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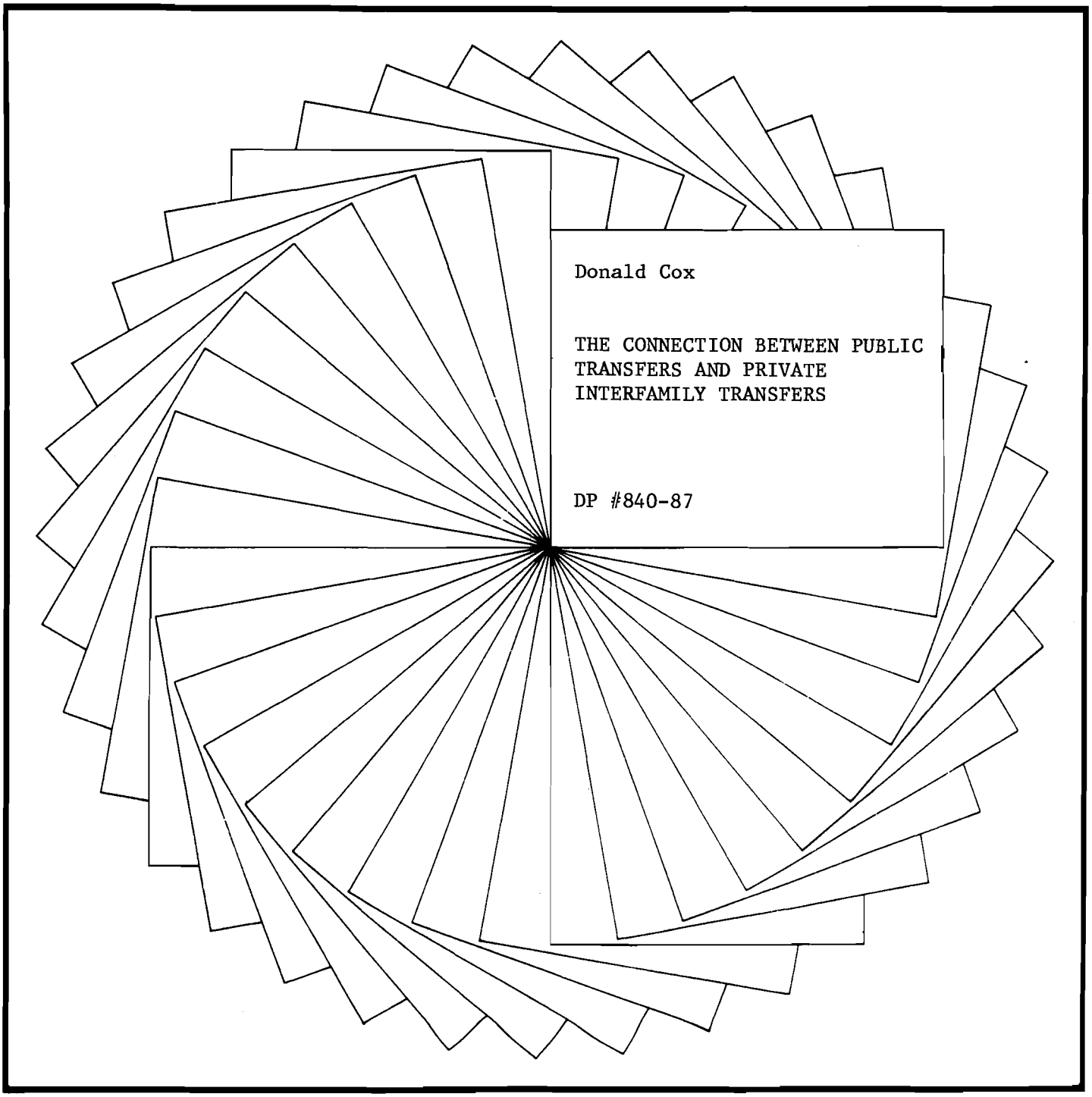

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THE CONNECTION BETWEEN PUBLIC TRANSFERS AND PRIVATE INTERFAMILY TRANSFERS

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ABSTRACT

This paper investigates the anti-poverty effectiveness of public transfers taking possible private-transfer responses into account. Widespread, altruistically motivated private transfers would neutralize the distributional impact of public transfers. I show that exchange-motivated transfers can actually amplify the effects of public transfers on the distribution of economic well-being. The common technique for gauging anti-poverty effectiveness (subtracting public transfers from other income and measuring the poverty-rate counterfactual) yields results extremely close to the more complex procedure that takes private-transfer responses into account. Further, much of the empirical findings indicate an exchange, rather than altruistic, motive for private transfers, opening up the possibility that "private amplification" occurs for some programs. This outcome is a one-hundred-and-eighty degree reversal of the prediction that public transfers merely supplant private ones.

Introduction

How effective are public transfers in fighting poverty? Almost all studies of the subject indicate a significant anti-poverty impact of public transfers. Subtracting public assistance and social insurance benefits from other income implies much higher poverty incidence than actual, post-public-transfer levels. But this straightforward calculation leaves us with a nagging question. If public assistance and social insurance programs were removed, might private interfamily transfers take up the slack? A pervasive network of private "safety nets" could render public transfers redundant.

Suppose such a network exists, and that any change in public transfers simply results in corresponding offsets in private transfers, leaving the actual distribution of economic well-being unchanged. Since government transfer programs have administrative costs, they would create nothing but deadweight losses. The policy recommendation would be to dismantle them.

A less extreme possibility is that private safety nets are not completely pervasive but ignoring them builds upward bias into calculations of the anti-poverty impact of government transfers.

In either case, the problem with simple comparisons of pre- and post-public-transfer poverty incidence is that they ignore the possible behavioral response of private transfers to the reduction in public transfers. A measure of this response is needed to gauge the true pre-public-transfer counterfactual, and hence the actual anti-poverty effectiveness of government transfers.

Further, the idea of private transfers as altruistically motivated safety nets has gained wide acceptance, but it is far from clear that this is the most accurate way to characterize private transfers. An alternative view is

that private transfers are governed by self-interested motives; donors give but receive something in exchange for their transfers. These transfer motives --altruism versus exchange--have far-reaching implications for the impact of public transfers on the distribution of economic well-being and the pre-public-transfer counterfactual.

In what follows, I define explicitly the difference between altruistic "safety nets" and exchange-motivated transfers, and model transfer behavior under these two regimes. I reiterate the results associated with altruistically motivated private transfers; the distributional impact of public transfers is dampened or completely neutralized by private behavior in this setting. I then explore the exchange model, which produces new and different results. In the exchange model, the distributional impact of public transfers can actually be amplified by private behavioral responses.

The empirical sections use a data set that contains information on both public and private transfers (the President's Commission on Pension Policy (PCPP) survey) to estimate the pre-public-transfer counterfactual taking private behavioral responses into account. Specifically, the question explored is this: If public assistance and social insurance systems were eliminated, and private transfers adjusted accordingly, what would the poverty rate be? With altruism in its strongest form (widespread private safety nets) this poverty-rate counterfactual would equal the actual one. The exchange-related private transfer motive can imply different outcomes.

The remainder of the paper is organized as follows. The first section provides some background from existing work on public and private transfers. The second contrasts alternative motives for private transfer behavior and explores their implications for public transfer policy. The third section contains the empirical work, which includes poverty-rate counterfactuals that account for adjustments in private transfers.

I. Existing Work

Danziger, Haveman, and Plotnick (1981) surveyed eight studies of anti-poverty effectiveness of public transfers. Most used survey microdata (e.g., the Current Population Survey, the Panel Study of Income Dynamics) and each study measures anti-poverty effectiveness by subtracting public assistance and social insurance benefits from total income.[1] All indicate large reductions in poverty after public transfers are added -- in some cases poverty incidence is reduced over 75 percent. Focusing on the share of aggregate income accruing to the lowest income quintile, rather than poverty rates, indicates significant impacts as well.

Most of these studies use the family as the appropriate spending unit.[2] This approach incorporates the view that resources are shared among family members living under one roof. Further, use of official U.S. poverty lines takes into account economies of scale associated with shared living arrangements. Nonetheless, these measures of anti-poverty effectiveness are open to criticism. Resources are not shared equally within families, and adjustments for this alters measures of poverty incidence significantly (Lazear and Michael, 1986). Further, resource pooling may extend beyond the nuclear family. Interfamily transfers can take place between families, and income differences between these linked families may be quite large. Changes in public transfers may prompt adjustments in interfamily transfers, and the zero-public-transfer counterfactual does not take this behavioral response into account.[3]

Present-day treatment of inter/intra-family transfers in economics originated with Becker (1974, 1981). Becker's analysis centers on the behavior of a benevolent--but dominant--individual (say, the "parent") who incorporates the well-being of others into his utility function. Since this individual cares about others, he may make transfers to experience vicariously

their increased consumption. The key aspect of Becker's altruism model is that, with private transfers, consumption and well-being of individual spending-unit members are independent of the distribution of income within the unit. Instead they depend only on aggregate income of the unit and the nature of the parent's altruism. Becker's approach has gained wide acceptance, and variants of it have been used in many theoretical and empirical studies of family behavior (e.g., Barro (1974); Ishikawa, (1975); Adams (1980); Tomes (1981); and Menchik and David (1983)). Becker's formulation implies neutral and in some cases perverse distributional effects of public redistribution policy (Becker and Tomes, 1979).

Lampman and Smeeding (1983) explore the implications of substitutable public and private transfers, and note that public transfers may create "secondary beneficiaries"--private donors whose burden is eased when public transfers to their dependents are increased. The altruistic motive for private transfers is implicit in their analysis. They present evidence from a variety of data sources indicating a large increase in government's share of total (public plus private) transfers, but only a slight reduction in private transfers (as a proportion of income) in the past fifty years.

Economists have recently begun to consider non-altruistic transfers--payments exchanged for in-kind services or future cash transfers. Non-altruistic family behavior has been explored in a variety of settings including household production (Manser and Brown, 1980; McElroy and Horney, 1981), annuity insurance (Kotlikoff and Spivak, 1981) and exchange for in-kind services (Bernheim, Shleifer and Summers, 1985; Cox, 1987a). Sociologists discovered exchange theory much earlier than economists (Thibaut and Kelley, 1959; Homans, 1961; Blau, 1964). A large body of empirical work on exchange-based kinship interaction exists in the sociology literature (e.g., Sussman, 1965; Adams, 1968; Hill, 1970). As we shall see below,

non-altruistic transfer motives have implications for public transfer policy that are dramatically different from altruistic motives.

Most empirical analyses of private transfer behavior deal with bequests.[4] Though households in upper income strata appear to have a strong bequest motive (Menchik and David, 1983), bequest-related redistribution of economic welfare is not likely to be significant because the average inheritance is small (Blinder, 1973; Menchik, 1980). Further, bequests tend to be shared equally among siblings (Menchik, 1980, 1985), which suggests they are not responsive to intrafamily income differences.

Another private transfer mechanism, however, is transfers of income among living families (inter vivos transfers). Inter vivos transfers have received less attention than bequests despite the fact that they are quantitatively more important (Kurz, 1984; Cox, 1987a).[5]

The lack of attention to inter vivos transfers presumably stems from scarcity of data. In what follows I use a data set that contains information for private inter vivos transfers as well as a variety of public transfer sources (the PCPP data set). Before examining the data, however, it is necessary to explore the implications of public redistribution policy under alternative motives for private income transfers.

II. Private Transfers and Public Income Redistribution

Consider two individuals, a private-transfer donor (say, the parent) and a recipient (the child). The parent incorporates the child's well-being into his utility function. The parent also enjoys services the child provides to him. Examples of child services are help with home production, companionship, visits, moral support, attention to parental advice, choice of clothing, hairstyles, and occupation, and conformity to parental rules. Children might provide these services willingly; good behavior and loyalty could increase

child utility. To make the problem interesting, however, I introduce parent-child conflict. I assume that increased services lower the well-being of the child.[6]

Some types of child services have ready market substitutes, but others do not. The companionship market, for example, is not as well established as the lawn-care market.

While the model below is cast in terms of a parent-donor and a child-recipient, many generalizations are possible. We could consider multiple-donor situations (e.g., Nerlove, Razin, and Sadka, 1984; Roberts, 1984; Weiss and Willis, 1985) or multiple recipients (Bernheim et al., 1985). The "parent" might be an adult child who makes transfers to his own parent. The parent-child labels are used for convenience.

The parent's utility function is

$$U_p = U_p(c_p, s, V(c_k,s)), \tag{1}$$

where U_p = parental utility, c_i = consumption, i = p,k, s = child services, and V = child utility. I assume the following sign pattern for the first partials: $U_c = \partial U/\partial c_p > 0$, $U_s = \partial U/\partial s > 0$, $V_c = \partial V/\partial c_k > 0$, and $V_s = \partial V/\partial s < 0$. Altruism implies that $\partial U/\partial V = U_v > 0$. Consumption is a normal good for each individual. The budget constraints for this problem are

$$c_p = I_p - T \tag{2}$$

and

$$c_k = I_k + T \tag{3}$$

where I_i, i = p,k denote parent and child incomes, net of taxes and inclusive of government subsidies. T denotes private transfer income, which fills the gap between the child's consumption and his income. Parent and child incomes are

$$I_i = I_i^o + \tau_i \quad i = p,k \tag{4}$$

where I_i^o is gross income and τ_i is government subsidies minus taxes. The government budget constraint is

$$\tau_p + \tau_k = 0, \tag{5}$$

and I assume, without loss of generality, that $\tau_p < 0$ and $\tau_k > 0$, so that parental taxes subsidize child consumption.

The change in child utility from entering a relationship with the parent cannot be negative. His utility from being on his own is

$$V_o(I_k,0). \tag{6}$$

The non-negativity constraint is

$$V(c_k,s) \geq V_o. \tag{7}$$

Substituting (2) and (3) into (1) and incorporating the non-negativity constraint leaves the parent with two choice variables, s and T.

The Kuhn-Tucker conditions are

$$\frac{\partial L}{\partial T} = - U_c + U_v V_c + \lambda V_c \leq 0, \qquad T\frac{\partial L}{\partial T} = 0 \tag{8}$$

$$\frac{\partial L}{\partial s} = U_s + U_v V_s + \lambda V_s \leq 0, \quad s\frac{\partial L}{\partial s} = 0 \tag{9}$$

$$\frac{\partial L}{\partial \lambda} = V(I_k + T, s) - V_o(I_k,0) \geq 0, \quad \lambda\frac{\partial L}{\partial \lambda} = 0 \tag{10}$$

There are two regimes to consider. The first is the instance when the child's utility gain, $V - V_o$, is strictly positive. In this case the parent is effectively altruistic. The second is exchange. The child is exactly compensated for providing services, so that $V - V_o = 0$. I analyze the comparative statics of each case in turn.

1. Altruism

Under altruism, the utility-compensation constraint is not binding so $\lambda = 0$. 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 point of view, $U_v V_c$. Child services are chosen in the same way. Parental marginal utility is equated with child marginal disutility multiplied by U_v.

The comparative statics associated with altruism are

$$\frac{\partial T}{\partial I_k} < 0, \qquad \frac{\partial T}{\partial I_p} > 0, \qquad \text{and} \quad \frac{\partial s}{\partial I_i} \gtrless 0 \qquad i = p,k. \tag{11}$$

Further, altruism implies that

$$\frac{\partial T}{\partial I_k} - \frac{\partial T}{\partial I_p} = -1 \quad \text{and} \quad \frac{\partial s}{\partial I_k} = \frac{\partial s}{\partial I_p}. \tag{12}$$

With family income constant, a dollar increase in child income prompts a dollar reduction in transfers. Parent and child consumption (and child services) are determined by the sum $I_k + I_p$. Taxing the parent while subsidizing the child does not affect their consumption as long as the government budget constraint remains balanced. Public transfers are neutralized by offsets in private transfers.

The results in (12) are a version of the Becker-Barro neutrality outcome. Bernheim and Bagwell (1985) have generalized these results to show that in an economy with many dynastic families linked by blood, marriage, and operative private transfers, government activity is distributionally (and allocatively) neutral.

2. Exchange

Assume that constraint (7) is binding. This is the exchange regime. Now transfers are used to provide exact compensation for services. With $\lambda > 0$,

$U_c < U_v V_c$. The parent dominates the bilateral monopoly in bargaining for services, so that the child receives his "threat-point" utility V_o.

Let us characterize transfers as the product of services and an implicit average price, p:

$$T = ps. \tag{13}$$

With separable utility,[7] the comparative statics are

$$\begin{aligned} &\frac{\partial s}{\partial I_k} < 0, \quad \frac{\partial p}{\partial I_k} \gtrless 0, \quad \frac{\partial T}{\partial I_k} \gtrless 0, \\ &\frac{\partial s}{\partial I_k} > 0, \quad \frac{\partial p}{\partial I_p} > 0, \quad \frac{\partial T}{\partial I_p} > 0. \end{aligned} \tag{14}$$

The key result is that transfers need not be inversely related to child income. A rise in child income reduces services (high-income recipients conform less to parental regulations) but can also increase the implicit service price. With $\partial p/\partial I_k > 0$, the sign of $\partial T/\partial I_k$ is positive or negative according to whether the reduced-form elasticity $(\partial s/\partial p)(p/s)$ is inelastic or elastic. With $(\partial s/\partial p)(p/s) < -1$, $\partial T/\partial I_k > 0$.

3. Balanced-Budget Redistribution with Exchange

With the above results, we are able to explore the effects of balanced budget redistribution (taxing the parent and giving the proceeds to the child). We will show how the effects of redistribution can be <u>amplified</u> by private behavior. This result is a one-hundred-and-eighty degree reversal of the Becker-Barro results reported above.

Before describing amplification, let us establish a simple benchmark case: two independent individuals, no altruism, and no exchange. Taxing the parent by a dollar reduces his well-being by U_c. Subsidizing the child by a dollar increases his well-being by V_c.

First, consider the amplification result for the child. Since the parent

dominates the bargaining arrangement the child receives his threat-point utility V_o. It is straightforward to show that the marginal utility of the subsidy is greater than the marginal utility of consumption for the child. Differentiating expression (7) we obtain

$$V_o' dI_k^o + V_o' d\tau_k = V_c dI_k^o + V_c d\tau_k + V_c dT + V_s ds \qquad (15)$$

Using the relations $T = ps$ and assuming $dI_k^o = 0$ and $d\tau_k = - d\tau_p$ we can write (15) as

$$V_0' = V_c + sV_c \frac{\partial p}{\partial \tau_k}\bigg|_{d\tau_k = - d\tau_p} + pV_c \frac{\partial s}{\partial \tau_k}\bigg|_{d\tau_k = - d\tau_p} + V_s \frac{\partial s}{\partial \tau_k}\bigg|_{d\tau_k = - d\tau_p} > V_c \qquad (16)$$

The gain in child utility from the increased subsidy is decomposed into four components in (16). The first is the direct marginal utility of comsumption associated with the subsidy increase. The second is the utility change that comes from a change in the implicit price of services for a given value of s. The third term is negative; it is the utility loss from the reduction in services for a given value of p. The last term is positive; it represents the reduction in disutility from providing fewer services. The sum of the last two terms is positive, because $- V_s > pV_c$. Since p is the average (not marginal) price of services, it is less than the child's marginal rate of substitution of transfers for services. The second term, which involves $\partial p/\partial \tau_k$, is ambiguous in sign. Despite this, V_o' always exceeds V_c.

The amplification result for the child can be summarized as follows. An increased child subsidy buys him two things: increased consumption and better terms of trade in the exchange of services.

Note that this amplification result is obtained regardless of whether private transfers, T, rise or fall after increased public redistribution. In

the case where T rises, the amplification result is most apparent: The child receives a larger public transfer, which raises his well-being by V_c; the private behavioral response results in increased private transfers, which boost his consumption further, and he provides less services to the parent, which augments his well-being further still.

The impact of balanced-budget redistribution for the parent is analyzed in a similar way. Differentiating parental utility with respect to τ_p, given that $d\tau_p = - d\tau_k$ gives us

$$- \frac{dU}{d\tau_p} = - U_c - sU_c \frac{\partial p}{\partial \tau_k}\Bigg|_{d\tau_k = -d\tau_p} - pU_c \frac{\partial s}{\partial \tau_k}\Bigg|_{d\tau_k = -d\tau_p} + U_s \frac{\partial s}{\partial \tau_k}\Bigg|_{d\tau_k = -d\tau_p} + U_v V_o' \gtrless - U_c \quad (17)$$

The impact of an increase in parental taxes alone reduces parental utility by U_c. Since the parent dominates the bargaining arrangement, if this tax increase were not used to subsidize the child, then by the envelope theorem this would be the end of the story. Because the tax increase is used to finance an increased child subsidy, however, there are further effects. If $\partial p/\partial \tau_k$ given $d\tau_k = - d\tau_p$ is positive, the parent pays a higher price for a given level of services, and the second term on the right-hand side of (17) is negative. The third term is positive, and represents the utility gain associated with reduced expenditures for services. The fourth term is negative; it is the loss in utility from the reduction in s. The sum of the third and fourth terms is negative, since the sum $-pU_c + U_s > 0$. The final term, $U_v V_o'$, is positive and represents the vicarious satisfaction the parent gets from the windfall to the child. Even though altruistic transfer motives are not operative, the parent is still inframarginally altruistic.

The possibility of an amplification result for the parent is easiest to see in the case in which private transfers rise after redistribution. The

parent's taxes increase, and the first order effect is $-U_c$. However, he must pay increased private transfers to the child in exchange for reduced services. Call the sum of these effects the "parent's extra loss." If the parent's extra loss exceeds the altruistic component, $U_v V_o'$, then private behavioral responses amplify the effects of redistribution for the parent. These results are an exact reversal of the altruist neutrality outcome.[8]

4. Incidence of Private Transfers and Regime-Hopping

So far we have considered interior solutions for transfers. Under what conditions will an interior solution be obtained? What determines whether the transfer is altruistic or exchange-motivated?

We can manipulate first-order conditions (8) and (9) to determine the conditions under which a transfer will take place. An interior solution for transfers and services implies that

$$\frac{U_s}{U_c} = -\frac{V_s}{V_c} \tag{18}$$

Condition (18) implies that the parent's marginal rate of substitution of transfers for services (MRS) is equated with that of the child. The solution for services is shown in figure 1a. Define the parent's MRS at $s = T = 0$ as $(U_s/U_c)^\circ$ and the child's MRS at $s = T = 0$ as $-(V_s/V_c)^\circ$. These are denoted by points A and B respectively in figure 1. If $(U_s/U_c)^\circ > -(V_s/V_c)^\circ$ an interior solution for transfers and services takes place (panel (a)) and otherwise it does not (panel (b)). We can think of the upward-sloping curve as the child's supply curve of services, and the downward-sloping curve as the parent's demand curve for services. An increase in child earnings raises his supply curve and lowers the probability that a transfer takes place. An increase in parent earnings raises his demand for services and increases the probability of a positive transfer.[9] With parental income held constant, there exists a

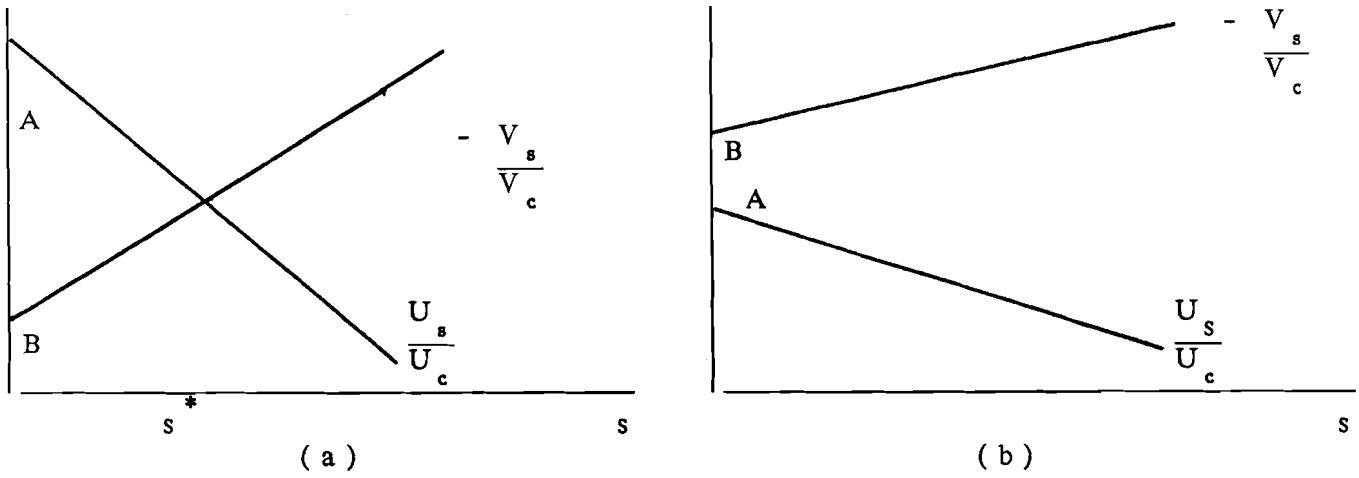

Figure 1

Interior and Zero Solutions for Services and Transfers

unique value of I_k such that $(U_s/U_c)^\circ = -(V_s/V_c)^\circ$. Denote this value as I_k'. A transfer takes place if $I_k < I_k'$, and otherwise it does not.

Turning to the effective motive for transfers, define the child's utility gain from the transfer-service relationship as

$$\Delta V = V(c_k^*, s^*) - V_o \tag{19}$$

where stars denote equilibrium values. It can be shown that $\partial(\Delta V)/\partial I_k < 0$. Define the minimum value of I_k such that $\Delta V = 0$ as $\bar{I}_k$. An altruistically motivated transfer will take place if $I_k < \bar{I}_k$.

It remains to be shown that $\bar{I}_k \leq I_k'$. Assume otherwise. Then there exists a value $\bar{\bar{I}}$ on the open interval $(I_k', \bar{I}_k)$ such that $T > 0$ but $s = 0$. Define U_s, V_s at $s = 0$ as U_s°, V_s° and U_c, V_c at $T = 0$ as U_c°, V_c°. With $T > 0$ but $s = 0$, the Kuhn-Tucker conditions imply that

$$\frac{U_s^\circ}{U_c} \geq -\frac{V_s^\circ}{V_c} \tag{20}$$

With decreasing marginal utility of consumption, replacing U_c, V_c by U_c°, V_c° changes (20) to a strict inequality, which contradicts $s = 0$. Therefore $\bar{I}_k \leq I_k'$.

We can now summarize the effects of balanced-budget redistribution on private transfers and services. The values of transfers and services are plotted against $\tau_k - \tau_p$ in figure 2.[10] Starting from the origin, private transfers are crowded out dollar-for-dollar. Further increases in $\tau_k - \tau_p$ crowd out the incidence of altruistically motivated transfers and increase the number of exchange-motivated transfers. In the exchange regime, transfers can either rise or fall with $\tau_k - \tau_p$. If they do both, transfers will follow the inverted U-shaped pattern in panel b of figure 2. Beyond this segment, transfers and services cease altogether. Public income redistribution crowds

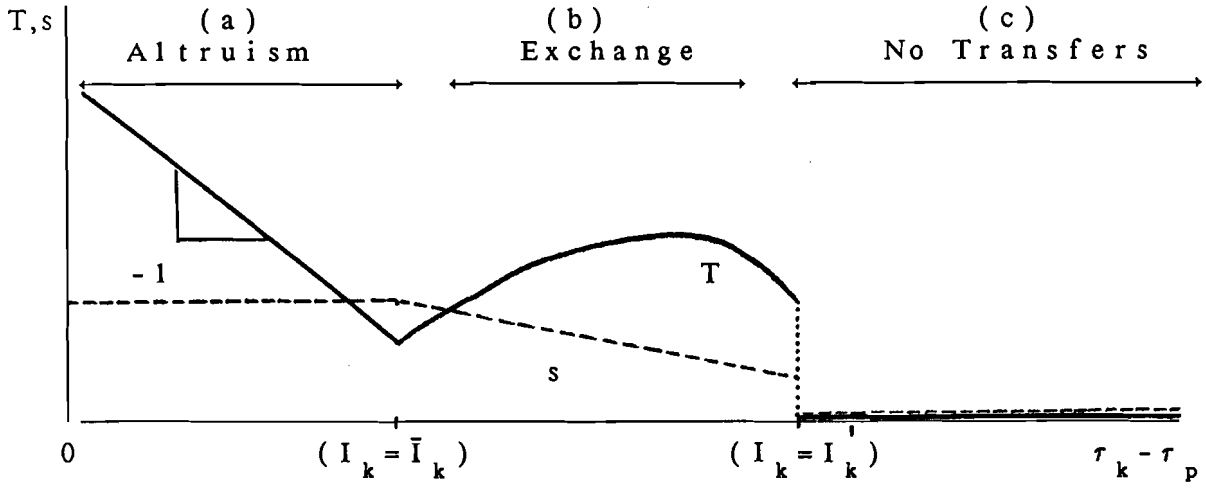

Figure 2

The Effects of Balanced-Budget Redistribution
on Transfers and Services

out private-transfer incidence, but need not crowd out private-transfer levels.

III. Empirical Implementation

The extent to which public transfers crowd out (or crowd in) private transfers is an empirical question. This question is addressed using the PCPP data, which contains information on both public and private interfamily transfers. I focus on poverty rates as a measure of the effectiveness of public transfers. The aim of this section is to determine the poverty-rate counterfactual that occurs when public transfers are eliminated and private interfamily transfers adjust to these conditions.

1. Data

Little information about inter vivos transfers was available before the collection of the PCPP data. The survey contained a module that asked families about private transfers. Though the primary aim was to measure retirement-related information, the survey covered a representative cross-section of 4,605 families. In addition to the private transfer information, the data set contains information on a variety of income sources from social insurance and public assistance programs, as well as demographic and labor market information, and income from financial assets. The survey information used below was collected in August 1979, and the data for income and transfers generally covers the first eight months of that year.[11]

The data set has three types of observations: households, family units, and persons. A household is defined as a group of persons living at the same address. Households were divided into 4,605 family units. A primary family unit contains a male head, his spouse, and children under 18 who live at home.[12] All others in the household are separate secondary family units. Eight-hundred and forty-six households had multiple family units, and the rest

contained one.

The survey measured private transfers between family units. Respondents reported payments received in the past month for food, mortgage payments, utility bills, and property taxes or property insurance. They then reported on a list of transfers received from January through August 1979. These transfers included bill payments (such as medical and legal fees) not reported in the monthly categories above, educational transfers, trust funds, stocks and bonds, gifts of durable goods or property or the value of use of these, cash, and miscellaneous transfers.[13] They reported transfers given to other family units during the same eight-month period, and the transfer categories match those for receipts. No transfers given were reported for the monthly items, however. In addition to the transfers reported in the questionnaire, secondary family units coresiding with a primary family unit who owns the home receive an implicit housing transfer.[14] Further, alimony and child support payments were reported in a separate module.

Since private transfer information is collected on a family unit basis, interspousal transfers and transfers to children under 18 were not measured. The survey does not follow the exact sources of transfer receipts or destinations of transfers given, but proxies for donor information are available and will be discussed below.

The public transfer income covered in the PCPP survey includes income from Aid to Families with Dependent Children (AFDC), Supplemental Security Income (SSI), Food Stamps, other conditional transfer income (such as housing assistance), income from training and education allowances (e.g., G. I. bill funds), veterans' benefits, Social Security Old-Age, Survivors and Disability Insurance (OASDI), and Railroad Retirement benefits. Together, these categories cover two-thirds of total expenditures for social insurance and public assistance.[15]

Of the original sample of 4,605 family units, 19 had missing information on earnings, 309 had public transfers coded as missing, and 21 had missing information on age of spouse. These observations (N = 349) were deleted, leaving a sample of 4,256 family units.

Twenty-eight percent (N = 1,195) of the family units received an inter vivos private transfer (i.e., a transfer from the PCPP list, alimony or child support payments, or an implicit housing transfer) and 34 percent (N = 1,445) received a public transfer from the list of transfers outlined above (see Appendix). The average private transfer for the sample was $333 ($1,189 among recipients) and the average public transfer was $823 ($2,421 among recipients). Nine percent (N = 375) received both a private and a public transfer. Private transfer income accounts for 29 percent of total (private plus public) transfer income. This figure squares with the breakdown of public and private transfers for 1979 reported in Lampman and Smeeding (1983).[16]

Despite this consistency, the PCPP data must be interpreted with care. The questionnaire was lengthy and complex, and the final data tapes contain some 1,200 variables per family unit. The number of categories for transfers received exceeds those of transfers given, so that comparing aggregate transfers given and received to gauge reporting bias is not possible. It is possible, however, to compare gifts and receipts within narrow categories, and there is some evidence that respondents tended to overstate the former in some instances. For example, for "gifts of durable goods," where some respondent judgment is required, the average value reported given is double that received; for other categories (e.g., cash) the two figures are very close (Cox and Raines, 1985).[17]

Despite the possibility of reporting bias and the limitations noted above, the PCPP data are the only source of information for comprehensive measures of inter vivos transfers received and public transfers, and the

survey offers a unique opportunity to explore the connection between the two.[18]

2. Specification

We start with a specification of the private transfer decision. Both the altruism and exchange models predict that the probability of a transfer taking place is inversely related to the income of potential recipients and positively related to that of donors. Denote current resources of the potential recipient as I_k^1 (earnings and financial income) and I_k^2 (a vector of public transfer income variables).

Exchange considerations imply that demographic characteristics of the family unit may be an important determinant of transfers. Evidence from the kinship-interaction literature indicates a positive female-male differential in the frequency of exchange (Hill, 1970; Leigh, 1982; Stoller, 1983). Female adult children provide more services to their parents (e.g., companionship, help with home production, help during illness) than males. Marital status is also an important determinant of exchange (Tomes, 1981; Stoller, 1983). Married family units are found to provide less assistance to other households than single ones.

Further, recent evidence suggests that capital market imperfections may play an important role in transfer behavior (Cox, 1987b). Holding current resources $I_k^1 + I_k^2$ constant, higher permanent income of potential recipients increases their desired consumption. If capital markets are imperfect, an increase in permanent income raises the probability of a transfer, and the timing of inter vivos transfers will be important. The considerations imply that permanent income variables--education, age, and race (as well as marital status and gender)--may play a role in the transfer decision. Along with indicators or recipient and donor resources, therefore, I enter these

additional variables, denoted by the vector X, in the transfer decision function. Indexing family units by h and adding a stochastic component, we can express the latent variable that determines the transfer decision as

$$t_h = b_0 + b_1 I_{ph} + b_2 I^1_{kh} + b_3 I^2_{kh} + b_4 X + \epsilon_h \qquad (21)$$

and $T_h > 0$ iff $t_h > 0$

$T = 0$ otherwise.

Regardless of transfer motives, the hypothesized values for the coefficients b_2 and b_3 are negative. Under altruism, $I^1_{kh} + I^2_{kh}$ is inversely related to pre-private transfer marginal utility of recipient consumption, and therefore inversely related to the probability of transfer receipt. With exchange, the current resources of the potential recipient are positively related to the supply price of services and inversely related to the probability of a transfer.

The motives for private transfers are crucial in determining the distributional implications of public transfers. One way to infer transfer motives is to focus on the possible sign difference in the equation for transfer amounts. Under altruism, current resources, I^1_k and I^2_k, are predicted to cause a reduction in private transfer amounts. Under exchange, an increase in these can increase private transfer amounts.[19]

A basic estimating equation for transfer amounts is the following:

$$T_h = c_0 + c_1 I_{ph} + c_2 I^1_{kh} + c_3 I^2_{kh} + b_4 X + E(\eta_h \mid T > 0) \qquad (22)$$

where η_h is a random error component.

The estimates of b_3 and c_3 can be used to construct the zero-public-transfer counterfactual. Before starting this task, however, three specification issues must be addressed.

First, as noted above, the exact sources and destinations of transfers are not available in the PCPP data. As a first step, we use the average area income, derived from Census data, as a proxy for donor income.[20] The donor-income issue is discussed further in later sections.

Second, the combined-regime model of transfers suggests a possible nonlinear relationship between recipient income and transfers. Nonlinearities are discussed further in a later section.

Third, entering actual public assistance income on the right-hand side of (21) and (22) could impart serious simultaneity bias to the coefficients b_3 and c_3. In 1979, for example, federal legislation required that for every dollar of child support payments or other, voluntary interfamily transfers, AFDC payments be reduced by $0.67. Supplemental Security Income payments are reduced by a third when the recipient coresides with others as a secondary family unit.[21] Food Stamp benefits are determined by a test involving income, net of "nondiscretionary" expenses and assets.[22] The income definition includes alimony and child support payments.

Since actual means-tested public assistance income is expected to be inversely related to private transfers because of program rules, I use an instrumental variables approach, substituting predicted benefits for actual benefit levels in equations (21) and (22).

3. Expected Wages and Estimated Public Assistance Benefits

Consider first the estimation of expected AFDC benefits. Participation is determined by a comparison of well-being on and off AFDC (Robins and West, 1980; Moffitt, 1983; Blank, 1985; Robins, 1986). This calculation in turn depends on state-specific benefit guarantees and income-disregard policies, individual earning potential, number of children, and preferences.

The AFDC benefit formula (in 1979) can be characterized by

$$\text{Benefit} = \text{Guarantee} - (\text{Tax Rate}) \times (\text{Earnings} + \text{Other Income} - 30) \quad (23)$$

where the guarantee is the maximum benefit available and the tax rate reflects state differences in allowable income deductions and deduction levels. Though income is taxed at a rate of two-thirds, the actual implicit tax rate is lower once state-specific deductions are taken into account.[23] Federal legislation requires that the first $30 of income be disregarded before calculating benefit reductions.

Before proceeding with estimating expected benefits, earning potential must be gauged to impute wage rates to non-earners. A wage function adjusted for sample selection bias associated with using earners only (Heckman, 1979) is used to generate expected wage rates. The probit equation for nonparticipation in the labor force (i.e., wage = 0) for women is given in column 1 of table 1. Women with low education and elderly women are more likely to be out of the labor force, but surprisingly, for this sample, being married and having young children are positively related to participation.

The wage regression for women is presented in table 2, column 1. Wage rates are expressed as a cubic function of age, education dummies, occupation, region, race/ethnicity, and marital status. The variables all have the expected sign pattern, and the selectivity variable is not significant, consistent with findings elsewhere.[24] The occupational category "services" was assumed for non-earners, and unconditional wage expectations (i.e., not including sample-selection effects) are used in the imputations.

We turn to the equations used to generate predicted AFDC benefits (table 3). A dichotomous variable for AFDC participation is regressed on the after-tax predicted wage, the benefit guarantee net of non-wage after-tax income, education, age, family size, and race/ethnicity and region dummies. The state-specific tax-rate data are taken from Blank (1985). The sample of

potential eligibles is restricted to mothers with no spouse present, with non-wage (retirement plus financial) income less than $5,000 during the eight-month period January-August, 1979.[25]

The results in table 3 indicate a positive but marginally significant relationship between AFDC participation and the guarantee net of after-tax other income. A positive but insignificant relationship between the predicted after-tax wage rate and participation is found, contrary to other studies (e.g., Barr and Hall, 1981; Robins, 1986). My sample size is much smaller than these others, which may account for the discrepancy. The other effects are completely consistent with those found by Robins (1986), who uses a similar specification. AFDC participation is inversely related to age and education, positively related to family size, and higher for black family units and for those living in the Northeast or North Central regions.

The equation used to predict AFDC benefit levels is presented in column 3 of table 3. The average benefit for this sample of recipients was $1,700 over the first eight months of 1979. This generalized Tobit equation contains the same vector of explanatory variables, except for the region dummies.[26] The coefficients follow the same sign pattern as those in the participation equation, with the exception of the after-tax wage rate, which is inversely (but not significantly) related to benefit levels.

The next set of estimates to examine are those used to generate predicted values of benefits from a set of other public assistance programs: Food Stamps, Supplemental Security Income, other conditional public transfer income, and general assistance.[27] The participation equation for these programs is estimated for the sample of family units with earnings less than $12,000 during January-August 1979 whose stock of financial assets was less than $5,000.

Table 1

Probit Analysis -- Dependent Variable: No Wages[a]

	Women		Men	
Variable	(1) Estimated Coefficient	(2) Asymptotic t-value	(3) Estimated Coefficient	(4) Asymptotic t-value
Constant	-0.948	-10.63	-0.321	-13.00
Education: Elementary or Less	0.820	10.95	0.767	9.37
Age < 22	-0.562	-4.63	-0.486	-3.33
Age > 65	1.813	21.06	1.824	20.57
Married	-0.447	-7.17	-0.430	-5.56
Black	0.278	3.34	0.147	1.43
Hispanic	-0.245	-1.81	-0.234	-1.45
Financial Income	0.522×10^{-5}	1.64	-0.102×10^{-4}	-1.24
Region:				
Northeast	0.060	0.61	0.112	1.01
North Central	-0.003	-0.03	0.126	1.15
South	0.018	0.19	0.185	1.77
Number of Children:				
Under Age 2	-0.204	-1.62	---	---
Aged 2 to 5	-0.313	-3.05	---	---
Aged 6 to 12	-0.251	-4.42	---	---
Dependent Variable Count	0	2669	0	2470
	1	714	1	448
Observations		3883		2918
ℓn L		-1104.5		-855.1

[a]Dependent variable = 1 if wage = 0, 0 otherwise.

Table 2

Least Squares Adjusted for Sample Selection Bias --
Dependent Variable: Log of Hourly Wage

	Women		Men	
Variable	(1) Estimated Coefficient	(2) t-value	(3) Estimated Coefficient	(4) t-value
Constant	0.637	2.23	-0.402	-1.46
Age	0.066	3.50	0.098	5.35
Age Squared	-0.001	-2.71	-0.002	-3.63
Age Cubed	0.703×10^{-5}	2.09	0.787×10^{-5}	2.35
Education:				
Some High School	0.038	0.69	0.003	0.06
High School Grad.	0.178	3.40	0.158	3.57
Some College	0.303	5.41	0.214	4.49
College Grad.	0.318	2.09	0.301	5.84
Grad/Professional School	0.443	5.19	0.212	3.37
Occupation:				
Professional/ Technical	-0.123	-3.33	0.093	2.65
Managerial	-0.131	-2.51	0.130	3.69
Sales	-0.415	-8.26	0.081	1.81
Clerical	-0.355	-12.88	-0.092	-2.11
Craftsperson	-0.212	-3.81	-0.001	-0.05
Operative	-0.293	-6.91	-0.018	-0.54
Laborer	-0.388	-4.41	-0.014	-0.33
Farm	-0.101	-0.98	-0.117	-1.85

(table continued)

Table 2 (continued)

Variable	Women (1) Estimated Coefficient	Women (2) t-value	Men (3) Estimated Coefficient	Men (4) t-value
Services	-0.419	-12.31	-0.206	-5.45
Private Household	-0.505	-5.06	---	---
Region:				
Northeast	-0.070	-2.09	-0.005	-0.18
North Central	-0.027	-0.87	0.107	3.86
South	-0.096	-3.06	-0.029	-1.06
Black	-0.034	-0.92	-0.086	-2.82
Hispanic	-0.012	-0.25	-0.037	-0.90
Married	0.159	4.98	0.068	2.37
Selectivity Variable	-0.066	-1.09	0.179	3.75
R-squared	0.32		0.29	
F-statistic	28.60		40.78	
Observations	2669		2470	

Note: The reference categories for the dummy variables are as follows: Education -- none of elementary, Occupation -- Directory of Occupational Title code not available, Region -- West. The selectivity variables are constructed from probit estimates in table 1. The selectivity variable (Inverse Mill's ratio) is the ratio of the ordinate of the standard normal density to the estimated probability of sample inclusion. The selectivity variables take on strictly positive values.

Table 3

Estimates of AFDC Participation and Benefit Levels

Variable	Participation[a] (1) Estimated Coefficient	(2) Asymptotic t-value	Amount[b] (3) Estimated Coefficient	(4) Asymptotic t-value
Constant	-0.151	-0.23	440.247	0.65
After-Tax Wage Rate	0.049	0.40	-53.985	-0.49
Benefit Guarantee Minus After-Tax Other Income[c]	0.001	1.51	3.197	3.66
Years of Education	-0.106	-2.70	-52.380	-1.01
Age	-0.012	-1.93	-10.505	-1.43
Family Size	0.254	3.47	335.011	3.97
Black	0.529	3.45	428.409	2.23
Hispanic	-0.348	-1.01	362.982	-0.84
Region:				
Northeast	0.604	2.54	---	---
North Central	0.532	2.32	---	---
South	-0.079	-0.27	---	---
Selectivity Variable	---	---	17.683	0.04
Dependent Variable Count	0	184	R-squared	0.29
	1	161	F-statistic	7.81
Observations		345		161
ℓnL		-206.63		

[a]Dependent variable = 1 if family unit received AFDC benefits, 0 otherwise.

[b]Dependent variable -- AFDC benefits received from January through August, 1979.

[c]Other income is financial plus retirement income.

First I replicate for men the wage-imputation procedure used above. These results are given in tables 1 and 2, columns 3 and 4. The results for labor force participation and wages generally mirror the patterns found for women, with two important exceptions. First, consistent with findings elsewhere, race differences in wages exist for men but not women. Second, the coefficient on the selectivity variable in table 2, column 3, indicates large positive self-selection effects for the wages of men.

Expected wages for both men and women are entered as regressors in the other-public-assistance participation equation in table 4. Other explanatory variables are education, gender, age of family unit head, family size, race/ethnic dummies, the stock of financial wealth, and region dummies.

The results in table 4, column 1, indicate that female-headed family units are much more likely to participate in these public assistance programs than male-headed units. Unlike AFDC, participation probabilities rise with age. Recall that benefits in table 4 include SSI payments, which are targeted toward the aged and disabled. Participation probabilities are lower for the elderly (age $\geq$ 65) than for prime-aged family units, however. Other things equal, participation probabilities increase with family size and are higher for married, black, and Hispanic family units. Predicted wages are not statistically significant, but the size of the stock of financial assets enters the participation equation negatively and is significant. A $1,000 increase in financial assets lowers the participation probability by about a percentage point. Curiously, education enters with opposite signs by gender: positive for males and negative for females. With imputed wages constant, education could be picking up program-knowledge effects, but it is unclear why this would be more important for males than females.

The equation used to predict benefit levels is presented in column 3 of table 4. The sign pattern for the coefficients matches that of the

Table 4

Estimates of Participation in Other Public Assistance Programs and Benefit Levels

Variable	Participation[a] (1) Estimated Coefficient	Participation[a] (2) Asymptotic t-value	Amount[b] (3) Estimated Coefficient	Amount[b] (4) Asymptotic t-value
Constant	-2.388	-6.55	-3514.440	1.50
Wage Rate, Male	-0.061	-0.64	148.543	0.62
Wage Rate, Female	0.017	0.44	-32.429	-0.40
Years of Education:				
Male	0.049	1.90	89.062	1.29
Female	-0.076	-4.18	-38.312	-0.69
Female-Headed Family Unit	1.454	4.41	1961.220	1.65
Age, Family Unit Head	0.020	5.88	30.584	2.14
$60 \leq Age \leq 64$	0.002	0.01	-165.567	-0.42
$Age \geq 65$	-0.430	-2.52	-406.375	-0.88
Family Size	0.340	7.90	357.414	1.85
Married	1.115	5.06	1117.830	1.44
Black	0.634	6.70	736.902	1.78
Hispanic	0.202	1.43	223.687	0.68
Financial Assets	-0.248×10^{-3}	-6.05	-0.239	-1.22

(table continued)

Table 4 (continued)

Variable	Participation[a] (1) Estimated Coefficient	Participation[a] (2) Asymptotic t-value	Amount[b] (3) Estimated Coefficient	Amount[b] (4) Asymptotic t-value
Region:				
Northeast	0.141	1.22	---	---
North Central	0.065	0.56	---	---
South	-0.159	-1.39	---	---
Selectivity Variable	---	---	963.156	1.08
Dependent Variable Count	0	1147	R-squared	0.06
	1	413	F-statistic	1.89
Observations		1560		413

[a]Probit: Dependent variable = 1 if Food Stamps, SSI or other conditional Public Assistance income received, 0 otherwise.

[b]OLS: Dependent variable -- amounts received from Food Stamps, SSI, and other conditional income from January through August, 1979.

participation equation, except those for the imputed wage rates, which are not significant in either the participation or benefit-amount equations.

Two other public transfer categories are used in the estimates of transfer functions below. The first is OASDI benefits. The availability of interfamily transfers from non-spouses to persons aged 18 or over (i.e., the type of transfer counted in the PCPP survey) does not affect eligibility requirements or benefit rates of OASDI. For this reason, actual, rather than predicted, Social Security benefits will be entered in the private-transfer functions estimated below.[28]

The second group of public transfers is a set of miscellaneous transfers: benefits for veterans, Railroad Retirement benefits, and payments from the G.I. Bill and training programs.[29] These benefits are also treated as exogenous in the private transfer functions.

4. Transfer Function Estimates

Estimates of equation (20), the probit equation for private transfers received, are presented in column 1 of table 5. A private transfer receipt occurs if the family unit receives a transfer from the list of transfers reported in the PCPP, alimony or child support payments, or an in-kind transfer in the form of shared living arrangements with a primary family unit who owns a home. The probit equation contains family-unit income from non-public sources (earnings plus financial income), public transfer income from the four sources discussed above, education, a vector of demographic variables (gender, age, marital status, and race/Hispanic dummies), and expected inheritance and debts owed to other family units. The last two variables proxy the closeness of financial ties to other family units.

The predicted values of AFDC benefits and other-public-assistance income are entered as regressors. Denoting these variables by the PUBTRAN1 and

Table 5

Transfer Function Estimates: Transfers Received
(Asymtotic t-values or t-statistics in parentheses.)

	Probit[a]	OLS[b]	
	(1)	(2)	(3)
Variables	Estimated Coefficient	Estimated Coefficient	Estimated[c] Coefficient
Constant	0.002 (0.01)	-3419.350 (-3.47)	-1264.930 (-3.45)
Family Unit Income	-0.149×10^{-4} (-6.03)	-0.025 (-1.93)	0.002 (0.35)
Years of Education Family Unit Head	0.003 (0.33)	108.810 (5.22)	96.579 (4.56)
Female-Headed Family Unit	0.279 (4.62)	646.482 (2.66)	176.347 (1.46)
Age, Family Unit Head	-0.023 (-14.42)	-43.776 (-2.34)	-1.474 (-0.39)
Married	-0.665 (-9.98)	-1387.38 (-2.34)	-24.052 (-0.14)
Black	-0.230 (-3.11)	-786.642 (-3.14)	-340.807 (-2.01)
Hispanic	-0.077 (-0.78)	-200.060 (-0.89)	-47.179 (-0.21)
Area Income	0.280×10^{-4} (7.27)	0.095 (4.21)	0.048 (6.12)
AFDC Benefits	-0.320×10^{-3} (-3.58)	0.031 (0.10)	0.569 (2.92)
Other Public Assistance Income	0.152×10^{-3} (1.30)	0.582 (1.89)	0.277 (0.86)
OASDI Benefits	-0.349×10^{-4} (-1.32)	-0.125 (-1.71)	-0.050 (-0.70)

(table continued)

Table 5 (continued)

Variables	Probit[a] (1) Estimated Coefficient	OLS[b] (2) Estimated Coefficient	(3) Estimated[c] Coefficient
Miscellaneous Public Transfer Income	-0.373×10^{-5} (-0.12)	-0.020 (-0.22)	-0.014 (-0.16)
Expected Inheritance	0.573×10^{-6} (1.40)	--- ---	--- ---
Debts to Other Family Units	0.310×10^{-5} (0.35)	--- ---	--- ---
Monthly Transfer[d]	--- ---	-611.722 (-4.90)	-609.882 (-4.74)
Selectivity Variable	--- ---	2718.570 (2.37)	--- ---
Dependent Variable Count	0 3061 1 1195	R^2 0.11 F 10.90	0.11 11.30
Observations	4256	1195	1195

[a]Dependent Variable = 1 if private transfer received, 0 otherwise.

[b]Dependent Variable -- transfer amount received.

[c]Selectivity variable omitted.

[d]Monthly Transfer = 1 if only a transfers from a monthly category received, 0 otherwise.

PUBTRAN2, respectively, the predicted values for these benefits are given by

$$\text{Prob}(\text{PUBTRAN}_i>0)\times E(\text{PUBTRAN}_i \mid Z_i, \text{PUBTRAN}_i>0) \quad i = 1,2 \quad (24)$$

where Z_i $i = 1,2$ denotes the vector of explanatory variables used in column 3 of tables 3 and 4, and E is the expectations operator. The public transfer probabilities are generated from the probit equations in tables 3 and 4.

The coefficients of three of the four public transfer variables are negative in the probit equation. The coefficient for predicted AFDC benefits in negative and significant at the .01 level. A $280 increase in predicted AFDC benefits (one standard deviation) reduces the probability of receiving a private transfer by 3 percentage points. The point estimate for the OASDI coefficient indicates that a one-standard-deviation increase in benefits ($1,220) reduces the probability of a private transfer by 1.5 percentage points. This coefficient is not precisely measured, however (significant at the .2 level). The coefficient for miscellaneous transfer income is negative, but insignificant and negligible. Finally, the coefficient for the predicted value of other-public-assistance income is actually positive (significant at the .2 level), which contradicts both exchange and altruism. The point estimate indicates that one-standard-deviation ($250) increase in predicted other-public-assistance income raises the probability of a private transfer by 1.3 percentage points.

The coefficient for family unit income (i.e., non-public transfer income) is negative and that of area income is positive, and each is significant at any popular level. The area income variable that is used as a proxy for donor's income requires some justification. First, donors and recipients of inter vivos transfers must be geographically close. Second, donor income must track area income reasonably well. The PCPP data indicate that both of these criteria are met. Recipients of transfers from the eight-month categories

were asked to report whether transfers were received by donors living in the immediate area. Of the 358 recipients with non-missing values for this question, three-quarters reported receiving a transfer from the same metropolitan area. Transfers from the monthly categories (e.g., for food) are probably more likely to have originated from the immediate area, and transfers of shared living arrangements (N = 488) originate from the same household.

With regard to the second criterion, income from family units who reported giving a transfer from the PCPP list (INCGIVE) was regressed on the area income variable (AREAINC). The results are as follows:

$$\underset{\quad (-\ 2.20)\quad (10.42)}{\text{INCGIVE} = -\ 8903.48 + 1.47\ (\text{AREAINC})} \qquad (25)$$

$$N = 727,\ R^2 = .13,\ F = 108.55.$$

The coefficient of AREAINC is highly significant.

The demographic variables for the probit equation for transfers received indicate that transfers are targeted toward young, unmarried family units. All else equal, female-headed family units are more likely to receive, and blacks and Hispanics are less likely to receive, a transfer.

Generalized Tobit equations for transfer amounts are presented in column (2) of table 5. The vector of explanatory variables are the same as that used in the probit equation, except that expected-inheritance and debts-owed variables are not included.[30] The sign pattern for the coefficients in the transfer amount equation match those of the probit equation, except for that of predicted AFDC benefits, which is positive but insignificant.

Simple OLS estimates for transfers received are presented in column 3 of table 5. The OLS coefficients are each lower in absolute value than the selectivity-corrected coefficients, with one exception. In this specification, the coefficient of predicted AFDC benefits is positive and

large, indicating a 57-cent increase in private transfers per additional dollar of predicted benefits.

5. Poverty Rate Counterfactuals

In this section the transfer functions in table 5 are used to gauge the private-transfer response to the elimination of public assistance and social insurance programs. I am interested in determining the maximum possible private behavioral response, so that, whenever possible, I assume background conditions that maximize private-transfer adjustments. The first step is to measure the number of additional private transfers that would take place if these programs were eliminated. In other words, setting expected public transfer payments equal to zero, what is the predicted proportion of private transfers received?

The results of these calculations are summarized below.

Benefits Eliminated	Predicted Change in Number of Transfers Taking Place
AFDC	+34
Other Public Assistance Income	-21
OASDI	+30
Miscellaneous Public Transfers	+ 1
Total	+44

The estimates from the private-transfer probit indicate that, if public transfers were eliminated, 44 additional family units would receive transfers, an increase of 44/1,195 = 3.7 percent. Note that these calculations do not take into account possible labor supply responses, induced changes in marital status, or increases in disposable income from tax reductions. Consideration of each of these effects would likely lower the number of additional

transfers, since private transfers are inversely related to earnings and targeted toward unmarried family units.

Another effect not yet considered is the change in the behavior of potential donors from the elimination of the Social Security payroll tax and taxes used to finance other transfer programs. A probit equation for transfers given is presented in table 6, columns 1 and 2. Transfers given are those from the PCPP list plus implicit housing transfers. The probit equation contains earnings, non-wage income, a vector of demographic variables, expected inheritance, and debts to other family units. The coefficient for earnings is positive and significant at any popular level. This coefficient will be used to gauge the increase in transfers given from the tax reduction associated with the elimination of public transfer programs. This income coefficient for transfer amounts given is negligible and insignificant (table 6, columns 3 and 4) and is ignored in the calculations below.

Assume that the Social Security payroll tax is fully shifted to workers, and ignore the taxable maximum ($22,900 in 1979). The combined payroll tax in 1979 was 10.16 percent. Eliminating the payroll tax increases disposable income by 11.30 percent. Assume that adding tax reductions associated with elimination of other public transfer programs results in a total increase in disposable income of 15 percent.

The coefficient for earnings in the probit for transfers given implies that a 15 percent increase in earnings is associated with an additional 51 transfers given--an increase of (51/1,060) = 4.8 percent.

With these figures in hand, we can gauge the maximum increase in private-transfer incidence from the elimination of public transfer programs. Assume that the set of additional transfers generated from the recipient probit and the donor probit are nonoverlapping. Further, let us ignore the anomalous transfers that are "crowded out" from the elimination of other

Table 6

Transfer Function Estimates: Transfers Given

Variable	Probit[a] (1) Estimated Coefficient	Probit[a] (2) Asymptotic t-value	OLS[b] (3) Estimated Coefficient	OLS[b] (4) Asymptotic t-value
Constant	-2.330	-12.74	1426.300	0.14
Earnings	0.163×10^{-4}	8.16	-0.004	-0.09
Non-wage Income	0.199×10^{-5}	0.51	0.017	0.86
Years of Education Family Unit Head	0.026	3.02	122.482	0.86
Female-Headed Family Unit	-0.022	-0.35	194.763	0.21
Age, Family Unit Head	0.042	6.03	30.475	0.19
Age Squared	-0.331×10^{-3}	-4.47	-0.164	-0.11
Married	0.002	0.03	-9.733	-0.01
Black	-0.066	-0.97	-677.151	-0.58
Hispanic	0.049	0.51	-359.761	-0.28
Expected Inheritance	0.836×10^{-6}	2.03	---	---
Debts to Other Family Units	0.165×10^{-4}	1.97	---	---
Selectivity Variable	---	---	-1836.170	-0.47
Dependent Variable Count	0	3196	R-squared	0.01
	1	1060	F-statistic	1.06
Observations		4256		724
ℓnL		-2240.0		

[a]Dependent variable = 1 if private transfer given, 0 otherwise.

[b]Dependent variable -- transfer amount given. Sample: family units reporting transfers given from the PCPP transfer list.

public assistance (N = 21). The number of additional transfers in this case is 116. Using the original number of recipients, 1,195, as a base, the percentage increase in private transfer incidence is 116/1,195 = 9.7 percent.

Now we can address the poverty-rate issue. I define the private-transfer counterfactual (PTC) poverty rate as the rate that is obtained if public transfer programs are eliminated, but private-transfer responses to their elimination are accounted for. The no-response counterfactual (NRC) is the poverty rate that corresponds to a simple subtraction of public transfer income from total income. The NRC is the poverty rate that is calculated in most studies of the anti-poverty effectiveness of public transfers. Finally, denote the actual poverty rate as A.

Recall from the theoretical section above that altruistic transfers with widespread linkages imply that PTC = A. That is, public transfers have no effect on poverty rates. At the opposite end of the spectrum, if accounting for private response is not empirically important, then PTC = NRC.

Poverty rates are calculated for the sample of family units using official poverty-rate cutoffs for 1979 (U. S. Bureau of the Census, 1981). These poverty-level cutoffs vary according to age (elderly versus nonelderly), whether the household is headed by a female, and the number of adults and children in the income unit. Poverty cutoffs are designed for application to households but here they are used for family units, so that a secondary family unit coresiding with a primary unit is treated as a separate spending unit. The value of implicit housing transfers from the primary unit are counted as secondary-unit income for poverty-rate calculations. Otherwise, secondary family units are treated the same as independent family units (i.e., family units that are separate households). This causes the poverty-rate measures presented below to be higher than the official, household-based calculations. The poverty rate for the PCPP sample of family units is 17.2 percent.[31]

The private transfer counterfactual was constructed in the following way. First, public transfer income is subtracted from total income (which includes private transfer income). Next, the maximum number of predicted additional private transfers (N = 116) is assumed to take place. I assume that these added transfers are targeted toward family units who received public transfers. The group who received public transfers (but not private ones) is ranked according to probability of private transfer receipt. This probability is determined from the probit equation in table 5, column 1. The top 116 are given imputed private transfers. The imputations are determined from the equation for private transfer amounts (table 5, column 2). In sum, public transfers are taken away, and the maximum additional private transfers are added. The poverty rate corresponding to this experiment is the private-transfer-counterfactual (PTC) poverty rate. Again, the poverty rate associated with the no-response- counterfactual (NRC) is simply the rate that is obtained from subtracting public transfers. The results of these calculations is shown below:

	Poverty Rate	Number in Poverty
Actual	17.2%	703
Subtracting Public Transfers		
No Response Counterfactual	27.4	1,166
Private Transfer Counterfactual	27.1	1,154

The results above indicate that the difference between NRC and PTC is extremely small. The number of family units in poverty under the NRC is only one percent greater than the number under the PTC. Since this experiment was designed to elicit the maximum private transfer response, the conjecture that public transfer programs are ineffective because of pervasive altruistic

safety nets is decisively rejected. These results indicate that anti-poverty effectiveness studies that implicitly assume no private transfer response are likely to be very close to the mark.

In terms of aggregate figures, removing the public transfer categories considered here would have reduced public transfers by over $140 billion in 1979. The simulations above indicate that private interfamily transfers would have increased by no more than about $6 billion in response.

6. Public Income Redistribution and Private Transfer Motives

The empirical work above demonstrates that public income transfers have powerful redistributive effects. The evidence refutes the strongest form of the altruist hypothesis, which is that pervasive private "safety nets" exist. We can push the analysis further by looking at the empirical results for transfers received to infer transfer motives. Recall from the theoretical section above that the altruist hypothesis predicts a large negative relationship between recipient income and transfers received, given an interior solution for transfers.

The selectivity-adjusted equation for transfer amounts received (table 5, column 2) shows a positive effect for AFDC benefits and other public assistance income, and negative effects of OASDI and miscellaneous public transfers. Only the other public assistance and OASDI coefficients are significant at the .1 level. The coefficient for AFDC benefits in the OLS estimates is positive, large, and statistically significant. Thus the coefficients for the public transfer variables indicate mixed results regarding transfer motives.

The coefficient for non-public family-unit income is negative and nearly significant at the .05 level, but it is small. A dollar increase in this income source is associated with only a 2.5 cent reduction in private

transfers. Further, educational transfers and alimony and child-support payments are likely to be inversely related to earnings for reasons other than altruism. College students earn less because of demands on their time; alimony and child support are likely to be set lower for women with high incomes. On the other hand, implicit housing transfers could also be positively related to recipient incomes for reasons other than exchange.

I estimated an equation for inter vivos transfer amounts received from the PCPP list for non-students, Cox (1987a), and found a positive relationship between family income and transfers received (coeff. = 0.027, t = 4.29). This result is impossible under altruism. Further, outside evidence suggests that this relationship is not due to omitted-variable bias, to the extent that area income is an imperfect proxy donor's income. A survey by Becker and Tomes (1986) summarizes evidence on the relationship between incomes of fathers and sons. The relationship is weak. In most of the studies, the elasticity of son's earnings with respect to father's earnings is less than .2. Combining this outside evidence with my empirical estimates for the relationship between recipient income and transfers (even the negative estimate from table 5, column 2) implies, under the altruism hypothesis, weighting parameters for recipient utility (U_v) that are incredibly large.[32] In addition, using the income of primary family units as a donor-income proxy for secondary units does not alter the results appreciably.[33]

Transfers are targeted toward unmarried, female-headed family units, and this matches the pattern for interfamily exchange found by sociologists (e.g., Leigh, 1982; Stoller, 1983). These findings support the exchange hypothesis; altruistic explanations are less compelling. If transfers are compensation for labor market discrimination against women, for example, the income variable should pick up this effect. Married couples should have more potential donors than non-married family units.[34] The existence of multiple

donors creates public-goods problems, but these problems are more likely to apply to transfer amounts than decisions.

This evidence suggests that the exchange model may be a more appropriate characterization of transfer behavior. Bernheim et al. (1985) also present evidence that supports the exchange model of transfers. Intergenerational contact is positively related to potential bequests for multiple-child families but not for single-child families, where competition for transfers is likely to be less.

If exchange is the dominant motive for interfamily transfers, the simple calculations of anti-poverty effectiveness will understate, rather than overstate, the impact of public income redistribution on the distribution of economic well-being.

One possible case in which this conclusion may not apply, however, is that of OASDI benefits. Recall from the theoretical model that the relationship between income and transfer receipts can be nonlinear. The nonlinearity can stem in part from crossing over from the altruistic regime, which may apply for low values of recipient income, to the exchange regime. The negative coefficient for OASDI in table 5, column 2, could be picking up this nonlinearity.[35] Financial transfers from younger to older generations are rare (Cox and Raines, 1985). Family units who receive these "reverse transfers" may be doing so poorly relative to their potential donors that the altruism model might be a more appropriate characterization of behavior for many of them.

IV. Conclusion

The idea that public income transfers supplant an all-pervasive web of altruistic, private safety nets receives absolutely no empirical support. Simple subtraction of public transfer income from other income yields a

poverty-rate counterfactual that is extremely close to the one that takes the private-transfer response into account. Since data sets containing comprehensive private-transfer information are scarce, most studies of anti-poverty effectiveness of public transfers use the subtraction technique. The accuracy of the technique for gauging poverty-rate counterfactuals is not affected appreciably by the fact that it ignores private behavioral responses to changes in public transfers.

The empirical results corroborate findings by Lampman and Smeeding (1983) that income shares devoted to private interfamily transfers diminished only slightly from 1935 to 1979, despite the enormous growth of public transfer programs. The findings in this paper also indicate a strong possibility that, due to exchange considerations, the distributional effects of some public transfer programs might actually be amplified by private behavioral responses. In this case, the subtraction technique would under- estimate the impact of public transfers on the distribution of well-being.

Appendix - Means of Variables Used in Analysis of Private-Transfer Receipts: Total Sample and Recipients

Variable	Total (N = 4,256)	Recipients (N = 1,195)
Family Unit Income	16,256	11,044
Years of Education, Family Unit Head	12.2	12.6
Female-Headed Family Unit (%)	32.0	50.2
Age, Family Unit Head	41.5	32.9
Married Family Units (%)	48.6	20.3
Black (%)	13.4	11.7
Hispanic (%)	5.5	5.5
Area Income	25,922	26,293
Total Public Transfers Received	823	635
Proportion Receiving	34.0	31.4
Mean among Recipients	2,421	2,922
AFDC Benefits	64	70
Proportion Receiving (%)	3.8	4.6
Mean among Recipients	1,700	1,536
Other Public Assistance Income	109	153
Proportion Receiving (%)	9.7	12.0
Mean among Recipients	1,124	1,274
OASDI Benefits	519	292
Proportion Receiving (%)	20.4	14.3
Mean among Recipients	2,548	2,049

(Appendix table continued)

Appendix (continued)

Variable	Total (N = 4,256)	Recipients (N = 1,195)
Miscellaneous Public Transfer Income	130	120
Proportion Receiving (%)	8.2	9.0
Mean among Recipients	1,583	1,329
Expected Inheritance	6,489	9,638
Debts to Other Family Units	201	181
Monthly Transfer (%)	5.5	19.5
Total Private Transfers Received	333	1,186
Proportion Receiving (%)	28.1	100.0
Mean among Recipients	1,186	1,186
Alimony and Child Support	52	184
Proportion Receiving (%)	3.4	12.1
Mean among Recipients	1,520	1,520
Educational Transfer	56	200
Proportion Receiving (%)	4.2	15.0
Mean among Recipients	1,336	1,336
Implicit Housing Transfers	69	246
Proportion Receiving (%)	11.5	40.8
Mean among Recipients	602	602
Other Private Transfers	156	555
Proportion Receiving (%)	17.8	63.3
Mean among Recipients	878	878

Notes

[1]Two of the papers surveyed also adjust for federal income and payroll taxes and count in-kind benefits (e.g., Food Stamps, Medicare, and Medicaid) along with cash transfers.

[2]Unrelated individuals are usually grouped together with families and weighting according to family size is not used. For an alternative approach see Danziger and Taussig (1979).

[3]Of course, individuals can adjust behavior on other margins in response to transfer programs. Labor supply and savings responses to public transfers have received a great deal of attention in the literature. These issues are reviewed in Danziger, Haveman, and Plotnick (1981).

[4]Exceptions are Lampman and Smeeding (1983), Kurz (1984), Cox and Raines (1985) and Cox (1987a, 1987b).

[5]The implied aggregate value of inter vivos transfers from the President's Commission on Pension Policy survey is $63 billion (Kurz, 1984). This figure does not include the implicit value of transfers from shared housing, interspousal transfers, or transfers to children under 18. The comparable figure for bequests, derived from figures reported in Kotlikoff and Summers (1981), is $40 billion.

[6]For an alternative, more general formulation, where services first raise then lower child utility, see Bernheim et al. (1985). Incorporating this approach would not change any of the results derived below as long as the child's marginal utility of services was negative in the neighborhood of the equilibrium.

[7]The separability assumption makes it possible to generate results that are observationally not equivalent to altruism. It is not needed to demonstrate further results below.

[8]The amplification result is sensitive to the nature of the bargaining arrangement. The parent-dominates assumption insures that the amplification result will be obtained for the child. It can be shown that Nash bargaining could produce either amplification or dampening of the impact of public income redistribution on well-being. The child-dominates framework produces a dampening effect. Regardless of bargaining framework, exchange differs from altruism because public income redistribution always affects the distribution of economic well-being.

[9]The only condition where these results would not be obtained is if the cross term V_{cs} was positive and large, or the cross term U_{cs} was negative and large.

[10]The curves in figure 2 are drawn for a separable utility function.

[11]The PCPP survey was actually a panel, but the second wave (1980) had an attrition rate of over 50 percent and did not collect detailed information on private transfers. Second-wave data are not used in this study.

[12]The original configuration of the data was such that the head of the family unit was defined as the one most familiar with family finances. In 63 percent of the 343 cases in which a married couple reported a female family head, the husband earned more than the wife. All 343 cases were redefined as male- headed family units.

[13]The PCPP list also included inheritances (N = 37). The definition of transfers below includes inter vivos transfers only.

[14]Implicit housing transfers are calculated by imputing a flow of services from the value of the primary unit's home. The annual rate of return used in the service-flow imputation is 7.6 percent (Musgrave, 1982). Housing services are divided by household size expressed on an eight-month basis. No separate category for room and board payments was included on the survey, but there is evidence that such payments were small. About 2 percent of all secondary family units indicated that they gave enough transfers to cover the imputed value of their transfers from shared living arrangements (Cox, 1987a).

[15]Major categories not covered are Medicare, Medicaid, Unemployment Insurance, and Worker's Compensation.

[16]The private and public transfer items used by Lampman and Smeeding are roughly consistent with those in the PCPP. They measured intra- as well as inter household private transfers. Their definition of public transfers counts cash transfers and in-kind food and housing transfers.

[17]For additional details about the PCPP survey and a facsimile of the transfer module of the questionnaire, see Cox and Raines, 1985.

[18]Other data sets that contain inter vivos transfer data are the Survey of Income and Program Participation (SIPP) and the Income Survey Development Program (ISDP). The SIPP contains two special interview modules in the fifth and eighth waves of the survey, where respondents are asked to report regular transfers given to individuals outside of the household, not transfers received, and receipts are critical for this study. Information on transfers received is limited to a dichotomous variable. The fourth wave of the ISDP contains information on transfers received, but information is limited to post-secondary educational expenses.

[19]Actually, the difference in predictions for current income under the two regimes is much stronger than a possible sign difference. Altruism predicts a negative and large relationship between transfer receipts and current income. The predicted offsets are dollar-for-dollar holding the sum of donor and recipient income constant. This point is explored further below.

[20]The donor-income proxy is the mean income of the "survey block," a survey construct designed by Market Facts, Inc., which performed the survey. The sample was drawn from 152 survey blocks, which represent the 28 largest SMSA's, 16 smaller SMSA's and 16 counties or groups of counties.

[21]In fact, program rules could turn an otherwise private-transfer recipient into a net giver. For example, an individual with a bank account producing, say, $20 in monthly income may have an incentive to give away these assets if he or she could then qualify for SSI by doing so.

[22]The application for Food Stamps does not include a separate income category for other private transfers; these must be reported in a category for miscellaneous income.

[23]Rebecca Blank kindly provided calculations of state-specific tax rates. Details on their calculation are provided in the appendix to Blank (1985).

[24]The reference category for the occupation variable is occupation-missing (40 percent), which is apparently a high wage group. Inter-occupational wage differentials follow a sensible pattern.

[25]AFDC payments are also available to single-parent, male-headed families in 25 states, but the number of these family units is likely to be small. Payments are also available through the AFDC-U program, which targets benefits to families with an unemployed male. These other AFDC payments are included in a different estimating equation below.

[26]The region dummies are omitted for identification purposes. In principle, Heckman's generalized Tobit can handle the same vector of explanatory variables in the decision and amount equation, but in practice this almost always leads to extreme collinearity and instability in the estimates. Here, the state-specific guarantee variable absorbs average regional differences in benefit levels.

[27]This set of transfers includes AFDC benefits for family units with males present.

[28]Of course, interfamily transfers can influence Social Security benefits through channels other than programmatic rules. For example, the availability of interfamily transfers can affect the decision to retire or hours of work in retirement, which would in turn affect the level of benefits. Modeling labor supply and the retirement decision is beyond the scope of this paper, however, and it is doubtful whether private transfers would have an important effect on the labor supply of the elderly: private transfers from young to old are rare (Cox and Raines, 1985).

[29]Miscellaneous transfers also include those from previous categories (e.g. Food Stamps) that were received by family units not meeting the sample-selection criteria applied to the participation equations in tables 3 and 4 (N = 64).

[30]These restrictions are imposed for identification purposes. They are not formally testable, but an informal test (entering expected-inheritance and debts-owed in a simple OLS equation for transfer amounts) resulted in insignificant coefficients for each variable.

[31]The official poverty rate for 1979 was 11.7 percent. Aggregating family units into households in the PCPP data yields a household-based poverty rate of 8.5 percent.

[32]For example, ignore services and suppose that donor utility is given by $U_p = \ell n(c_p) + \beta \ell n(c_k)$. This implies the transfer function $T = \beta I_p/(1+\beta) - I_k/(1+\beta)$. Omitting donor income from the regression creates omitted variable bias equal to $b_{12}\beta/(1+\beta)$, where b_{12} is the auxilliary regression of recipient income on donor income. The Becker-Tomes survey indicates that $b_{12} < .1$. Combining $b_{12} = .1$ with the empirical estimate of $\partial T/\partial I_k^1$ from table 5, column 2, implies a weighting parameter $\beta = 7.8$, which is highly implausible.

[33]Replacing area income by primary-family-unit income for secondary family units and reestimating the equation in table 5, column 2, results in a recipient-income coefficient of -0.023 (t-value = - 1.41).

[34]A negative coefficient for married family units is still obtained when alimony and child-support payments are deleted from the list of transfers.

[35]I experimented with the nonlinearity issue by including a splined specification for total income. The node of the spline was varied in intervals of $500, and the maximum-likelihood node was $3,000. The point estimates from the splined specification indicated that private transfer amounts fell, then rose, with income. The segment of the spline with the negative income coefficient was not significant, however.

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