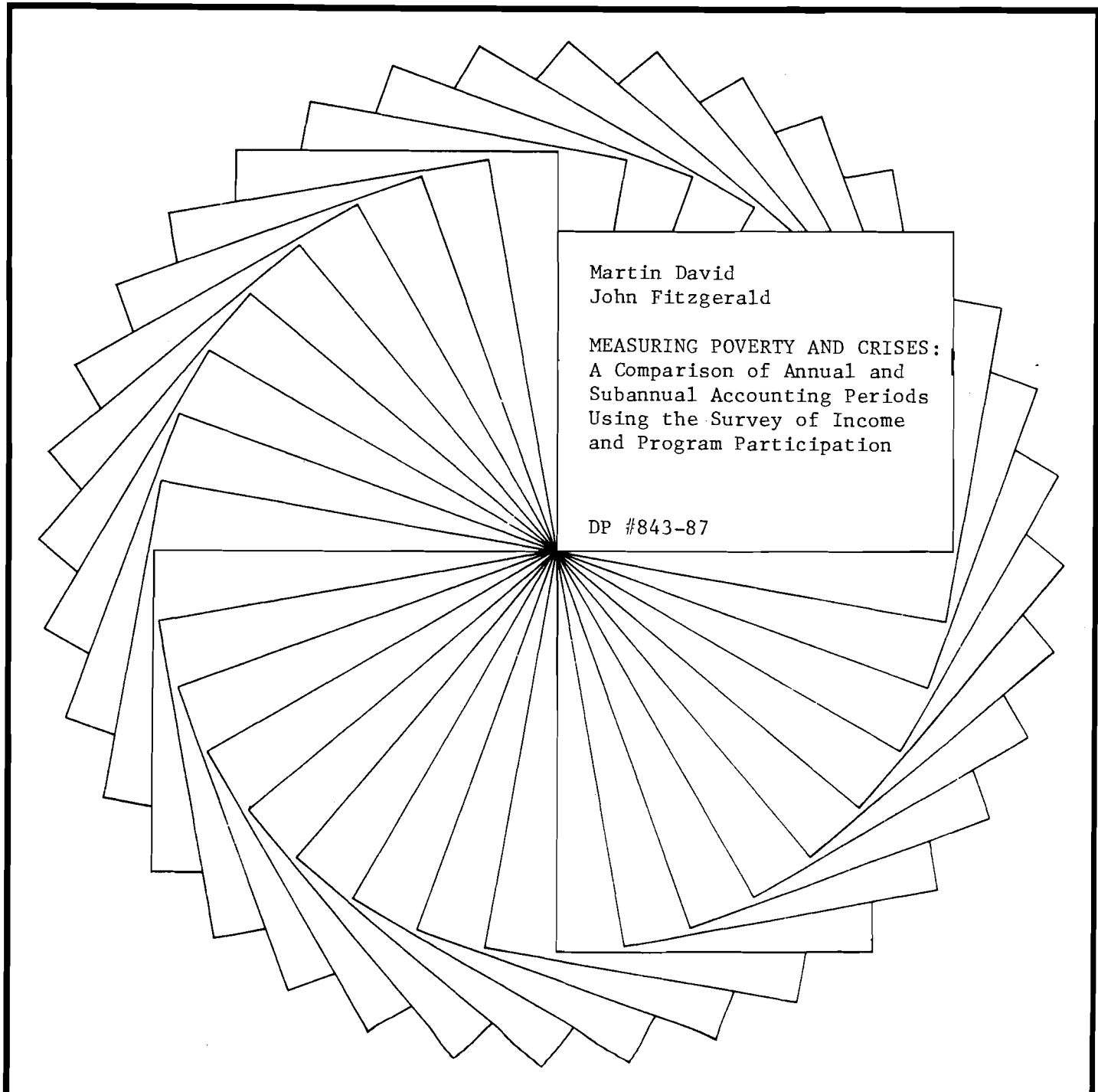




# Institute for Research on Poverty

## Discussion Papers



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MEASURING POVERTY AND CRISES:  
A Comparison of Annual and  
Subannual Accounting Periods  
Using the Survey of Income  
and Program Participation

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Measuring Poverty and Crises: A Comparison of Annual and  
Subannual Accounting Periods Using the Survey of  
Income and Program Participation

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## Abstract

The official poverty measure, which is based on cash income, is a deficient measure of hardship, particularly for short accounting periods. This paper introduces an alternative measure, the crisis measure, which adds estimated liquid assets to income. The crisis measure makes it possible to distinguish between those whose income shortfalls can be made up by selling assets and those who face true hardship and must curtail consumption (or go into debt).

Crisis measures are computed for 1984, using the longitudinal data in the Survey of Income and Program Participation, a Census Bureau survey which contains data on income from liquid assets.

A comparison of the poverty measure and the crisis measure reveals that transitions into and out of poverty are overstated by the poverty measure. But for some groups, such as nonwhites and women who are single parents, the measures do not differ by much. These groups hold few assets. The elderly and married couples without children, on the other hand, are much less likely to be poor using a crisis measure.

An examination of who receives means-tested transfers reveals that such programs tend to be targeted more toward those in crisis than the officially poor. Those with assets tend to be excluded from the programs by means of the assets tests, which weed out the temporarily impecunious from the truly needy.

Measuring Poverty and Crises: A Comparison of Annual and  
Subannual Accounting Periods Using the Survey of  
Income and Program Participation

1. OFFICIAL VERSUS UNOFFICIAL MEASURES OF POVERTY

Poverty statistics published by the U.S. Bureau of the Census in the P-60 series of the Current Population Reports rely on an established set of definitions. Poverty thresholds that are adjusted annually by the Office of Management and Budget are compared to cash incomes. Debate on the meaning of this comparison has raised questions about both the threshold and the resources to which thresholds are compared. The U.S. Bureau of the Census held a conference on treatment of noncash income (1985); the Institute for Research on Poverty held a symposium on the role of asset tests for defining eligibility for welfare programs (1977); the economics profession has had extensive debate on the appropriateness of alternative techniques for comparing the well-being of different kinds of families (Deaton and Muellbauer, 1980; Danziger et al., 1984; van der Gaag and Smolensky, 1982.)

In this paper we demonstrate that the official poverty measure is conceptually deficient and discuss the importance of that deficiency for measures that relate to 1-month, 4-month, and annual accounting periods.

We refer to the generic problem of observing economic deprivation as "measuring poverty." The procedures used in P-60 and other government reports are designated official poverty measurements. We introduce an alternative that we refer to as crisis measurement.

## 2. POVERTY INCIDENCE AND THE ACCOUNTING PERIOD

"Poverty" connotes a condition of economic deprivation. It generally refers to the current situation of a person or family, but also may designate a circumstance of longer duration--"Half of all children grow up in families in poverty." At one extreme we want to know who are chronically poor (in poverty over a lifetime) and who are exposed to poverty at some point in their lives. At the other extreme we want to know who are poor at this instant of time and how the social "safety net" responds to their deprivation.

Measuring poverty over long accounting periods obviously gives an insight into problems related to chronic deprivation. Long accounting periods also lower the probability that a person who is nonpoor on a lifetime basis will be measured as poor owing to a transitory income shortfall. Measuring poverty over a short period will enlarge the count of poor to include those experiencing temporary hardships.

If consumption flows are used to estimate poverty, changing from long to short accounting periods causes little difficulty, when services of assets and inventories are measured. If income flows are used to estimate poverty, the problem is to distinguish those individuals with real hardships from others who can alleviate their problems by selling assets, increasing debts, and liquidating inventories. Short-term, income-related measures of poverty must thus be augmented to account for the capability that the economic unit has for smoothing consumption by dissaving and borrowing.

By our definition, an economic crisis occurs when adjusted cash flow for a household (taken as the relevant decision-making group) is insufficient to meet current costs of consumption. We explore this concept and consider what time period is most appropriate for defining economic crises in light of the existing measurements in the Survey of Income and Program Participation (SIPP) described below. The discussion of how to adjust short-term measures to include assets goes back to 1959. David (1959) includes liquid assets in a measure of welfare; Hansen and Weisbrod (1968) and Bixby et al. (1975) annuitize wealth to arrive at augmented cash flow; Steuerle and McClung (1977) discuss a variety of ways to augment the income definition in measuring poverty. Some results from these studies are presented in Section 4.

We approach the problem of measuring a crisis in two steps:

- a. We consider the mathematical problem of aggregating resources and poverty thresholds over time.
- b. We indicate how implementation of the measures on SIPP is affected by the measurement, imputation, and weighting procedures in cross-sectional and longitudinal samples.

### 3. TIME AGGREGATION OF POVERTY MEASURES

#### Instantaneous Concepts

We define an instantaneous measure of crisis as follows:

- a.  $z(t)$  is a vector defining the structure of the household, including age, sex, and other characteristics of members that are relevant to the cost of the minimum subsistence consumption level,  $n(z)$ , for an instant of time.

- b.  $h(z)$  extracts household membership from  $z$  and the total income of the household at any instant of time is given by

$$(1) \quad y_h(t) \equiv \sum_{i \in h(z)} y(i, t),$$

where  $y(i, t)$  is the income flow for the  $i$  th individual at the instant  $t$ . Similarly, the sum of fungible assets of the household at the instant  $t$  is given by

$$(2) \quad f_h(t) \equiv \sum_{i \in h(z)} f(i, t)$$

- c. crisis is defined as

$$(3) \quad CI(y_h(t) + f_h(t) < n(z)),$$

where the CI function is an indicator whose value is 1 if the inequality is true and 0 otherwise. In the same notation, the instantaneous official poverty indicator is

$$(4) \quad OI(y_h(t) < n(z))$$

#### Time Aggregation to Accounting Periods of Length T.

Aggregating the total need of households with which a particular individual is associated for a period of time from 0 to T is given by

$$(5) \quad n[T] \equiv \int_0^T n(z(t)) dt$$

(The square brackets will be used to denote the time integral). Since the individual is associated with only one household at each point in

time, this sum is unique regardless of changes in household structure and living arrangements.

Aggregation of incomes can be achieved in the same manner:

$$(6) \quad y_h[T] \equiv \int_0^T y_h(t) dt.$$

The definition of crisis can now be revised to indicate potential maximal consumption during the period:

$$(7) \quad CI[T] \equiv CI(y_h[T] + fh(0) < n[T]).$$

That is, if the total of fungible assets at the beginning of the period plus income flows during the period ending at T is less than the cost of a subsistence level of consumption during that period, the individual will be classified as in crisis. Note that the resources and needs of each household are represented in the calculation in proportion to the time that the individual in question is at risk in (i.e., a member of) that household. Therefore no double counting of needs or income occurs.

The official poverty rate over the interval [0,T] will be

$$(8) \quad OI[T] \equiv OI(y_h[T] < n[T]).$$

It is clear that  $OI[T] > CI[T]$ .

One issue requires conceptual clarification: What part of total wealth,  $w(0)$ , should be included in  $fh(0)$ ? Clearly, many assets are not convertible to cash at an instant in time. However, the longer the period over which they can be converted, the greater the likelihood that they can be sold and that they can be sold at a price near a fair market value. The notion of "fair market value" is intended to convey a distinction



between liquid and illiquid assets. We incorporate these ideas by defining

$$(9) \quad fh[0,T] \equiv \int_0^T \exp(-rt) m(t)w(0)(1 - M(t)) dt,$$

where  $m(t)$  is the proportion of wealth that can be converted to cash at exactly time  $t$ .  $M(t)$  is the proportion of assets that have cumulatively been converted to cash at time  $t$ ,

$$M(t) \equiv \int_0^t m(t)dt.$$

Equation (7) is now restated:

$$(10) \quad CI[T] \equiv CI(yh[T] + fh[0,T] < n[T])$$

where the  $fh[0,T]$  is used to connote the maximum of wealth that could be liquidated at fair market value in the interval  $[0,T]$ . Clearly  $fh[0,T]$  varies over individuals;  $m(t)$  varies as the composition of their wealth varies; and the total fungible wealth will vary with the level of  $w(0)$ .

#### 4. PAST EMPIRICAL RESULTS ON POVERTY AND WEALTH

Several studies have indicated the importance of wealth holdings among those classified as poor on an income basis. David (1959) uses data from the 1956 Survey of Consumer Finances of the Survey Research Center to construct a poverty ratio. His net index compares a measure of income based on disposable income plus homegrown food plus imputed home

rent to the cost of a bundle of basic needs. The gross index adds liquid assets to the income above and compares the result to the same needs standard. The index of poverty that includes liquid assets is 23 percent lower.

Hansen and Weisbrod (1968) match asset data from the Survey of Financial Characteristics of Consumers of the Federal Reserve Board (1962) to data from the 1962 Current Population Survey. They compute a measure of resources which includes income and the annuity value of net worth. If the poverty threshold is taken to be a resource level of \$3,000 per family, the number of poor declines from 20 percent to 17 percent when the annuity value of net worth is included.

Steuerle and McClung (1977) present several measures of household resources and include wealth in different ways. Their data are from the 1966 Survey of Economic Opportunity of the Office of Economic Opportunity, DHEW. The five resource definitions used in Table 1 are (1) Income: 1966 total nonassistance family income from the Current Population Survey (CPS), plus lump-sum income; (2) Income/Liquid Assets: Income (1) plus liquid assets; (3) Income/Net Worth: Income (1) plus assets, minus debt, less one-half money income from assets; (4) Income/Fraction of Net Worth: Income (1) plus 10 percent of net worth, less income from assets; (5) Income/Annuity: Income (1) plus annuity value of net worth, less income from assets. The table shows that wealth can have a substantial impact--inclusion of liquid assets lowers the poverty rate by 18 percent, inclusion of net worth lowers the poverty rate by 41 percent.

These studies show the importance of wealth adjustments on an annual basis; we can expect larger effects on a shorter accounting period.

Table 1

Percentage of Total Population Falling into or Near  
Poverty by Various Poverty Standards  
(Survey of Economic Opportunity)

SEO Poverty Standard	Means/Needs											
	0.00- 0.20	0.21- 0.40	0.41- 0.60	0.61- 0.80	0.81- 1.00	Total in Poverty	1.01- 1.20	1.21- 1.40	1.41- 1.60	1.61- 1.80	1.81- 2.00	Over 2.00
1	3.9	2.6	3.3	4.1	4.3	18.1	4.6	5.1	5.6	5.3	5.5	55.9
2	3.4	2.4	2.6	3.3	3.3	14.9	3.3	3.8	4.5	4.0	4.5	65.1
3	2.7	1.6	1.9	2.2	2.2	10.6	2.2	2.4	2.7	2.3	2.5	77.4
4	3.2	2.2	2.5	3.3	3.2	14.4	3.6	4.1	4.9	4.7	5.0	63.3
5	3.2	2.2	2.6	3.1	3.4	14.5	3.7	4.4	4.9	5.1	5.5	61.9

SEO Poverty Standard Definitions (PSD):

1. 1966 SEO Income/Needs less than 1.0
2. 1966 SEO Income-Liquid Assets/Needs less than 1.0
3. 1966 SEO Income-Net Worth/Needs less than 1.0
4. 1966 SEO Income-Fraction of Net Worth less than 1.0
5. 1966 SEO Income-Annuity less than 1.0

Source: Steuerle and McClung, "Wealth and the Accounting Period in the Measurement of Means," Technical Paper VI (February 1977) in HEW report The Measure of Poverty (Washington, D.C.: Government Printing Office, 1977), Table 6.

5. CONCEPTUAL ADVANTAGES OF CI[T] AND THE RELATIONSHIP BETWEEN CI[T] AND OI[T]

In some small intervals of time, it is quite possible that  $yh[T] = 0$ . Between pay periods many workers have no sources of cash flow. Self-employed with intermittent receipts also will have periods of zero cash flow. In that case, the affected family will be classified as poor according to the OI[T], even though adequate liquid assets are available. The probability of this eventuality decreases as the accounting period lengthens.

A second observation is that most households will maintain sufficient fungible assets to meet the "transaction needs" of the interval between income receipts. Thus  $fh[0,0]$  will be at a minimum just before the receipt of recurrent income flows. This behavior is independent of the accounting period.

In any case, taking the cash on hand at the beginning of the period as fixed and considering successively longer periods for the receipt of income gives the following relationship:

$$(11) \quad \frac{d(yh[T])}{dT} = \frac{d(fh[0,0] + yh[T])}{dT} .$$

That is, we expect the same rate of increase of resources, as the accounting period increases, using both income and cash-flow measures (if the measure of fungible assets is fixed). When increases in fungibility of assets after  $t = 0$  are considered, the rate of increase indicated by the cash-flow measure must rise more quickly than  $yh[T]$  with increasing  $T$  over some interval  $0 < T < A$ :

$$(12) \quad \frac{d(yh[T])}{dT} \leq \frac{d(fh[0,T] + yh[T])}{dT} \quad 0 < T < A.$$

Because  $\frac{dn[T]}{\alpha T}$  is identical for both OI[T] and CI[T], equation (12) implies that poverty rates using the cash-flow measure will fall faster than OI[T] as the accounting period is lengthened from an infinitesimally short period.

Up till now we have only considered the resources available to the household from the sale of net worth. Borrowing against net worth would cause little change in the measure, except that the cost of interest probably should be added to  $n[T]$ . Borrowing would be desirable when assets are required to earn income (i.e., tools of the self-employed, automobiles required for transport to work, etc.).

Alternatively, household members can borrow against their future earning capacity. This occurs when consumers borrow on their credit cards, defer mortgage loan payments, or take out personal loans. Information on the capacity of the household to incur such debts should be included in the broader measure of poverty. Since none of this information is available in the SIPP core data, we shall not belabor the point.

## 6. MEASUREMENT ISSUES SPECIFIC TO SIPP

### Samples Used

The Census Bureau's 1984 Panel for the Survey of Income and Program Participation (SIPP) is a nationally representative sample of the noninstitutionalized U.S. population. It includes monthly data on income, program participation, and demographics for about 20,000 U.S.

households. Household members are interviewed every four months, and these data are organized into four-month pieces called waves. Due to a staggered system of interviewing, one-quarter of the sample households are interviewed in each calendar month, and thus a wave includes an overlapping mix of calendar months for the four sample groups.

Our longitudinal sample time period corresponds roughly to calendar 1984: for one-quarter of the sample it is October 1983 through September 1984, for the second quarter it is November 1983 through October 1984, and so on. We include persons in households continuously present for the first four interviews; thus we follow only persons who were part of the nationally representative sample. To guard against potential bias in poverty and crisis rates due to differential sample attrition, we calculate longitudinal sample weights that adjust for differential probabilities of inclusion in our longitudinal sample. David and Fitzgerald (1987) describe this procedure in detail. Our longitudinal sample includes 44,639 persons.

We also present some results based on the third-wave interview. This cross section is larger (48,357 persons), since we do not require continuous presence in the sample for four interviews. (We do require that the person is part of the representative sample, i.e., was present at the first-wave interview.)

The wave-3 sample increases precision of estimates for small groups. It also is subject to less potential bias from attrition. Most important, imputation for missing data is consistent for each individual. The wave-3 sample incorporates the dynamics of changing household composition, and differs from the Current Population Survey (CPS) and the

first wave of SIPP in that regard. The time period for this sample is centered at May and June 1984. Sample weights for this cross section require adjustment for panel attrition and the scheme in David and Fitzgerald (1987) is applied to the wave-3 sample.

### Imputation

The SIPP uses an imputation procedure to simulate values for missing data. Data are imputed cross-sectionally, i.e., without reference to a person's data in other waves, and this poses some problems for our longitudinal work. We elected to use the imputed data and recognize that the imputations add variance to longitudinal income totals. For example, imputation of a missing report of interest income does not make use of the level of interest reported at another interview. By our sample-inclusion criteria, we have excluded persons with fully imputed records.<sup>1</sup>

### Time-Weighted Aggregates

To use longitudinal data we must incorporate changes in household composition during the accounting period. The four-month reference period of SIPP allows close tracking of household composition changes and income changes; this is clearly an advantage over surveys such as the CPS. Our results tabulate individuals in households. Each individual is classified according to the time-weighted averages of income and poverty thresholds that apply to the households in which those individuals lived during the 12-month year. For example, an individual spends 6 months in a household with \$7,000 of income and a poverty threshold of \$5,000 during those six months; she spends the remainder of the year in a separate household with \$500 income and a poverty threshold of \$3,000.

The individual will then be attributed a status of poverty for the 12-month period--the cumulative \$7,500 of income with which that person is associated during the year is less than the cumulative \$8,000 of poverty thresholds.

#### Estimating Fungible Assets

A crucial part of our study is the measurement of fungible assets at the beginning of the accounting period,  $fh(0)$ . These data are not directly reported in each SIPP wave. Thus we construct an asset balance measure based on income flows from the assets. Because we are interested in assets held at the beginning of the accounting period, we base our measure on asset income flows from the prior period.

We focus on liquid assets which can be converted to cash (then consumption) over a short period of time. Liquid assets are measured by the capitalized value of interest income, i.e., income from savings accounts, bonds, and money market funds. Appendix A shows that our crisis measure would not be sensitive to the inclusion of all property income assets regardless of their liquidity.

For a large part of the sample the interest reported in SIPP was imputed (calculated) by the Bureau of the Census based on the asset balances reported. For these persons, capitalizing the interest income at the interest rate used by the Census (6 percent) recovers the account balances. For the rest of the sample an interest rate must be assumed, and we chose to use the same 6 percent rate. The interest income amount is collected by the Census as a four-month aggregate. Thus we do not have monthly interest income amounts and cannot calculate monthly balances. We therefore present crisis measures for only the first month of a



wave, and estimate cash assets from interest amounts paid during the prior wave.

#### Allocating Fungible Assets to Changing Households

The crisis measure is obtained by adding the estimated value of assets to the income recorded for the household with which the individual was associated in the first month of the period. That is, if three persons--mother, father, and daughter--were in the household for the first six months and the daughter established separate housekeeping thereafter, the crisis measure requires the following calculation:

1. The asset income of each person in the four months prior to the beginning of the period is calculated by summing interest on cash in banks, savings accounts, and money market mutual funds (asset types 100-104). (Income received from assets that are jointly owned is allocated to each person involved.)
2. The asset income is capitalized at a 6 percent rate of annual interest. The capital amount is therefore 50 times the reported interest for the prior four-month period.<sup>2</sup>
3. The capital amounts are aggregated according to household structure at the beginning of the period for which the crisis measure is calculated. In our example, this is a household consisting of a mother, father, and daughter.

The logic behind this procedure is that the initial household is an economic decision-making group and that the decision to alter that group is made in relation to what the members know about the initial asset position of the group as a whole. Subsequent changes in household composition are endogenous to the balance sheet at the beginning of the measurement period.

## 7. POVERTY AND CRISIS LEVELS

We begin our presentation of results by illustrating the effect of shortening the accounting period on measures of poverty and crisis. Using the longitudinal sample, we construct measures for three accounting periods: twelve months, four months (one wave), and one month (the first month of a wave). The twelve months of data in the longitudinal sample generate 1 12-month measure (loosely 1984), 3 consecutive 4-month measures that use the same data, and 3 1-month measures that are based on the first, fifth, and ninth month in the 12-month period. Table 2 presents the results. The four- and one-month measures are averages of the three measures obtained within the 1984 year.

As the accounting period becomes shorter the poverty measure indicates a substantial rise in the number of persons classified as poor. On a one-month basis, 14 percent of the population is poor--a figure 24 percent larger than the annual poverty rate. Annual poverty rates do not detect a large number of persons who experience temporary income shortfalls. These figures are comparable to those found by Williams (1986), who uses a slightly different sample and unweighted estimates. The crisis measure rises by much less as we shorten the accounting period, and even falls slightly between the four- and one-month measure. This is because a given amount of assets increases in importance relative to income as the accounting period gets shorter.

We compare poverty and crisis measures for periods within the year in Table 3. The difference shows the reduction in the population experiencing hardships that occurs when we exclude persons whose liquid assets are high enough for their consumption to remain above the poverty

Table 2

Accounting Period Differences in Poverty and Crisis Measures:  
 1984 Longitudinal Sample from SIPP  
 (Percentage of Population)

Reference Period	Percentage in Poverty	Percentage in Crisis
(1) Annual (months 1 to 12)	11.26	10.44
(2) 4 months (average) <sup>a</sup>	13.17	11.32
Differences from annual	1.87	0.92
Differences as percentage of (1)	16.55	8.85
(3) 1 month (average) <sup>b</sup>	14.04	11.03
Difference from annual	2.74	.63
Difference as percentage of (1)	24.2	6.06

Note: Poverty and Crisis Measures are weighted counts of persons.  
 Unweighted sample size = 44,639.

<sup>a</sup>Average of periods 1, 2, and 3.

<sup>b</sup>Average of months 1, 5, and 9.

Table 3

One-, Four- and Twelve-Month Poverty and Crisis Measures Compared:  
1984 Longitudinal Sample

Reference Period	Months Measured	% in Poverty	% in Crisis	Difference in Level	Difference as Percentage of Poverty Measure
1 Month	1	14.69%	11.38%	3.31%	22.5%
	5	13.89	11.15	2.74	19.7
	9	13.54	10.57	2.97	21.9
					(mean 21.4)
4 Months	1-4	13.86	11.83	2.03	14.6
	5-8	13.07	11.39	1.68	12.9
	9-12	12.59	10.73	1.86	14.8
					(mean 14.0)
Annual	1-12	11.26	10.44	0.82	8.00

line during the accounting period. Taking the crisis measure as a more accurate measure of hardship, the difference shows the percentage of persons misclassified as in hardship when assets are ignored. As the accounting period shortens the crisis measure screens out an increasing proportion of persons who are so misclassified. On average 21 percent of the one-month poor are misclassified.

Table 3 also shows the variability and trend in the measures through calendar year 1984. Both the poverty and crisis ratios fall through the year. In Appendix B Table B-1 we show the joint distribution of the crisis and poverty measures and the means of liquid assets within that distribution. The table shows that some persons classified as poor by the official measure hold substantial quantities of liquid assets.

To summarize, as the accounting period becomes shorter the poverty measure classifies an increasing number of persons as poor owing to income variability (temporary shortfalls). The crisis measure screens out increasing numbers with asset cushions sufficient to enable them to continue poverty-line consumption levels. The net result is that the one-month crisis measure is only 6 percent above its annual level, even though the one-month poverty measure is 24 percent above its annual level.

## 8. POVERTY AND CRISIS TRANSITIONS

A number of writers have stressed the large turnover of the poverty population--particularly over short periods (e.g., Williams 1986, Ruggles and Williams, 1987). Accepting that the official poverty measure overstates the short-term level of hardship by ignoring assets, we next

ask the extent to which transitions in or out of poverty are overstated. That is, to what extent do those experiencing transitions in or out of poverty have sufficient assets to avoid hardship according to the crisis measure? How well do assets cushion the impact of short-term income fluctuations that cause poverty transitions?

Table 4 addresses these questions by looking at two measures of transition into, or out of, poverty and crisis. The one-month transitions show status in one month compared with status measured four months later. The four-month transitions show changes between consecutive four-month measures. (Thus the elapsed time is the same for the one and four-month transitions.) Consider the one-month transitions in column 2 of Table 4. Of those measured as entering poverty (e.g., not poor in month 1 but poor in month 5), almost 40 percent never experienced a crisis--i.e., they had enough assets to finance consumption above the poverty line in both months. Of those measured as exiting poverty on a monthly basis, nearly 40 percent never experienced a crisis. Of those who were in poverty for both months (labeled always poor), 17 percent escaped a crisis in one or the other of the months.

Clearly, the monthly poverty measure substantially overstates the frequency of transitions. The mobility of those truly in hardship, as measured by the crisis measure, is much lower. Alternatively, those who make poverty transitions often have asset cushions. We show below, however, that there is a big difference across demographic groups in the ability to cushion a shortfall. The four-month measures tell a similar story, but the averaging implicit in the four-month measures lowers the magnitudes of the difference between the poverty and crisis measures.

Table 4

Poverty and Crisis Transitions over Four Months:  
1984 Longitudinal Sample

		One-Month Measures		Four-Month Measures <sup>a</sup>	
		Month 1 to 5 (2)	Month 5 to 9 (3)	Period 1 to 2 (4)	Period 2 to 3 (5)
(1)					
Always Poor	Total N <sup>b</sup>	23,444.1	21,528.5	22,914.4	20,961.7
	% Always Crisis	82.7	82.0	88.0	88.5
	% Never Crisis	10.6	10.7	5.9	5.6
	% Enter or Exit Crisis	6.7	7.3	6.1	5.9
Enter Poverty	Total N	8,276.5	9,400.9	6,945.6	7,785.4
	% Enter Crisis	60.8	62.3	71.6	69.5
	% Never Crisis	39.2	37.7	28.4	30.5
Exit Poverty	Total N	10,082.9	10,192.2	8,751.1	8,898.3
	% Exit Crisis	60.4	67.5	72.7	76.3
	% Never Crisis	39.6	32.5	27.3	23.7
Never Poor	Total N	186,608.0	187,289.9	189,800.5	190,766.2
	% Never Crisis	100.	100.	100.	100.
Grand Sum (every column)			228,411.5		

<sup>a</sup>Period 1 is months 1 through 4, period 2 is months 5 through 8, period 3 is months 9 through 12.

<sup>b</sup>Weighted counts in thousands of persons.

Another way of viewing transitions is to look at the three 4-month periods within the 1984 year as a three period history. Table 5 shows that the proportion of persons measured as in crisis for three consecutive periods (always) is a little over two-thirds of the annual rate; the comparable poverty number is slightly higher. From row 2(a) and (b) we find that 16 percent of the population had a least one 4-month period of crisis, a proportion 55 percent higher than the annual rate (row 3(b)). The comparable figure for "ever poor" is 70 percent above its annual rate. The crisis measure shows less occasional hardship: the proportion having one or two periods of hardship during the year (row 2(b)) is 19 percent lower for the crisis measure than the poverty measure.

#### 9. SIGNIFICANT DEMOGRAPHIC RELATIONSHIPS

We suggested above that the crisis measure can change our perception of the number of persons in hardship in the short run. In this section we ask how it changes our perceptions about the distribution of hardship across demographic groups. We proceed by calculating the difference between the poverty and crisis measures for various demographic groups as a percentage of the poverty measure. Persons in groups that show large differences are more likely to have significant liquid assets, and thus tend to be misclassified by the poverty measure over a short accounting period.

Table 6 shows the distribution of the 4-month measure, for the wave-3 sample, classified by household structure. Since a household can include unrelated individuals, we separately classify households that include



Table 5

Percentage of Individuals in Poverty and Crisis during  
1984, by Accounting Period and History  
(Subannual Detail)

	Poverty	Crisis	Difference as Percentage of Those in Poverty
(1) Annual (no detail)	11.26%	10.44%	-7.3%
(2) Four-month history (3 subannual periods):			
(a) Always	7.92	7.01	-11.6
(b) Sometimes, not always	11.33	9.14	-19.3
(c) Never	80.75	83.86	+3.85
(3) History as percentage of annual			
(a) Always	70.1	67.3	
(a+b) Ever	171.0	155.2	

23  
Table 6

Poverty and Crisis Levels by Household Structure  
and Race:  
Wave-3 Cross Section

Race and Household Structure at First Interview	Four-Month Measures			Percentage of Population	
	Poverty (1)	Crisis (2)	Diff. as % of Poverty Measure	White	Black
Panel A: Households of Related Individuals					
<u>White</u>					
Single w/children	34.2%	32.7%	4.4%	7%	--
Single w/o children	13.1	8.6	34.4	13	--
Married w/children	9.2	7.8	15.2	48	--
Married w/o children	3.9	2.8	28.2	27	--
<u>Nonwhite</u>					
Single w/children	52.8%	51.6%	2.3%	--	27%
Single w/o children	28.1	25.0	11.0	--	14
Married w/children	23.0	20.1	12.6	--	40
Married w/o children	7.2	6.2	13.9	--	12
Panel B: Households Containing Unrelated Individuals					
<u>White</u>					
Single w/children	20.1%	19.4%	3.5%	1.4%	--
Single w/o children	6.9	5.1	26.1	3.1	--
Married w/children	7.2	6.4	11.1	0.66	--
Married w/o children	4.8	4.8	0.	0.25	--
<u>Nonwhite</u>					
Single w/children	37.8%	34.5%	8.7%	--	2.9%
Single w/o children	16.1	16.1	0.	--	2.7
Married w/children	30.8	30.8	0.	--	0.87
Married w/o children	N.A.	N.A.	N.A.	--	0.19
Panel C: All Households					
<u>White</u>	10.2%	8.4%	17.6%	100%	--
<u>Nonwhite</u>	30.2	28.1	6.9	--	100%

Note: Wave 3 of SIPP has unweighted sample size of 48,357. This cross section includes more persons than the longitudinal sample (44,639), since the longitudinal sample requires continuous sample inclusion for 3 periods. Marital status is shown for the reference person in each household at the time of the first interview.

such persons. The household is classified by the marital status of the household reference person, designated by the Census Bureau, at the beginning of the SIPP sample panel. Changes in status are not reflected here. Both the poverty measure and the crisis measure show that nonwhites are roughly three times more likely to be poor or in crisis than whites. As expected, single-headed households with children are most likely to have hardship, while married-couple households without children are least likely.

In general, the difference between the poverty and crisis measure is larger for whites, particularly for those households without children. These households apparently are more able to accumulate assets. The measures show smaller differences for nonwhites--liquid asset balances offer little cushion when incomes fall below the poverty standard. Single-headed households with children show small differences between the measures for both whites and nonwhites. Conversely, availability of assets makes white households without children less likely to have a crisis. Panel B shows households that include unrelated individuals. (Some households with a single reference person are consensual unions not recorded as marriages by the Census Bureau.) The results are qualitatively similar to those for households of related individuals, but the magnitudes are smaller.

To describe the distribution of the measures further, Table 7 classifies persons by age and gender. The table shows that children have the highest incidence of poverty and crisis. The most striking feature of the table is the difference between the two measures for elderly women. These women, many of whom are likely to be widows, seem to hold sizable quantities of liquid assets.

Table 7

Poverty and Crisis by Age and Sex of Individuals:  
Wave-3 Cross Section

Age and Sex		Four-Month Measures		
		Poverty (1)	Crisis (2)	Diff. as % of Poverty Measure
< 18	All	20.0%	18.5%	7.5%
	Male	19.9	18.4	
	Female	20.0	18.6	
18-24	All	12.9	11.3	12.4
	Male	11.4	9.8	
	Female	14.2	12.7	
25-34	All	10.6	9.3	12.3
	Male	8.2	7.0	
	Female	12.8	11.4	
35-44	All	9.7	8.3	14.4
	Male	8.2	6.9	
	Female	11.0	9.6	
45-54	All	9.4	7.9	16.0
	Male	8.4	6.8	
	Female	10.4	8.8	
55-64	All	9.1	6.8	25.3
	Male	7.7	5.4	
	Female	10.4	8.0	
65+	All	11.4	7.5	34.2
	Male	6.8	5.0	
	Female	14.5	9.3	

We stress care in interpreting the results for the elderly. Cash in savings accounts may represent the source of a significant part of total income. Also these households are not likely to realize income from earnings. As a consequence it may be more reasonable to count assets of the aged on the annuitized basis that was used by Hansen and Weisbrod (1968) and Bixby et al. (1975). Having cautioned against a literal interpretation of the crisis measure, we must reiterate that the results here support the work of Danziger et al. (1984), which indicates that deprivation of the aged tends to be overstated by income measures as compared to consumption. The crisis measure represents a rough adjustment to understand the nature of this overstatement.

How do human capital levels affect the ability to accumulate assets and avoid short-term crises? Table 8 categorizes persons over the age of 15 by highest grade completed and race. The difference between the poverty and crisis measures shows that those with higher educational levels have accumulated more liquid assets. Importantly, this is true for both whites and nonwhites. Nevertheless, the most educated nonwhites have accumulated only slightly more assets (in relation to their poverty budget) than the least educated whites. Thus education levels alone do not explain racial differences.

We earlier stressed the substantial overstatement of poverty transitions by the official poverty measure. This overstatement varies dramatically by demographic group, as is seen in Table 9. For nonwhites and single-headed households with children the occurrence of "false" transitions (measured poverty transition by a person never in crisis) is much smaller than for other groups. For the elderly and married heads of

Table 8

Poverty and Crisis by Race and Education:  
Wave-3 Cross Section

Race	Highest Grade Completed	Population (millions)	Four-Month Measures		
			Poverty	Crisis	Diff. as % of Poverty Measure
<u>White</u>	<12	42.8	16.0%	13.3%	16.9%
	=12	51.2	6.7	5.3	20.9
	>12	57.4	4.4	2.8	36.4
<u>Nonwhite</u>	<12	9.64	37.0	34.7	6.2
	=12	6.97	19.4	17.2	11.3
	>12	7.02	14.3	11.8	17.5

Note: Table shows persons aged 16 or older.

Table 9

Four-Month Poverty and Crisis Transitions by Demographic Groups:  
Period 1 to 2, Longitudinal Sample

		All	Nonwhites	Age > 65	Households of Related Individuals			
					Single w/o Child	Single w/ Child	Married w/o Child	Married w/ Child
Always Poor	Total N <sup>a</sup>	22,914.4	8,577.3	2,221.0	3,500.5	8,809.1	1,702.5	7,495.2
	% Always Crisis	88.0	93.3	66.7	69.5	95.9	79.1	88.8
	% Never Crisis	5.9	1.7	24.9	20.4	1.7	12.8	3.4
	% Enter or Exit Crisis	6.1	5.0	8.4	10.1	2.5	8.1	7.8
Enter Poverty	Total N	6,945.6	1,531.2	593.5	1,030.9	898.7	689.1	3,846.2
	% Enter Crisis	71.6	86.5	43.6	61.0	85.3	47.2	75.7
	% Never Crisis	28.4	13.5	56.4	39.0	14.7	52.8	24.3
Exit Poverty	Total N	8,751.1	2,216.7	686.5	1,324.0	1,521.2	960.6	4,433.9
	% Exit Crisis	72.7	74.3	52.0	59.5	88.4	53.4	76.0
	% Never Crisis	27.3	25.7	48.0	40.5	11.6	46.6	24.0
Never Poor	Total N	189,800.5	21,805.3	21,028.8	23,198.6	12,108.1	52,991.2	90,710.6
	% Never Crisis	100.	100.	100.	100.	100.	100.	100.
Column Total N		228,411.5	34,130.6	24,529.7	29,054.1	23,337.2	56,343.4	106,486.0

<sup>a</sup>Weighted counts in thousands. Columns may not add to total owing to rounding.

households without children over half of those measured as entering poverty experience no crisis, and slightly under half of those measured as leaving poverty were initially in a crisis. For these groups the mobility in or out of hardship is dramatically overstated by the poverty measure. In general, households without children show large proportions of "false" poverty transitions. The table also shows that mobility is quite restricted for some groups, notably single household heads with children. While 8.8 percent ( $.88 \times 22,914.4 \div 228,411.5$ ) of the total population experienced a crisis in both four-month periods, 36.2 of the group consisting of single heads with children had two consecutive periods of crisis.

#### 10. TARGET EFFICIENCY, THE ACCOUNTING PERIOD, AND MEASURE OF HARDSHIP

One way to evaluate the crisis measure of hardship is to ask whether it increases our understanding of social policy in comparison to the poverty measure. We attempt this evaluation by studying the distribution of benefits under means-tested transfer programs. Two normative criteria aid in this evaluation:

- A. In a desirable program the probability of receiving benefits should rise in proportion to the measure of hardship.
- B. The expected benefit from the program should increase as the measure of hardship increases.

(We recognize that target efficiency measures do not measure economic efficiency--see Sadka, Garfinkel, and Moreland, 1982--but they offer a basis for intelligent program design.)



The first criterion motivates a presentation of the proportion of the population that is served by a means-tested program in relation to the prewelfare crisis ratio (i.e., market income, transfers other than means-tested transfers, and cash assets divided by the poverty threshold). We present tabulations based on the wave-3 cross section, using the four-month poverty and crisis measures, because of the consistency of imputations and the integrity of asset income on the four-month interval.

The calculations use data similar to Weinberg (1986), but differ in several important respects. Social Security and other transfers that are not means-tested are included in the prewelfare measure. The measures are averaged over four months, rather than one month--April 1984. And the months included range from January to July, depending on the rotation group.

In Table 10 panel I reports the recipiency of transfers. Cash transfers are described in rows 1-3, labeled A-C. Row A shows that nearly three-quarters of those in deep crisis receive cash transfers and about a third of those whose resources command between 0.5 and the poverty line are recipients. Row B informs us that recipiency of these benefits reaches between 12 and 20 percent of the poor who are not in crisis. Row C indicates an even smaller recipiency rate for those who are neither in poverty nor in crisis. The analysis is repeated for noncash benefits consisting of Food Stamps, Special Supplemental Food Program for Women, Infants, and Children, and energy assistance in rows 4-6. For both kinds of benefits recipiency declines monotonically with the crisis ratio and the poor receive at a greater rate than the nonpoor.

Table 10

Target Efficiency of Cash and Noncash Means-  
Tested Programs Classified Prewelfare Poverty and  
Crisis Measures  
(Wave-3 Cross Section)

Efficiency Measures & Program	Target Population	Prewelfare Crisis Ratio					2.0 or More	Mean	Percentage
		0 to .5	.5 to 1.0	1.0 to 1.5	1.5 to 2.0				
<b>I. % Receiving Transfers</b>									
<u>Cash</u>									
A. crisis < 1		73.6	30.1	--	--	--	}	10.9	
B. in poverty, not A		--	--	20.5	16.5	11.9			
C. neither		--	--	14.3	8.8	3.3			
<u>Noncash</u>									
A. crisis < 1		81.3	47.4	--	--	--	}	12.4	
B. in poverty, not A		--	--	30.0	24.3	9.9			
C. neither		--	--	24.6	12.1	2.1			
Total									
<b>II. Cumulative Share of Transfers</b>									
<u>Cash</u>									
A. crisis < 1		.585	.701	--	--	--			70.1
B. in poverty, not A		--	--	.010	.012	.023			2.3
C. neither		--	--	.074	.117	.275			27.5
									100.0
<u>Noncash</u>									
A. crisis < 1		.617	.808	--	--	--			80.8
B. in poverty, not A		--	--	.012	.014	.018			1.8
C. neither		--	--	.079	.116	.174			17.4
Total									100.0

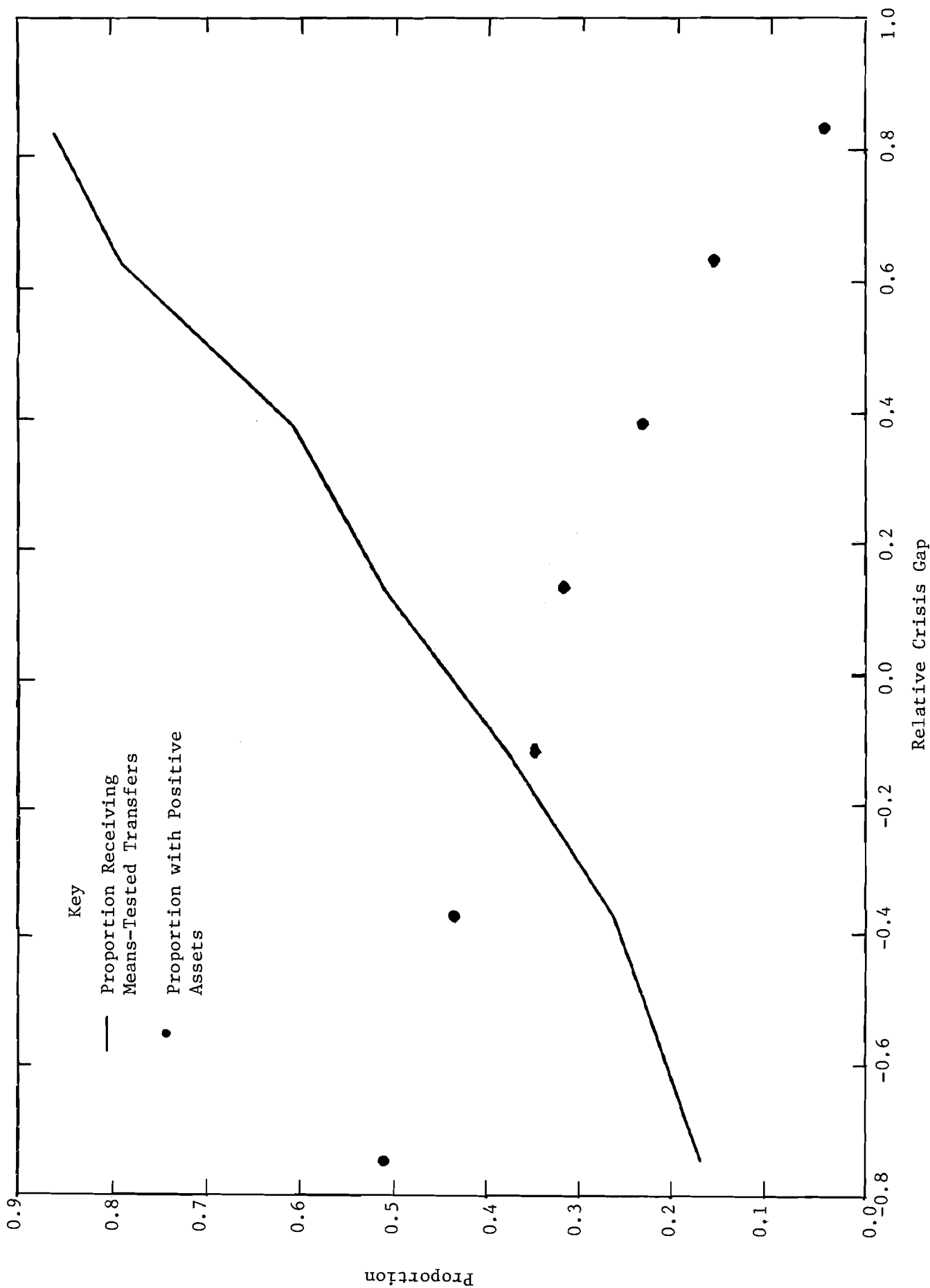
Some indication of the concentration of expenditures on the most needy is given by the analysis of share of benefits in panel II of Table 10, classifying beneficiaries according to the same matrix used in panel I. For cash transfers 70 percent are directed to persons in crisis. Slightly more than 2 percent of additional benefits are paid to the poor who are not in crisis. Persons who are poor but not in crisis seldom meet eligibility criteria to participate in means-tested programs. Conversely, for reasons that may be entirely consistent with the mandates of a number of means-tested programs, 27.5 percent of cash benefits are paid to persons who are not poor.

The share of noncash benefits that is received by persons in crisis is larger than for cash benefits. Few benefits are paid to poor who are not in crisis. Almost no noncash benefits are paid to persons whose resources in the absence of means-tested programs place them at or above twice the poverty threshold.

Figure 1 graphs these relationships. It shows a rising proportion of persons receiving transfers as the crisis gap widens. The relative crisis gap is defined as one minus the prewelfare crisis gap. The figure also shows the low proportion of persons with sizable crisis gaps who live in households with positive liquid assets.

We conclude that the prewelfare crisis measure gives a clearer understanding of mechanisms by which means-tested transfers are distributed than the poverty ratio, which would classify all persons shown on the rows labeled (B) as poor. It does this without incorporating specifics about those distribution mechanisms, but relies on a concept of potential consumption for its conceptual underpinnings.

Figure 1  
Proportion Receiving Transfers and Proportion with Assets



The implications of Table 10 for the expected benefit paid are shown in Table 11. Columns 1 and 2 display the mean payment according to the crisis measure and poverty classification used in Table 10. Again, the expected payment declines monotonically with increase in the crisis ratio. In the case of noncash programs this is the result of both decreases in eligibility and the mean payment to recipients as the level of the crisis ratio rises. For cash programs there are a number of recipients who receive large payments despite a high crisis ratio, so that most of the apparent decline is due to reduction in recipiency rates. Column 3 of Table 11 shows the crisis gap--the difference between the poverty threshold and available resources--for each group. (A negative amount indicates resources in excess of the poverty threshold.)

We can further view the responsiveness of transfers to need by graphing the relationship. For convenience we divide the amount of transfer payments received by the poverty threshold and call the scaled result relative transfers. Relative transfers are compared to the relative crisis gap in Figure 2. The dotted 45-degree line in the figure shows the level of relative transfers necessary to eliminate the crisis gap. The distance between this line and the expected level of transfers shows the unfilled crisis gap. (The effect of a more liberal poverty threshold can be seen by displacing the line to the left. For example, the Food Stamps program recognizes a need to pay some benefits to families up to 125 percent of the poverty threshold. It can be pictured as a program for which the dotted line has an intercept at -0.25 on the horizontal axis.)

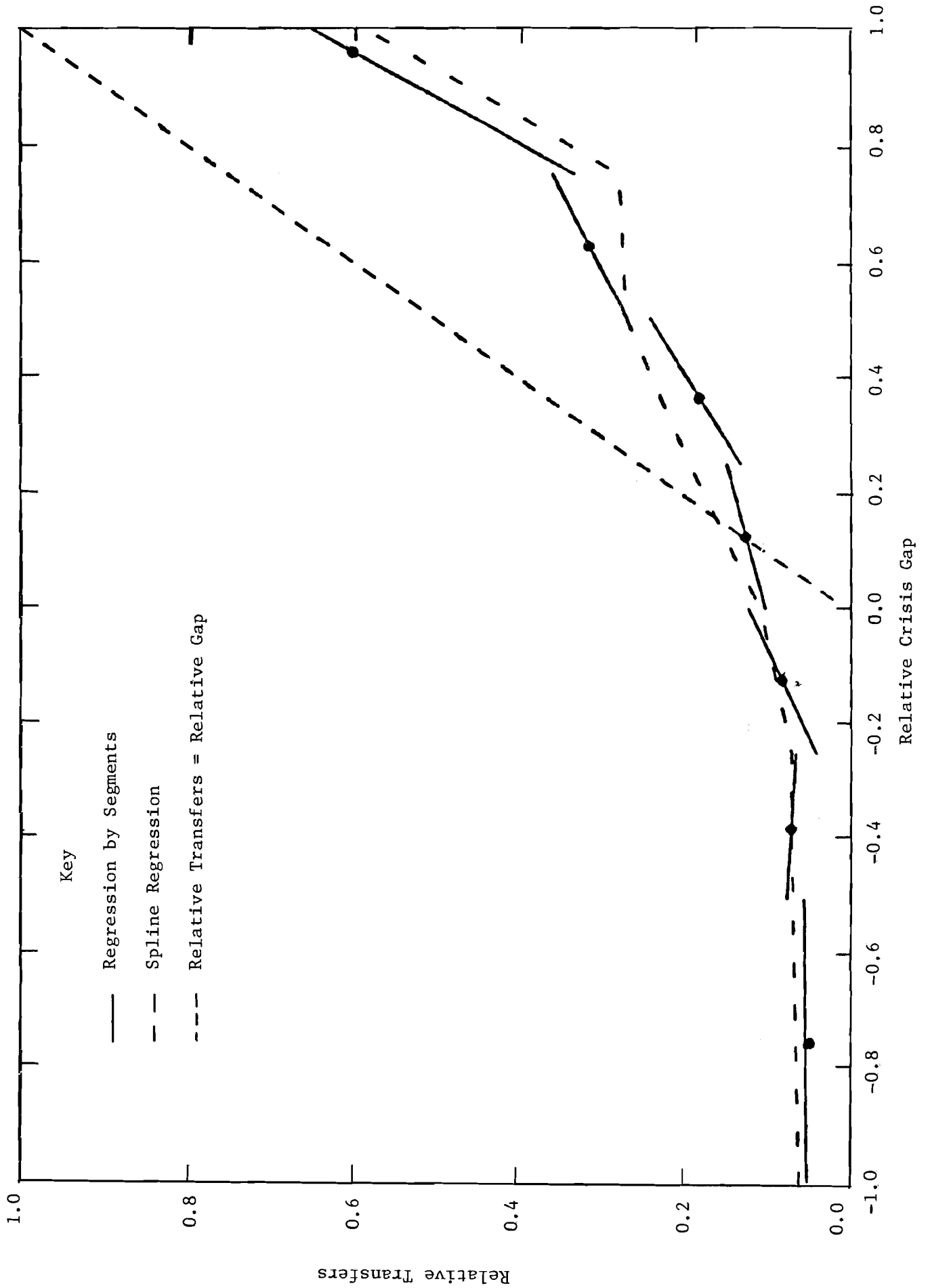
Table 11

Mean Transfer Payments and Crisis Gap  
for Different Target Populations  
(Wave-3 Cross Section)

Prewelfare Crisis Measure, Target Population	Mean Transfer		Mean Crisis Gap (3)	Percentage of Gap Unfilled (4)	Percentage of Population (5)
	Cash (1)	Noncash (2)			
A. Crisis < 1					
0 to .5	\$1,277	\$661	+\$ 3,116	37.8%	6.73%
.5 to 1.0	304	245	+ 849	35.3	5.61
B. In poverty, not crisis < 1					
1.0 to 1.5	279	139	- 516	a	0.62
1.5 to 2.0	157	69.1	- 2,009	a	.22
2.0 or more	158	28.2	- 41,089	a	1.04
C. Neither in poverty nor crisis < 1					
1.0 to 1.5	171	89.9	- 906	a	6.32
1.5 to 2.0	83.0	34.9	- 2,569	a	7.64
2.0 or more	32.4	5.77	- 30,336	a	71.8
Mean (total)	146.8	72.0	- 2,221	--	100.0

<sup>a</sup>Not meaningful since gap is negative.

Figure 2  
Spline Regression for Relative Transfers



The solid line segments in Figure 2 show the ordinary least squares regression lines for relative transfers on the relative gap, run separately for each of the indicated segments. There are at least 950 unweighted observations on each segment. The dot shows the mean for the observations in each segment. The kinked dotted line shows a spline regression of the relation where the endpoints of the segments are constrained to meet.

As is apparent in the figure, persons with small crisis gaps are on average moved out of crisis, but the transfer system allows increasing proportions of unmet need until the relative gap reaches .75. Then the transfer system responds with a dollar of transfer for a dollar increase in need.

Table 12 presents coefficients and summary statistics for the spline regression. Table 12 also records the dispersion of transfers for persons of equal need. Large dispersion indicates targeting on a basis other than need--redistributions among persons with the same need could increase average well-being. The R-squared for the spline regression shows that, for the group of persons with prewelfare crisis ratios less than 3, 45 percent ( $1 - .552$ ) of the variance in transfers is not explained by variation in the level of need.

One might ask if this summary of means-tested programs is reasonable when we know that eligibility is frequently determined by family characteristics. Figure 3 shows a spline regression for each of the four household types analyzed earlier. A good part of the dispersion is accounted for by household structure--an F-test shows that the coefficients differ significantly across the groups. Somewhat surprisingly, the group receiving the largest expected transfers are married couples



Table 12

## Spline Regression for Transfers on Crisis Gap (4 Month)

## A. Regression Coefficients:

Sample of All Persons with Crisis Ratio &lt; 3, N = 20,237

Dependent Variable: Relative Transfers = Transfers/Poverty Line

Splined Independent Variable: Relative Crisis Gap = Crisis  
Gap/Poverty Line

Coefficient	Range of Spline	Estimate	Standard Error
b <sub>0</sub>	constant	.0274	.000149
b <sub>1</sub>	.75 to 1.	1.25	.0480
b <sub>2</sub>	.5 to .75	.0507	.0185
b <sub>3</sub>	.27 to .5	.316	.0180
b <sub>4</sub>	0 to .25	.351	.0332
b <sub>5</sub>	-.25 to 0	.165	.0432
b <sub>6</sub>	-.5 to -.25	-.0160	.0183
b <sub>7</sub>	-.5 to -1.	-.0321	.00549
b <sub>8</sub>	-1 to -2.	-.0130	.00185

## B. Summary Statistics for Spline Transfer Regressions:

By Household Structure

Samples Include Persons with Crisis Ratio &lt; 3.

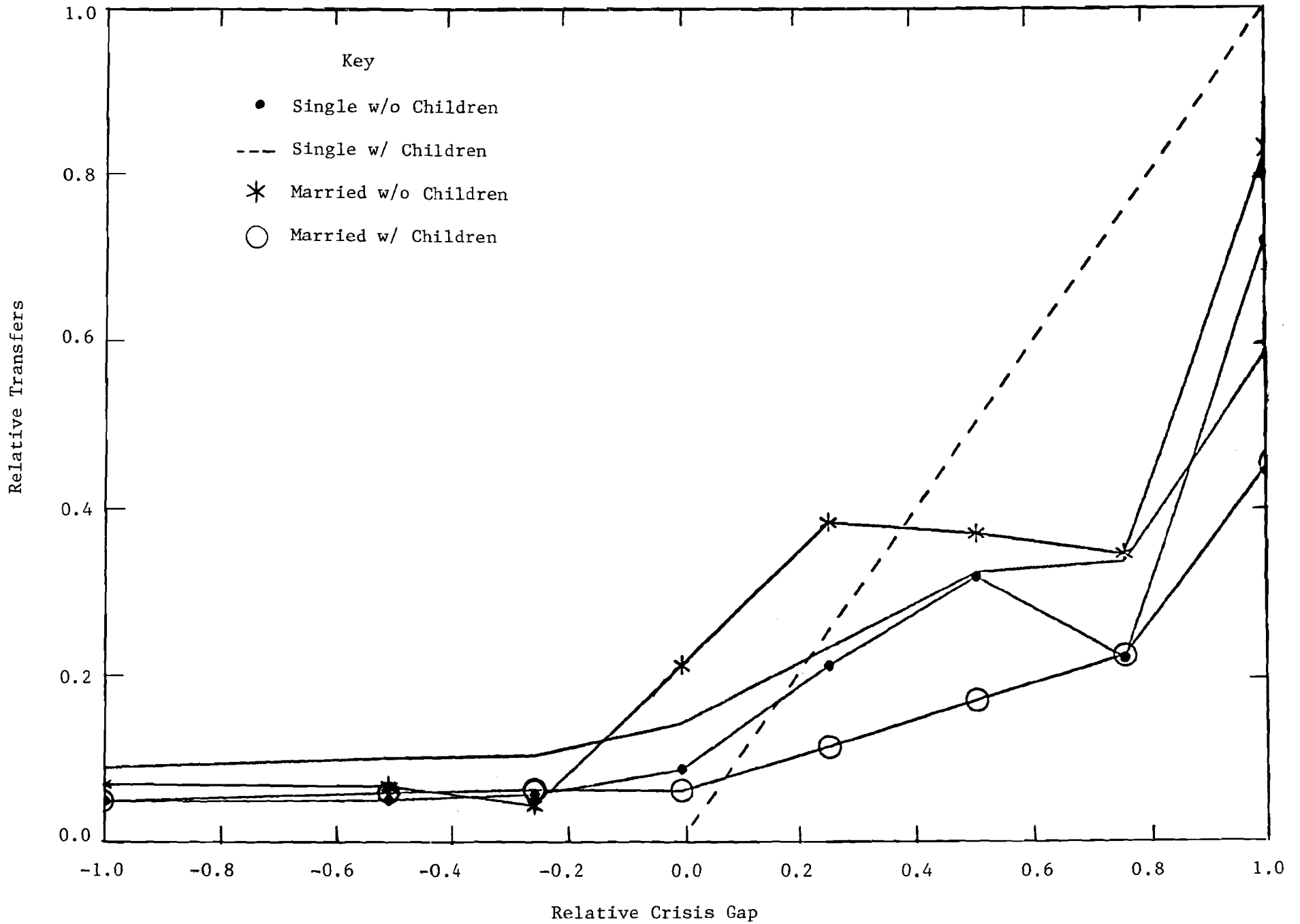
Sample:	N	R <sup>2</sup>	$\sigma^2$
1. All <sup>a</sup>	20,237	.552	.0282
Household Structure:			
2. Only related persons present	19,140	.572	.0268
Single w/o children	2,343	.593	.0389
Single w/children	3,816	.664	.0346
Married w/o children	2,323	.278	.0282
Married w/children	10,658	.494	.0196

Note: Transfers include both means-tested cash transfers, and noncash transfers.

<sup>a</sup>Includes households with unrelated persons present.

Figure 3

Spline Regression for Transfers: By Household Structure



without children. This group likely includes many elderly who receive SSI and means-tested veterans' benefits. The least targeted group is married couples with children. Based solely on the crisis gap as a measure of need, redistribution toward this group is warranted.

The R-squared in the bottom panel of Table 12 shows that there is a good deal of dispersion of transfers even within household structure groups. Transfers to single-headed households with children show the least unexplained variation (34 percent), while the married without children group shows the most (72 percent). Again, this latter group likely mixes elderly who receive SSI with younger couples who receive nothing.

## 11. CONCLUSION

We argue that the official poverty measure based on cash income is a deficient measure of hardship, particularly for short accounting periods. We propose an asset-adjusted poverty measure, our crisis measure, that screens out those persons with liquid assets adequate to maintain consumption at the poverty threshold level during the accounting period. The difference in levels between the two measures reveals that a portion of the officially measured poor are misclassified according to our crisis measure. Further, the poverty measure substantially overstates transitions in or out of hardship--those in crisis, the asset and income poor, show much lower mobility than the officially measured cash-income poor.

For some groups, such as nonwhites or single-head households with children, the two measures do not differ by much; these groups hold few

assets. For the elderly and married couples without children the measures differ substantially. When we look at the targeting of means-tested transfer programs, we find that programs tend to be targeted more toward those in crisis than those in official poverty. The official poor who are not in crisis do not receive many transfers, probably owing to asset tests in transfer programs.

Given the sample design of SIPP, we have most confidence in measures taken on a four-month basis. One advantage of subannual measures is that we can more closely match household composition to income. Further, we can more accurately portray hardship at a point in time as long as assets have been included as resources. The SIPP does not allow computation of assets on a monthly basis. Aggregation to annual measures requires sample weighting for attrition, longitudinal imputation of missing data, and methods for handling changes in family composition. Our results suggest the importance of gathering asset information on a subannual basis in order to measure hardship on a subannual basis.

Along with this last suggestion, further work showing how the transfer system affects the consumption pattern of households seems a useful extension. This would require comparisons across accounting periods that consider the potential lag of the transfer system response to need. Improved data on assets or actual consumption of households would be necessary. Moreover, the effects of changes in marital status, or other household composition effects, should be considered. On a subannual basis, measurement of well-being depends on understanding how resources, both income and assets, are distributed when household composition changes.

## Appendix A

## ALTERNATIVE ASSET MEASURES

Here we address the sensitivity of our crisis measure to an alternative asset definition. We have concentrated on liquid assets measured by income flows of capitalized interest. Another natural asset measure is the capitalized value of all property income flows. This would add income from stocks and rental property to our measure. These types of assets are expected to have a larger variance in returns and be less liquid. Owner-occupied housing and consumer durables do not generate property income and are thus excluded. Since our concern is with financing short-term consumption, this exclusion seems reasonable, although it ignores the potential to borrow against these assets.

Table A-1 shows that persons experiencing a four-month crisis receive very little property income that is not interest. To make this comparison we again used a 6 percent rate to capitalize all property income in excess of interest income. To the extent that the 6 percent rate understates the return available on these assets, our capitalization overstates the value of these assets. The table shows that 94 percent of those in crisis receive no property income other than interest. If we were to include all property income assets in our crisis measure, and assume that anyone who receives even one dollar of noninterest property income is moved out of crisis, then our crisis measure would fall by 6 percent. For the average four-month measure this would be a change from 11.3 percent to 10.6 percent, increasing differences between the crisis

and poverty measures (see Table 2). (The negative property income cases shown in the table are most likely wealthy persons taking property income (e.g., rental, losses.)

Table A-1

Alternative Asset Measure by Crisis Status  
1984 Longitudinal Sample

Population (4-month measure)	Distribution of the Capital Value of Property Income Less Interest Income (Other Assets) <sup>a</sup> at Beginning of Period--Percentage of Row Total					Total
	Negative	Zero	1 to \$2,000	\$2,001 to \$10,000	\$10,000 plus	
In Crisis Period 2 <sup>b</sup>	.43	94.1	2.47	1.20	1.80	100%
In Crisis Period 3	.19	94.1	3.14	1.23	1.33	100

<sup>a</sup>Includes stocks, rental property income, and all other noninterest bearing, property income assets. Owner-occupied housing and consumer durables excluded.

<sup>b</sup>Data for the Period 1 calculation was inadvertently not extracted by us from SIPP.

## Appendix B

Table B-1

Distribution of Crisis within Official  
Poverty--12-Month Measures

Poverty ratio	Crisis Ratio					Total
	<.5 <sup>a</sup>	.5-1.0	1.0-1.5	1.5-2.0	2.0+	
A. Percentage of Row Total						
< .5 <sup>a</sup>	94.0	4.0	0.6	0.5	0.0	100.0
.5-1.0	0.0	90.6	5.1	1.1	3.2	100.0
1.0-1.5	0.0	0.0	78.0	9.2	12.8	100.0
1.5-2.0	0.0	0.0	0.0	69.5	30.5	100.0
2.0+	0.0	0.0	0.0	0.0	100.0	100.0
Totals	3.0	7.4	7.8	8.7	73.1	100.0
B. Means of Assets at Beginning of the Period						
< .5	\$58	\$2,260	\$4,730	\$9,980	\$92,900	\$1,050
.5-1.0	0	78	2,480	5,630	57,700	2,100
1.0-1.5	0	0	209	2,850	27,500	3,940
1.5-2.0	0	0	0	295	19,800	6,240
2.0+	0	0	0	0	19,000	19,000
Totals	58	116	339	625	19,400	14,230
Population represented by weights (millions) annual	6.8	17.0	17.8	19.8	166.9	228.4

<sup>a</sup>0.1% of the population reports negative income.



## Notes

<sup>1</sup>We exclude persons from the sample who report data for less than the 4-month reference period. In part, this decision was taken because a high proportion of such persons have imputed data. Deceased persons and persons who move out of sample households without interviews will receive a completely imputed record. (They are often type z nonresponse.) This procedure does not exclude persons who move and are interviewed at their new address, and whose presence in another household earlier in the reference period is appropriately recorded by month.

Short and McArthur (1987) estimate the attrition cumulatively to wave-4 for persons 15 years of age and older in rotation groups 1-3 of the sample (75 percent of the sample). The attrition is 17.80 percent, given the interview in wave 1. The slightly different rule for inclusion stated above yields attrition of 16.05 percent ( $100 - 44,639/53,172$ ) for all persons listed in wave 1.

<sup>2</sup>This calculation assumes that all such accounts earn the same rate of interest. It also assumes that assets are carried over to the following period.

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