer receipt = 1 if received, 0 otherwise. Asymptotic t-values are in parentheses.

$4,000 rise in income lowers the probability of a transfer receipt by one-half of a percentage point.

The family unit's own characteristics can be entered as regressors in the estimating equations, but it is difficult to measure the characteristics of potential donors. The PCPP data do not measure the exact sources and destinations of transfers. In this section, the income level of potential donors is proxied by the mean income level in the "survey block."[17] A survey block generally represents the portion of the

[17] The survey block is a construct designed by Market Facts, Inc., the firm that collected the PCPP data. The sample of households in the PCPP data is drawn from 152 survey blocks, which represent the 28 largest standard metropolitan statistical areas (SMSAs), 16 smaller SMSAs, and 16 counties or groups of counties. For the mean income of the survey block (MINCBLK) to be a reasonable proxy for donor income, two criteria must be met. First, recipients should be geographically close to their donors. Second, MINCBLK should be closely related to the income levels of givers. With regard to the first issue, recipients of transfers in the 8-month categories were asked to report whether their donors resided in the immediate metropolitan area. Reporting was incomplete, but this location variable is available for 358 recipients. Of these, 74 percent received at least one transfer from the immediate area. If we assume that

SMSA in which the family unit resides. The mean income for survey blocks is drawn from census data. The estimated coefficient for survey block mean income is positive and significant. Family units that reside in more affluent survey blocks are more likely to receive a transfer.

The next equation to examine is the one for transfer amounts, conditioned on the event of a transfer. This equation is estimated using Heckman's (1979) generalized Tobit technique. Let T_i denote the transfer amount received by family unit i. The equation for T_i is given by

$$T_i = \mathbf{b}_0\mathbf{Z}_i + b_1E_{ki} + b_2E_{pi} + (\epsilon_i|T_i > 0). \quad (21)$$

The altruism version of the model predicts a negative value for b_1, while exchange allows for a positive value for b_1. The hypothesized value for b_2 is positive for each transfer motive. The estimates of equation (21) are presented in table 3, column 1.

The important result for purposes of this paper is the positive estimated coefficient of own income on the transfer *amount* received, conditional on a transfer taking place (table 3, col. 1). Evaluated at recipient means, a 1 percent increase in own income implies a 0.53 percent increase in transfers received. The positive coefficient estimate for income is significant at any popular level. The Heckman two-step procedure is used to control for possible selection bias, though selection bias does not appear to be an important problem here.[18]

The estimated positive relationship between recipient income and

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monthly transfers (e.g., transfers for food) were received from donors who are geographically close, the proportion of recipients whose donors reside in the immediate area is 92 percent. It appears, therefore, that the proportion of recipient-donor pairs who are geographically close is fairly high. Second, the income of family units that reported giving a transfer (INCGIVE) was regressed on MINCBLK. The variable MINCBLK, which comes from the 1970 census, is expressed in 1979 dollars using the GNP deflator. The results are as follows:

$$\underset{(-2.20)\ (10.42)}{\text{INCGIVE} = -8{,}903.48 + 1.47(\text{MINCBLK}),} \quad N = 727, R^2 = .13, F = 108.55.$$

The coefficient of MINCBLK is highly significant (t-values are in parentheses).

[18] Note that the constant term is deleted in the equations presented in table 3. Including the inverse Mills ratio term introduces collinearity into the transfer amount equation. Deletion of the constant (which is never significantly different from zero) eases the collinearity somewhat. When the constant term is included in the selectivity-corrected equation, the recipient income coefficient is $.393 \times 10^{-1}$ ($t = 2.10$). In the uncorrected equation the recipient income coefficient is $.269 \times 10^{-1}$ ($t = 4.29$). In addition, maximum likelihood estimates of Heckman's (1979) generalized Tobit produced estimates similar to those in table 3, with slightly smaller standard errors. A positive and statistically significant relationship between recipient income and transfer amount received is found in each of these different specifications.

TABLE 3

LEAST-SQUARES ESTIMATES FOR TRANSFER RECIPIENTS (Dependent Variable: Transfer Amount)

	ESTIMATED COEFFICIENT	
VARIABLE	(1)	(2)
Income	$.269 \times 10^{-1}$	...
	(4.29)	
Labor income	...	$.218 \times 10^{-1}$
		(3.10)
Years of education	−2.953	5.898
	(−.12)	(.23)
Age	.889	2.84
	(.16)	(.51)
Marital status (1 if married, 0 otherwise)	−191.115	−99.246
	(−.92)	(−.47)
Gender (1 if female, 0 if male)	188.716	153.059
	(1.37)	(1.11)
Race (1 if black, 0 otherwise)	58.62	83.270
	(.26)	(.37)
Mean income, survey block	$.369 \times 10^{-1}$	$.381 \times 10^{-1}$
	(2.16)	(2.21)
Monthly transfer (1 if only a monthly transfer is received, 0 otherwise)	−665.645	−672.213
	(−5.16)	(−5.18)
Selectivity term	96.394	−28.464
	(.32)	(−.09)
R^2	.09	.08
F-statistic	8.09	6.91
Observations	641	641

NOTE.—t-values are in parentheses.

transfer amount received contradicts the altruistic version of the model but is consistent with exchange. Given the important implications of this finding, further scrutiny of the income-transfer relationship is needed to determine whether we can rule out other possible explanations for this result.

The income measure used in column 1 of tables 2 and 3 includes financial income and public assistance income. Two possible sources of bias might arise from using this total income measure. First, the financial component of income could be generated by transfers of assets received in the past, causing a spurious relationship between income and transfers received. Second, public transfer income (another component of total income) might act as a surrogate for a host of other factors that might influence the amount of private transfers received. Suppose, for example, that an individual is receiving aid to the blind. A positive estimated relationship between transfers received and public assistance income could simply be caused by al-

truists targeting their private transfers toward individuals with special circumstances.

To rule out these two potential problems, the first equations in tables 2 and 3 were reproduced using only labor income. This replication is presented in column 2 of tables 2 and 3. These results are very similar to the original estimates. The positive relationship between the amount of transfers received and income is not an artifact of potentially spurious factors related to financial and public transfer income.

Could the estimated relationship between labor income and transfer amounts also be spurious? Suppose, for example, that altruistic donors make transfers that enhance the human capital of recipients. The positive relationship between labor income and transfers might arise because past transfers raised earning potential, and past and current transfers are positively related. If this were the case, however, we would expect that the level of schooling and the amount of transfers received would be strongly related. The results in table 3 indicate, however, that the education variable has a negligible impact on the amount of transfers received.[19] Further, labor income is *inversely* related to the probability of receiving a transfer (table 2, col. 2). The argument that labor income and transfer amounts are spuriously related through the channels described above cannot account for these two findings.

Another possible criticism is that the equation estimated in table 3 is subject to the effects of omitted variable bias, to the extent that the mean income of the survey block is an imperfect proxy for true donor income. That is, could the recipient's income be picking up the effects of donor income on transfer behavior in such a way that, even though the true value of the recipient's income coefficient is negative, its estimated value is positive?

There are two approaches to this issue. The first is to consider the following thought experiment. Suppose that the true motive for

[19] The connection between transfers and educational attainment (for more on this see Adams [1980], Tomes [1981], and Menchik and David [1983]) raises the possibility that eq. (21) may be misspecified because schooling is treated as exogenous. To explore this issue, eq. (21) was reestimated using an instrumental variables approach. The instruments for education were age, marital status, gender, percentage of adults in the SMSA with at least one year of college, mean family income in the county, spouse's education, state per capita public appropriations for higher education, and state proportions of high school graduates attending public colleges or universities. The latter two variables were obtained from McCoy and Halstead (1979) and merged into the file using state codes. A Hausman-Durbin-Wu misspecification test (Hausman 1978; Nakamura and Nakamura 1981) of eq. (21) generates $\hat{\chi}^2_1 = 1.04$, which is not significant at even the 25 percent level ($\chi^2_{.25} = 1.32$). We cannot reject the hypothesis that years of schooling is exogenous in this model.

transfers is altruism and that the parental utility function takes the following functional form:[20]

$$U_p = \ln(c_p) + \alpha_p \ln(1 + s) + \beta \ln(c_k) + \beta\alpha_k \ln(1 - s), \quad 0 \leq s < 1. \tag{22}$$

where $\beta = U_v$, the parental weighting parameter for child utility. Under altruism, this utility function generates the transfer function

$$T = \frac{\beta}{1 + \beta} E_p - \frac{1}{1 + \beta} E_k. \tag{23}$$

The omitted variable bias in this case would be equal to $\beta b_{12}/(1 + \beta)$, where b_{12} is the auxiliary regression of the child's income on the parent's income. A positive estimated relationship between E_k and T, given that transfers are altruistically motivated, requires $\beta b_{12} > 1$. Becker and Tomes (1986) survey a set of empirical studies that measure the relationship between parent and child income using matched data for fathers and sons (e.g., Hauser, Sewell, and Lutterman 1975; Atkinson 1981). They note that "the point estimates for most of the studies indicate that a 10 percent increase in father's earnings raises son's earnings by less than 2 percent" (p. S25). This implies a value of b_{12} that is less than 0.1. Combining the value of $b_{12} = 0.1$ with the estimate of $b_1 = 0.027$ from table 3, column 1, implies, in this example, a weighting parameter β of 14, which is quite unreasonable. To minimize possible pitfalls associated with relying on these outside estimates, we can push the example further by using the *maximum* implied value of b_{12} from the studies surveyed by Becker and Tomes (1986, p. S25). This yields a weighting parameter of 5.3, which is still highly implausible.

Though this evidence is compelling, the issue of donor income is too important to rely solely on data from outside sources. The second approach to this issue relies not on outside data but on the special structure of the PCPP data set. The additional empirical results reported below indicate that omitted variable bias is empirically negligible.

C. *Primary, Secondary, and Independent Family Units*

An additional test for the connection between income and transfers received exploits a different aspect of the structure of the PCPP data

[20] The logarithmic functional form was chosen for simplicity. Other functional forms, such as the isoelastic and quadratic, generate similar results. Further, using estimates from parent-child assets rather than earnings relationships (e.g., Menchik 1979) implies β values of the same order of magnitude.

set. Recall from the data description above that the PCPP data set contains three types of family units. Independent family units are single-family unit households. Primary and secondary family units are part of multiple-family unit households. Secondary family units reside in a household headed by a primary family unit and receive an implicit transfer, in the form of housing services, from the primary family unit. The list of private transfers reported in the PCPP survey does not include these housing services. Nonetheless, we can identify recipients of housing services because information on family unit type (independent, secondary, and primary) is available in the data set. In addition, secondary family units can be matched to their primary counterparts to form complete households.

The additional test for motives for private transfers can be constructed by contrasting the behavior of secondary versus independent family units. We know that the secondary family units are receiving a transfer in the form of housing services. Given that these family units are already receiving this transfer, we will look at the impact of income on the probability that they receive an *additional* transfer from the list of private transfers reported in the PCPP survey. For secondary family units, the probit equation for transfer receipt is already conditioned on a transfer (in the form of housing services) taking place. Therefore, our interpretation of the probit coefficient on family unit income for the sample of secondary family units is similar to the interpretation of the coefficient on family unit income in the transfer amount equation in table 3. In each case, we are looking at the effect of own income on transfers received, given that a transfer takes place.

The interpretation of the coefficient for income in the case of *independent* family units is similar to the interpretation of the income coefficient in table 2. Since independent family units do not share living arrangements, the transfers that they report in the survey are the only transfers that they receive.

A comparison of income coefficients in the transfer receipt probit equations for independent versus secondary family units shows a striking contrast. For *independent* family units, the income coefficient in the probit for transfer receipt is *negative* and significant (table 4). For *secondary* family units, the income coefficient in the probit for transfer receipt is *positive* and significant (table 5). An important difference between these two samples is that, for secondary family units, the event of receiving a private transfer is conditioned on the event that a transfer in the form of housing services already takes place. The probit for independent family units explores the question, Does the family unit receive a transfer? The probit for secondary family units explores a different question: Does the family unit receive an additional transfer over and above housing services?

TABLE 4

PROBIT ESTIMATES FOR INDEPENDENT FAMILY UNITS
(Dependent Variable: Transfer Receipt)

Variable	Estimated Coefficient
Income	$-.116 \times 10^{-4}$
	(−3.60)
Years of education	$.403 \times 10^{-1}$
	(2.81)
Age	$-.163 \times 10^{-1}$
	(−7.23)
Marital status (1 if married,	−.310
0 otherwise)	(−3.39)
Gender (1 if female, 0 if male)	.215
	(2.62)
Race (1 if black, 0 otherwise)	−.364
	(−2.97)
Mean income, survey block	$.402 \times 10^{-4}$
	(3.21)
Constant	−1.198
	(−4.81)
Recipients	295
Nonrecipients	2,291
Observations	2,586
ln L	−838.9

NOTE.—Transfer receipt = 1 if transfer received, 0 otherwise. Asymptotic t-values are in parentheses.

The negative coefficient on income for independent family units is predicted by both the altruism and the exchange hypotheses. The positive coefficient on income for secondary family units contradicts the predictions of altruism but is in accord with the predictions of the exchange version of the model.[21]

Focusing on the behavior of secondary family units confers an additional advantage. One possible problem with the earlier empirical implementation (tables 2 and 3) was that the income coefficient for recipients could have been affected by the omitted variable bias discussed above. Omitted donor characteristics could bias upward the

[21] Given that the decision to be a secondary family unit is endogenous, the probit equations were reestimated controlling for selection bias. These estimates are very similar to those in tables 4, 5, and 6. Selection bias was statistically significant in the secondary family unit probit but not in the independent family unit probit. These results are contained in Cox (1986). There is evidence that very few of the secondary family units in the survey compensate the primary units by paying room and board. Survey respondents were asked to report transfers given, which includes a miscellaneous category. Total transfers given was compared with an imputed flow of primary family unit housing services for each secondary unit. Transfers given exceeded imputed housing services in only 2 percent of the secondary family unit sample, indicating that nearly all the secondary units receive a net transfer in the form of housing services. Probit estimates with the 2 percent deleted are very similar to those in table 6.

TABLE 5

PROBIT ESTIMATES FOR SECONDARY FAMILY UNITS
(Dependent Variable: Transfer Receipt)

Variable	Estimated Coefficient
Income	$.315 \times 10^{-4}$
	(4.68)
Years of education	$-.257 \times 10^{-1}$
	(−1.38)
Age	$-.126 \times 10^{-1}$
	(−4.03)
Marital status (1 if married,	−.352
0 otherwise)	(−1.29)
Gender (1 if female, 0 if male)	.428
	(4.67)
Race (1 if black, 0 otherwise)	−.196
	(−1.53)
Mean income, survey block	$.338 \times 10^{-4}$
	(2.56)
Constant	−.904
	(−2.97)
Recipients	249
Nonrecipients	801
Observations	1,050
ln L	−544.3

NOTE.—Transfer receipt = 1 if transfer received, 0 otherwise. Asymptotic t-values are in parentheses.

coefficient of recipient income. We know the income levels of the recipients, but the income levels of potential donors were proxied by the mean income of the survey block. For secondary family units, however, the most likely candidate for the potential donor is the primary family unit with which the secondary family unit resides. Primary family unit characteristics can be entered as regressors along with the secondary unit characteristics. Table 6 shows the secondary family unit probit equation when a vector of the corresponding primary family unit characteristics is added. The basic finding—a positive relationship between the income of secondary units and the probability of receiving a private transfer—is unaffected by entering the characteristics of primary family units as regressors.[22]

The vector of primary unit characteristics is significant at the .18

[22] In addition, the estimates in tables 2 and 3 were replicated using primary family income instead of MINCBLK as an indicator of donor income for secondary family units. The variable MINCBLK was used as an indicator of donor income for other family units. It is expressed in 1979 dollars using the gross national product deflator (see n. 17). This formulation yielded results virtually identical to those of the original. The elasticity of secondary unit income with respect to primary unit income is .286 (t = 2.89), well within the range of estimates reported in Becker and Tomes (1986).

TABLE 6

PROBIT ESTIMATES FOR SECONDARY FAMILY UNITS WITH CHARACTERISTICS OF PRIMARY FAMILY UNITS INCLUDED AS REGRESSORS (Dependent Variable: Transfer Receipt)

Variable	Estimated Coefficient
Secondary unit characteristics:	
Income	$.338 \times 10^{-4}$
	(4.95)
Years of education	$-.263 \times 10^{-1}$
	(−1.33)
Age	$-.133 \times 10^{-1}$
	(−3.99)
Marital status	−.395
	(−1.41)
Gender	.432
	(4.70)
Race	−.289
	(−2.27)
Primary unit characteristics:	
Income	$.463 \times 10^{-5}$
	(1.16)
Years of education	$.279 \times 10^{-1}$
	(1.43)
Age	$.495 \times 10^{-2}$
	(1.50)
Number of children under 18	$.554 \times 10^{-1}$
	(1.51)
Dual-earner status	−.306
	(−1.68)
Marital status	$.914 \times 10^{-1}$
	(.56)
Constant	−1.047
	(−2.82)
Recipients	249
Nonrecipients	801
Observations	1,050
ln L	−543.1

NOTE.—Transfer receipt = 1 if transfer received, 0 otherwise. Asymptotic t-values are in parentheses.

level. To explore the possibility that the household production services are traded (e.g., child care or housework), the number of children under the age of 18 in the primary family unit and primary dual-earner status were entered in the probit equation. If transfers were payment for household production, we would expect positive coefficients for each of these variables. The coefficient for the number of children is of expected sign but is not statistically significant. The coefficient for dual-earner status of the primary family unit is negative and on the margin of statistical significance. One explanation for the negative coefficient for dual-earner status is that, for a given

income level, dual-earner status implies lower per capita earning potential, which would be inversely related to transfers given.[23]

There is an additional reason for focusing on the behavior of secondary family units. Though the PCPP data contain no direct information about services exchanged among family units, propinquity is likely to be an important ingredient in this exchange. The household membership decision (the decision to be a secondary vs. independent family unit) might be viewed as a decision to provide services (i.e., companionship, conformity to the rules of the household, or household production) in exchange for housing and perhaps other transfers.

The exchange model predicts that low-income individuals are more likely to enter this relationship because they have lower supply prices for services. The PCPP data confirm this prediction: a strong inverse relationship between secondary unit status and family unit income exists.[24] The altruist model predicts the same result: transfers of shared living arrangements will be targeted toward lower-income individuals. The altruism model cannot explain, however, the finding that the receipt of other inter vivos transfers reported in the PCPP data set is positively related to the secondary family unit's income. This finding fits the case of exchange in which the price elasticity of services is less than unity in absolute value.

D. Multiple Secondary Family Units

The income-transfer relationship is explored further by looking at the behavior of households containing more than one secondary family unit. This subsample is important because we can measure the *deviation* of income from the mean income of all secondary units in the household. We can also control for potential donor characteristics as before, with the vector of attributes of primary family units.

Under altruism, donors attempt to equalize consumption among recipients by giving lower transfers to those whose incomes are high relative to average recipient income (Tomes 1981). With exchange motivations, however, a larger than average income can lead to in-

[23] Separate equations for transfer amounts were also estimated for secondary and independent family units. In each of these equations the point estimates for recipient income are positive but not statistically significant. These estimates are contained in Cox (1986).

[24] In a probit equation for secondary unit status, e.g., a 10 percent rise in income reduces the probability of secondary unit status by three percentage points (evaluated at sample means; asymptotic t-value $= -12.98$). Other regressors included in this equation were the vector of demographic variables and the mean income of the survey block.

creased transfers received if, for example, the services of different recipients in the same household are imperfect substitutes.

In the sample, 228 households contained multiple secondary family units, resulting in a sample of 489 of these family units. The probit equation for the receipt of a transfer from the PCPP list is given by

$$t_i = \mathbf{a}_0\mathbf{Z}_i + a_1(E_{ki} - \overline{E}_{ki}) + a_2\overline{E}_{ki} + a_3E_{pi} - \mu_i, \qquad (24)$$

where $\overline{E}_{ki}$ denotes mean secondary family income in the household in which the ith secondary family unit resides. The variable E_{pi} is measured by primary family unit income, and the vector $\mathbf{Z}_i$ contains other primary and secondary unit characteristics.

The estimate of equation (24) is presented in table 7, column 1. The deviation of secondary unit income from mean secondary unit income is positively associated with transfer receipt, which contradicts the altruistic consumption equalization hypothesis but is consistent with the exchange-related findings reported above.

The effects of mean secondary family unit income on the probability of transfer receipt can be calculated by taking the difference $\hat{a}_2 - \hat{a}_1$. The effect of mean income on the probability of transfer receipt is much smaller than that of own income, consistent with the evidence above that the positive income-transfer relationship is not an artifact of interhousehold income differences.[25]

The results in table 7 corroborate the findings reported in the previous two sections: given an interior solution for transfers, higher income leads to greater transfers.[26] Column 2 measures the deviation of income from the average in ratio form. Column 3 contains estimates controlling for selection bias associated with secondary unit status. The same findings were obtained for other specifications that were estimated (e.g., reestimating eq. [24] controlling for the number of secondary units and estimating eq. [24] for transfer amounts received).[27]

[25] The equivalent form $t_i = \mathbf{a}_0\mathbf{Z}_i + a_1E_{ki} + d_2\overline{E}_{ki} + a_3E_{pi} - u_i$ was estimated, where $\hat{d}_2 = \hat{a}_2 - \hat{a}_1$. The asymptotic t-value for $\hat{d}_2$ was 0.50.

[26] The only apparent "altruistic" finding is the inverse relationship between education and transfer receipt (table 7, cols. 1 and 2). This effect disappears when sample selection effects associated with household membership are controlled for (col. 3).

[27] For example, a first-differences model for transfer amounts was estimated for households containing two secondary units. The difference in transfer amount received, ΔAMOUNT, was regressed on the difference in secondary unit incomes, ΔINCOME. The first-difference approach has the advantage of controlling for both observable and unobservable household-specific fixed effects. The results are

$$\Delta\text{AMOUNT} = \underset{(-.18)}{-35.499} + \underset{(1.87)}{.056}\Delta\text{INCOME}, \quad N(\text{pairs}) = 39, R^2 = .09;$$

t-values are in parentheses. Controlling for gender, age, and education differences between secondary units produced a similar coefficient for ΔINCOME (.063; $t = 1.92$).

TABLE 7

PROBIT ESTIMATES FOR SECONDARY FAMILY UNITS FROM HOUSEHOLDS WITH MULTIPLE SECONDARY FAMILY UNITS (Dependent Variable: Transfer Receipt)

VARIABLE	ESTIMATED COEFFICIENT (1)	(2)	(3)*
Secondary unit characteristics:			
Deviation from mean income†	$.261 \times 10^{-4}$	...	$.448 \times 10^{-4}$
	(1.81)		(2.56)
Income/mean income	...	.340	...
		(3.36)	
Mean income	$.357 \times 10^{-4}$	$.301 \times 10^{-4}$	$.451 \times 10^{-4}$
	(2.88)	(2.37)	(2.80)
Years of education	$-.571 \times 10^{-1}$	$-.585 \times 10^{-1}$	$-.267 \times 10^{-1}$
	(−1.88)	(−1.90)	(−.69)
Age	$-.178 \times 10^{-1}$	$-.185 \times 10^{-1}$	$.170 \times 10^{-2}$
	(−3.01)	(−3.11)	(.11)
Marital status	−.761	−.960	.192
	(−1.13)	(−1.35)	(.21)
Gender	.493	.480	.571
	(3.51)	(3.44)	(4.16)
Race	−.262	−.279	−.215
	(−1.50)	(−1.59)	(−1.30)
Primary unit characteristics:			
Income	$.270 \times 10^{-5}$	$.403 \times 10^{-5}$	$.196 \times 10^{-5}$
	(.46)	(.68)	(.30)
Years of education	$.349 \times 10^{-1}$	$.335 \times 10^{-1}$	$.195 \times 10^{-1}$
	(1.25)	(1.19)	(.64)
Age	$.137 \times 10^{-1}$	$.142 \times 10^{-1}$	$.110 \times 10^{-1}$
	(2.53)	(2.61)	(1.88)
Number of children under 18	$.739 \times 10^{-1}$	$.621 \times 10^{-1}$	$.720 \times 10^{-1}$
	(1.41)	(1.17)	(1.41)
Dual-earner status	.284	.311	.281
	(.97)	(1.01)	(.99)
Marital status	−.605	−.621	−.594
	(−2.30)	(−2.35)	(−2.44)
Constant	−1.031	−1.290	−1.31
	(−1.80)	(−2.21)	(−2.38)
ln L	−239.34	−235.51	−238.46

NOTE.—Recipients = 110, nonrecipients = 379, observations = 489. Asymptotic t-values are in parentheses.

* Probit equation has been corrected for sample selection bias. Transfer receipt and secondary unit status are estimated jointly. Variables entered in the secondary status equation are income, years of education, age, marital status, gender, race, and mean income of the survey block (ln L = −678.05). The estimated correlation between unobservables in the transfer and secondary status probit is ρ = −.438 (standard error = .286).

† Income minus mean income. Mean income is the average income of all secondary units in the household.

E. Additional Results

The exchange model receives additional support from the findings for the relationship between marital status and transfer receipt and the relationship between gender and transfer receipt.

The demographic characteristics—age, marital status, gender, and race—each have a large impact on the probability of receiving a transfer. The findings in table 2, for example, indicate that private transfers are targeted toward young, unmarried family units. Other things equal, family units headed by blacks have a lower probability of transfer receipt. Female status increases the estimated probability of receiving a private transfer. Recall that neither alimony nor child support is included in this list of private transfers.

The findings from the probit equations in table 2 for gender and marital status are easier to reconcile with exchange than with altruism. An "altruistic" explanation for the positive coefficient for female status in the probit equation in table 2 might be that females incur wage discrimination or have interrupted careers. The probability of transfer receipt is higher for them because private transfers compensate women for these events. The problem with this explanation is that the coefficient estimate is obtained controlling for income. Presumably, the income variable should be picking up each of these effects, unless women are being compensated for the effects of past or future career interruptions. A more compelling exchange-related explanation exists. Because of either discrimination or choice, women tend to be concentrated in activities that are related to family-oriented services (e.g., home production). Experience in home production would raise the demand price and lower the supply price of services.

The inverse relationship between marital status and the probability of transfer receipt is even more difficult to explain in the context of the altruistic model. A married couple has more potential donors than a single individual. If altruism is the motive for transfers, marriage should *increase* the probability of transfer receipt. Externalities may exist when more than one potential donor is present. Each donor may withhold inter vivos transfers, hoping that other donors contribute instead. (A related problem is explored in Nerlove, Razin, and Sadka [1984].) Still, a zero-transfer equilibrium is highly implausible in a multiple-donor situation in which altruism exists.[28]

[28] It is easy to show that the externality created by marriage will cause each effectively altruistic donor to give less, but this argument applies to transfer *amounts*, not the transfer decisions discussed here. An outcome in which each effectively altruistic donor withholds all transfers is unlikely to persist; each donor can make himself better off by giving a small transfer. In addition to Nerlove et al. (1984), see Roberts (1984) for an analysis of altruistic transfer behavior in a multiple-donor context.

An alternative exchange-related explanation is that marriage raises the implicit supply price of services provided to other family units. Family responsibilities associated with marriage make it less likely for a married couple to exchange services for private transfer income.

A further demographic result favoring the exchange model concerns the relationship between private transfers and the presence of young children. The transfer equations in tables 2 and 3 were reestimated adding a dummy variable for the presence of young children (aged 2 or under). In the transfer amount equation, this dummy variable is negative, numerically important, and significant at the .05 level. The presence of young children is associated with a $450 decline in the transfer amount received.[29]

The finding that the presence of young children is inversely related to transfer amounts received runs directly counter to the altruism hypothesis. The presence of young children should widen the gap between desired consumption and income and prompt increased transfers from altruistic donors. Yet we find that just the opposite occurs.

The inverse relationship between transfer amounts received and young children can be explained in the exchange model, however. Young children place demands on the time of family unit members, presumably causing a cutback in the level (and perhaps quality) of services that the family unit supplies to others.

It is important to note here that the findings reported in the empirical sections above are extremely robust with respect to changes in transfer measures and specification.[30] These modifications include

[29] The transfer amount equation, which includes a dummy variable for the presence of young children, is (*t*-values are in parentheses)

$$\begin{aligned}\text{transfer amount received} = {} & .027(\text{income}) - 5.149(\text{years of education}) \\ & \quad (4.38) \qquad\quad (-.20) \\ & - 1.075(\text{age}) - 139.174(\text{married}) - 448.025(\text{presence of young children}) \\ & \quad (-.19) \qquad\quad (-.66) \qquad\quad (-1.94) \\ & + 238.369(\text{gender}) + 70.178(\text{race}) + .036(\text{mean income, survey block}) \\ & \quad (1.70) \qquad\quad (.31) \qquad\quad (2.11) \\ & - 676.170(\text{monthly transfer}) + 161.256(\text{selectivity variable}), \\ & \quad (-5.25) \qquad\quad (.54) \\ & R^2 = .10,\ F = 7.64,\ \text{Obs.} = 641.\end{aligned}$$

In this sample, 48 family units had young children. The dummy for presence of young children was insignificant in the transfer probit equation. Estimations that included older children showed no relationship between older children and transfer amounts received or probability of receiving a transfer.

[30] Results from a variety of modifications of the basic specifications are contained in Cox (1986). Additional results are contained in an appendix available on request. The only modification that affects the coefficient of the income variable is the inclusion of individuals receiving transfers for education. Despite the fact that students receive large transfers and have small incomes, however, including them in the sample does

alternative measures of transfers (e.g., inclusion of bequests along with inter vivos transfers or inclusion of imputed housing services for secondary units) and adjustment for sample selection bias in the separate estimations for secondary and independent family units. None of these modifications alters the conclusions presented above.

Other Evidence

This paper focuses on the relationship between transfers received—which are interpreted as payments for services—and income and demographic variables associated with recipients and potential recipients. The PCPP data set contains data for inter vivos transfers but does not contain information on actual services transacted. However, an important existing estimate of the relationship between measured services, income, and demographic characteristics can be used to corroborate the findings reported in this paper. In his empirical investigation of bequest behavior, Tomes (1981, p. 946, n. 24) estimated a simple "supply of services" equation. He regressed the frequency of contact between decedent and recipient (measured by the number of visits) on several variables, including recipient and decedent income levels and demographic variables. He found that visits are inversely related to recipient income, which confirms the prediction that $\partial s/\partial E_k < 0$ in the exchange model.

More important, Tomes's estimation of the equation for the supply of visits contains two results important for this paper. First, the supply of visits is significantly higher for nonmarried individuals than for married individuals. This finding is outside evidence that strengthens the argument that transfers are payments for services. Tomes found that being married reduces the supply of visits; this paper indicates that being married reduces the probability of receiving an inter vivos transfer. Second, he found that the supply of visits is higher for females than for males. This finding mirrors the relationship between female status and the probability of receiving an inter vivos transfer from the list of transfers reported in the PCPP survey. The consistency between Tomes's supply of visits equation and the transfer equations reported here provides additional evidence in favor of the exchange model.

Studies of kinship interaction (Bert Adams 1968; Hill 1970; Leigh 1982; Stoller 1983) provide similar evidence. These studies generally use survey results containing information on forms of parental aid

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not produce an inverse relationship between income and transfers received. The income coefficient is negligible and not significantly different from zero for this sample (Chiswick and Cox 1986).

and child services (e.g., financial assistance, help during illness, emotional support, or help with home production) or frequency of intergenerational contact (e.g., visits and telephone calls). Empirical evidence from this literature shows that interaction among family members of different generations is often characterized by reciprocity rather than one-way benevolent patronage.

Hill (1970) interviewed 85 families about services and economic assistance given and received among three generations (grandparent, parent, and married child). The average member of the married-child generation was a net giver of services related to household management, emotional support, and help during illness but a net recipient in terms of economic assistance (Hill 1970, p. 68). One-third reported both giving and receiving help and often classified the help items as "loans" or "exchanges" rather than outright gifts (p. 69).[31]

Reciprocal exchange is a necessary, but not sufficient, condition for exchange-motivated transfers. Two-way exchange is also consistent with reciprocal altruism. Survey results collected by Adams (1968) for a sample of 799 individuals in Greensboro, North Carolina, provide some findings relevant to this issue. Adams found that self-reported measures of closeness were unrelated to frequency of contact in the total Greensboro sample: "35 percent of these young adults who are close to both parents see them weekly or more, 33 percent of those affectionally close to one parent see them that often, as do 34 percent of the respondents who indicate that they were affectionally distant from their parents" (p. 72).[32] Nearly 20 percent said they were close to neither parent, yet most interacted frequently with them. Further, less than half cited "enjoyment" as the sole reason for keeping in touch with their parents. Most reported that contact was motivated by some sort of obligation, such as giving help (p. 82).

Most studies of kinship interaction indicate that women provide more services and contact than men. Leigh (1982) reports a positive female/male differential in the frequency of contact with parents from a survey of 935 Indiana households. He cites many other

[31] Unfortunately, Hill does not provide a tabulation of help items according to this type of classification.

[32] When the sample was disaggregated according to distance from parent's residence, an inverse relationship between closeness and contact was found for some distance categories. For individuals whose parents lived within 100 miles from Greensboro, e.g., 21 percent of the "close to both" group contacted their parents weekly or more, while 12 percent of the "close to neither" group contacted them that often. Respondents whose parents lived in Greensboro reported frequent contact regardless of feelings of closeness. In this sample, 85 percent of those reporting that they were "close to both" contacted them weekly or more, while 79 percent of the "close to neither" group contacted them weekly or more. The remaining 21 percent of the "close to neither" group contacted their parents monthly or more.

findings in the kinship literature that corroborate this finding. Hill (1970) found that daughters provide more parental aid than sons. These findings are consistent with those of Tomes (1981) discussed earlier. The positive female/male differential in frequency of kinship interaction parallels the relationship between female status and probability of inter vivos transfer receipt. Taken together, these results also suggest that inter vivos transfers are more responsive payment mechanisms than bequests since the majority (60 percent) of bequests to male-female sibling pairs are shared equally (Menchik 1980, p. 305).

Stoller (1983) collected information on informal help provided to older persons by their adult children. She found that daughters provided twice as much informal help as sons. In addition, marital status of the children was an important determinant of informal help: "the time demands associated with the marital relationship and the importance attached to these activities impede the ability of the adult child to help his/her parent" (p. 855).[33] This finding is consistent with both Tomes's result and this paper's connection between marital status and inter vivos transfers.

Finally, findings from studies of kinship interaction tend to support the notion of price inelastic demand for services. Though evidence on this issue is speculative, two results from the kinship interaction literature are of interest here. First, Adams (1968, p. 48) found frequent parent-child contact (visits, letters, or telephone calls) between young adults and parents who are geographically separated. All respondents with parents living in Greensboro contacted their parents at least monthly, but so did 91 percent of those with parents further than 100 miles away. Contact frequency was higher for parent-child pairs who were geographically close, but this evidence suggests that expenditures associated with contact are likely to rise, not fall, with geographic distance. Similar results from a different data set were obtained by Klatzky (1971). Second, Hill (1970, pp. 64–69) reports that nonfamilial service sources (e.g., clergy or health and welfare agencies) received universally low ranking when survey respondents were asked about their preferred sources of aid. Apparently, nonfamilial sources of services are considered poor substitutes for familial sources.

[33] The other studies discussed here consider primarily relationships among married family units, and the impact of the child generation's marital status on kinship relations is not explored. The data sets used by Leigh and Adams contain information on both married and nonmarried children, but neither investigator looks at married/nonmarried differentials in frequency of contact.

Conclusion

This investigation of the motives for inter vivos transfers supports the idea that inter vivos transfers are payments for services that are exchanged among family units. A key factor in making inferences about motives for private transfers is the relationship between the recipient's income and transfers, given an interior solution for transfers. A positive relationship between the recipient's income and transfers contradicts the altruist hypothesis. Such a positive relationship is consistent with the exchange hypothesis when the elasticity of services with respect to the implicit service price is less than unity in absolute value. The estimated relationship between demographic variables and private transfers received also favors the exchange hypothesis over the altruist hypothesis. Finally, outside evidence shows that demographic patterns for the supply of services closely parallel demographic patterns for inter vivos transfers received. The consistency between the results in this paper and outside evidence that contains actual data for services further strengthens the interpretation of inter vivos transfers as payments for services.

The initial impetus for this inquiry into the motives for private transfers stemmed from concerns about the effects of government redistribution programs on economic welfare and behavior. The absence of evidence for altruistically motivated transfers has far-reaching implications for the effects of public redistribution policy. Absence of altruism implies that public income redistribution can have substantial effects on the distribution of economic well-being. Further, the existence of exchange motives for transfers implies that trends in the distribution of income are imperfect measures of changes in economic well-being over time. A secular decline in the dependency of individuals (in terms of shared living arrangements) has accompanied rising real incomes and the growth of public transfer programs. This decline in dependency should be counted as an additional effect on the distribution of well-being.[34] The lack of evidence for altruism also implies that government redistribution policy can have significant effects on savings and work effort.

The absence of evidence for altruism does not imply that inquiries into the effects of rising public transfers or real incomes on behavior should not be viewed in a family context. The evidence presented here, however, indicates that private transfers will interact with public

[34] Lampman and Smeeding (1983) cite an intriguing finding by Morgan et al. (1962). Morgan et al. find that about three-fourths of secondary family units living with younger relatives in 1959 stated that they preferred to live alone except that they were financially better off living with their relatives.

transfers in a way quite different from that envisioned by proponents of the altruist model of transfer behavior.

Appendix A

Comparative Statics Results

In the altruistic regime (where constraint [5] is nonbinding) differentiation of conditions (7)–(8) in the text yields

$$\begin{bmatrix} A & B \\ C & D \end{bmatrix} \begin{bmatrix} dT \\ ds \end{bmatrix} = \begin{bmatrix} E \\ F \end{bmatrix},$$

where

$$\begin{aligned} A &= U_{cc} - U_{cv}V_c + U_{vv}V_c^2 + U_vV_{cc}, \\ B &= -U_{cs} + U_{cv}V_s + U_{vv}V_cV_s + U_vV_{cs}, \\ C &= -U_{cs} + U_{sv}V_c + U_{vv}V_cV_s + U_vV_{cs}, \\ D &= U_{ss} + U_{sv}V_s + U_{vv}V_s^2 + U_vV_{ss}, \\ E &= U_{cc}dE_p + U_{cv}V_cdE_k - U_{vv}V_c^2dE_k - U_vV_{cc}dE_k, \\ F &= -U_{cs}dE_p - U_{sv}V_cdE_k - U_{vv}V_cV_sdE_k - U_vV_{cs}dE_k. \end{aligned}$$

This system implies the following equalities:

$$\frac{\partial T}{\partial E_k} - \frac{\partial T}{\partial E_p} = -1 \tag{A1}$$

and

$$\frac{\partial s}{\partial E_k} - \frac{\partial s}{\partial E_p} = 0. \tag{A2}$$

The term $\partial s/\partial E_p$ is given by

$$\frac{1}{|G|}(-U_{cs}A - U_{cc}C) \gtrless 0,$$

where the Jacobian determinant $|G| = AD - BC > 0$.

In the exchange regime, we can rewrite equation (6) in the text as

$$L = U_p(E_p - T, s, V_0(E_k, 0)) + \mu[V(E_k + T, s) - V_0(E_k, 0)], \tag{A3}$$

where $\mu = U_v + \lambda$. Assuming that functions U_p and V are additively separable and using the equality $T = ps$ implies the following comparative statics results for changes in the child's income:

$$\frac{\partial s}{\partial E_k} = \frac{1}{|J|}[(U_{cc}s + \mu V_{cc}s)(-V_s)(V_0' - V_c) + \mu V_{cc}(-V_sV_cs)] < 0, \tag{A4}$$

$$\frac{\partial p}{\partial E_k} = \frac{\partial p}{\partial E_p} + \frac{1}{|J|}V_0'[(U_{cc} + \mu V_{cc})pV_s - (U_{ss} + \mu V_{ss})V_c] - \frac{1}{s} \gtrless 0, \tag{A5}$$

and

$$\frac{\partial T}{\partial E_k} = \frac{s}{|J|}[\mu V_{cc}V_s^2 - V_c(V_0' - V_c)(U_{ss} + \mu V_{ss})] \gtrless 0, \tag{A6}$$

where $|J| > 0$ is the Jacobian determinant and V_0' is the child's marginal utility of consumption evaluated at the threat point ($V_0' > V_c$). The term $\partial p/\partial E_p$ in (A5) is

$$\frac{\partial p}{\partial E_p} = -\frac{1}{|J|} U_{cc}V_s(V_{cp} + V_s) > 0. \tag{A7}$$

The first two terms in expression (A5) are positive and the final term is negative. A sufficient condition for the second term to exceed the third in absolute value is that $pV_0' > -V_s$. In this case, (A5) is unambiguously positive. With parental income compensation ($dps = -dE_p$), (A5) is also unambiguously positive.

Expression (A6), $\partial T/\partial E_k$, is ambiguous in sign. This expression can be rewritten as

$$\frac{\partial T}{\partial E_k} = \frac{\partial s}{\partial E_k} p\left(\frac{1}{\frac{\partial s}{\partial p}\frac{p}{s}} + 1\right). \tag{A8}$$

With expression (A5) positive, (A8) is positive if $(\partial s/\partial p)(p/s) > -1$.

Relaxing the separability assumption implies the following expression for $\partial T/\partial E_k$:

$$\begin{aligned}\frac{\partial T}{\partial E_k} = \frac{1}{|H|}[&(\mu V_{cc} - U_{cv}V_0')V_s^2 + \mu V_{cs}V_s(V_0' - V_c) \\ &+ V_c(-U_{sv}V_0' - \mu V_{cs})V_s - V_c(V_0' - V_c)(U_{ss} + \mu V_{ss})] \gtrless 0,\end{aligned} \tag{A9}$$

where $|H| > 0$ is the Jacobian determinant in this case.

Assuming the sign configuration ($U_{cs} > 0$, $V_{cs} < 0$, $U_{cv} > 0$, $U_{sv} > 0$) for the cross terms results in additional negative terms in $\partial s/\partial E_k$ and additional positive terms in $\partial p/\partial E_k$.

An interior solution for transfers T and services s will occur when the parent's marginal rate of substitution (MRS) of transfers for services is less than the child's MRS of transfers for services, where each MRS is evaluated at $s = 0$. The parental MRS at $s = 0$ can be written as

$$P_p^\circ = \text{MRS}^\circ = \frac{U_s^\circ}{U_c^\circ} > 0, \tag{A10}$$

where the superscript denotes that these terms are evaluated at $s = 0$. The term MRS° can be interpreted as the parent's demand price for the first unit of services and can be relabeled P_p°. With $U_{cs} = 0$, the effect of an increase in E_p on the parent's demand price is

$$\frac{\partial P_p^\circ}{\partial E_p} = -\frac{U_{cc}^\circ U_s^\circ}{(U_c^\circ)^2} > 0.$$

The supply price for the first unit of services is

$$P_k^\circ = -\frac{V_s^\circ}{V_c^\circ} > 0,$$

with $V_{cs} = 0$; the effect of an increase in E_k on the child's supply price is

$$\frac{\partial P_k^\circ}{\partial E_k} = \frac{V_s^\circ V_{cc}^\circ}{(V_c^\circ)^2} > 0.$$

Therefore, the probability of an interior solution for transfers is inversely related to the child's income level.

If the separability assumption is relaxed and replaced with the more plausible assumption that $U_{cs} > 0$ and $V_{cs} < 0$, none of the signs of the comparative statics results is affected. Only in the unlikely case in which $U_{cs} < 0$ and $V_{cs} > 0$ will the separability assumption be important here. In particular, with $U_{cs} < 0$ and large in absolute value, it is possible that $\partial \bar{t}/\partial E_p < 0$, and with $V_{cs} > 0$ it is possible that $\partial \bar{t}/\partial E_k > 0$.

Appendix B

TABLE B1

MEANS OF VARIABLES FOR VARIOUS SAMPLES

	Total Sample (N = 4,426) (1)	Recipients (N = 641) (2)	Independent Family Units (N = 2,586) (3)	Secondary Family Units (N = 1,050) (4)	Secondary Family Units, Multiple-Secondary-Unit Households (N = 489) (5)
Income*	16,293	12,935	19,348	6,789	6,775
Labor income*	14,234	11,360	16,874	6,099	6,232
Years of education	11.9	12.3	12.0	11.9	12.2
Age	41.7	35.2	44.6	29.7	27.6
Percentage married, spouse present	48.1	27.6	64.4	3.4	1.4
Percentage female headed	39.2	54.4	34.3	49.9	50.1
Percentage black	13.4	10.5	11.8	16.4	20.0
Mean income, survey block (1970 census)	13,040	13,345	12,969	13,070	12,885
Average transfer received†	115	793	129	156	159
Percentage receiving transfers	14.5	100	11.4	23.7	22.5
Average transfer received among recipients	793	793	1,130	658	709
Income, primary	...	...	...	18,111	17,752
Years of education, primary	...	...	...	11.7	11.7
Age, primary	...	...	...	47.5	48.2
Number of children under 18, primary	...	...	...	.77	.80
Percentage dual earner, primary	...	...	...	44.1	44.6
Percentage married, spouse present, primary	...	...	...	53.0	55.2

* Income figures are for January–August 1979.
† Transfer figures include monthly (August 1979) and 8-month (January–August 1979) transfers.

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