NBER WORKING PAPER SERIES

MEASURING THE WELL-BEING OF THE POOR USING INCOME AND CONSUMPTION

Bruce D. Meyer
James X. Sullivan

Working Paper 9760
http://www.nber.org/papers/w9760

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
June 2003

This paper was prepared for the Joint IRP/ERS Conference on Income Volatility and Implications for Food Assistance, May 2-3, 2002 in Washington, DC. We thank seminar participants at the University of Colorado, the ERS, the University of Illinois at Chicago, the University of Notre Dame, the NBER Labor Studies and Consumer Expenditure Survey meetings, and Northwestern University for their comments, and John Bound, Charlie Brown, Angus Deaton, Thesia Garner, Jonathan Gruber, Dean Jolliffe, Joseph Lupton, Bruce Spencer, Frank Stafford and Robert Van Horn for suggestions. The views expressed herein are those of the authors and not necessarily those of the National Bureau of Economic Research.

Measuring the Well-Being of the Poor Using Income and Consumption
Bruce D. Meyer and James X. Sullivan
NBER Working Paper No. 9760
June 2003
JEL No. D12, I32

ABSTRACT

We evaluate consumption and income measures of the material well-being of the poor. We begin with conceptual and pragmatic reasons that favor income or consumption. Then, we empirically examine the quality of standard data by studying measurement error and under-reporting, and by comparing micro-data from standard surveys to administrative micro-data and aggregates. We also compare low reports of income and consumption to other measures of hardship and well-being. The closer link between consumption and well-being and its better measurement favors the use of consumption when setting benefits and evaluating transfer programs. However, income retains its convenience for determining program eligibility.

Bruce D. Meyer
Department of Economics
Northwestern University
2003 Sheridan Road
Evanston, IL 60208
and NBER
bmeyer@northwestern.edu

James X. Sullivan
University of Notre Dame
Department of Economics
447 Flanner Hall
Notre Dame, IN 46556
Sullivan.197@nd.edu

I. Introduction

Income is almost exclusively used to measure economic deprivation in the United States. Relative to consumption, income is generally easier to report and is available for much larger samples, providing greater power to test hypotheses. An extensive literature examines the effects of low income on child outcomes such as test scores, behavior problems, and health (for example, see Mayer 1997). While the accuracy of income reports in many datasets has been analyzed, this work has not focused on validating income measures for poor families.[1] For those at the bottom, where the extent of material deprivation is most important, there is little evidence to support the reliability of income measures. Moreover, there is significant evidence suggesting that income is badly measured for the poor.

Unlike the U.S., in developing countries consumption is the standard measure of material well-being.[2] While there are obvious differences between developing and developed countries, such as the extent of formal employment, these distinctions are blurred when looking at the poor in developed countries who may do little formal work. Arguably, consumption is better measured than income for poor families. Consumption is less vulnerable to under-reporting bias, and ethnographic research on poor households in the U.S. suggests that consumption is better

---

[1] An exception is Mathiowetz, Brown, and Bound (2002).

[2] World Bank (2001) summarizes this preference for consumption measures of poverty. For example, on page 17 the report argues that "Consumption is conventionally viewed as the preferred welfare indicator, for practical reasons of reliability and because consumption is thought to better capture long-run welfare levels than current income." See Deaton (1997), particularly Section 1.2, for an informative discussion of income and consumption measurement issues in developing countries. For a paper that argues for the use of income in developed countries see Atkinson (1991).

reported than income. There are also conceptual and economic reasons to prefer consumption to income because consumption is a more direct measure of material well-being.

This paper examines the quality of income and consumption measures of material well-being. We explore both conceptual and measurement issues, and compare income and consumption measures to other measures of hardship or material well-being. Our analysis begins by exploring the conceptual and pragmatic reasons why consumption might be better or worse than income. We then consider five empirical strategies to examine the quality of income and consumption data. First, we compare the income and consumption reports, along with assets and liabilities, for those with few resources to examine evidence of measurement error and under-reporting. Second, we investigate other evidence on the internal consistency of reports of low income or consumption. Third, we compare how well micro-data in standard datasets weight up to match aggregates for classes of income and consumption that are especially important for low-resource families. Fourth, we examine comparisons of household survey reports of transfer receipt to administrative micro-data on transfer receipt. Fifth, we evaluate income and consumption measures by comparing them to other measures of hardship or material well-being.

We find substantial evidence that consumption is better measured than income for those with few resources. We also find that consumption performs better as an indicator of low material well-being. These findings favor the examination of consumption data when policy makers are deciding on appropriate benefit amounts for programs such as Food Stamps, just as consumption standards were behind the original setting of the poverty line. Similarly, the results favor using consumption measures to evaluate the effectiveness of transfer programs and general

trends in poverty and food spending. Nevertheless, the ease of reporting income favors its use as the main eligibility criteria for transfer programs such as Food Stamps and Temporary Assistance for Needy Families (TANF).

II. An Analytical Framework for Income and Consumption Data

There are both conceptual and reporting reasons why one might prefer either consumption or income data when examining the level of or changes in the material well-being of the most disadvantaged families. The conceptual issues strongly favor consumption, while reporting issues tend to favor income for most people but not for low-resource populations.

To make these ideas as precise as possible, we first need to define income, consumption, and expenditures. We define *income* (what might be better called *survey income*) as the inflow of money and near money to a family. Because we want to reflect consumable resources, we subtract taxes on income and add the face value of Food Stamps, which are close to money in practice. One should note that this definition reflects what one can potentially measure well in a household survey rather than a Haig-Simons type measure.[3]

Expenditures is the outflow of money from a household. *Consumption* starts from expenditures but replaces the outlays for durable goods with the flow value of services from these goods (this adjustment is feasible for housing and cars in our data), minus expenditures on

[3] Haig and Simons (Rosen 2002) provide a conceptually better measure of income defined as the net increase in the ability to consume during a period. In other words, consumption plus net additions to wealth. This definition would include unrealized capital gains, the flow value of durable services, employer provided fringe benefits, and other items. Such a definition cannot be implemented with conventional survey data.

investment items (medical care, education) minus cash gifts to other families and charities.

In practice, survey income, expenditures, and consumption are all measured with significant error. Thus we can write observed income, expenditures and consumption as $Y=Y^*+\varepsilon_Y$, $E=E^*+\varepsilon_E$, and $C=C^*+\varepsilon_{C,}$ where Y*, E*, and C* are the true values of these concepts, and ε_Y, ε_E, and ε_C are the corresponding errors in the observed values. The conceptual reasons to prefer income or consumption deal with differences between Y*, E*, and C*, while the reporting reasons deal with the distributions of ε_Y, ε_E, and ε_C.

A. Conceptual Issues

Economic theory suggests that current consumption more directly measures the material well-being of the family than current income.[4] Current income can be a misleading indicator of the economic status of the family because earnings are susceptible to temporary fluctuations due to transitory events such as layoffs or changes in family status. These temporary changes cause current income to vary more than consumption, but they do not necessarily reflect changes in well-being (for example, see Wemmerus and Porter 1996). Consumption is more likely to capture a family's long-term prospects than is income.[5] Income measures also fail to capture disparities in consumption that result from differences across families in the accumulation of assets or access to credit (Cutler and Katz 1991). Expenditures reflect a family's long-term

[4] For further discussion see Cutler and Katz (1991), Slesnick (1993), or Poterba (1991).
[5] Poterba (1991) provides evidence that the difference between current income and current expenditures is larger for very young and very old households, suggesting that some of this disparity is likely the result of life-cycle behavior, and that current income understates well-being for these households. See Blundell and Preston (1998) for a recent formal analysis of these issues and the potential for combining income and consumption data.

prospects but may be lumpy because of the indivisibility of certain purchases such as houses and cars. Consumption though should reflect the smoothed flow of services obtained from these durable goods.

The insurance value that means-tested transfer programs provide for both recipients and potential recipients is likely to change as reforms alter program generosity and eligibility. Consumption is more likely to reflect these changes in insurance values than is income, though not in all cases. For example, if welfare is a valuable source of insurance for poor families, then the value of this insurance falls as welfare reform introduces more rigid eligibility rules such as time limits and work requirements. This change creates an incentive for these families to find alternative sources of insurance such as increased savings, resulting in reduced consumption, holding income fixed. Alternatively, families could choose to increase earnings by working more. However, in this case, an income measure of material well-being would suggest that families are better off as a result of the reduction in insurance. However, one should note that a single year's consumption or income may often be a poor proxy for inter-temporal utility. It is possible to construct situations where inter-temporal utility and income rise, while consumption falls.

So far, these arguments that suggest consumption better captures material well-being than income rely on differences between Y* and C* that are due to savings. For the low-educated single mother population on which we focus, we believe that Y* and E* are in most cases the same because little saving and dissaving occurs for this group. Nevertheless, C* differs from Y* due to the differences between expenditures on durables and the service flow from them.

In addition, income does not reflect in-kind transfers, such as Medicaid, that are reflected

in expenditure data. These in-kind transfers are a particularly important source of support for families with low cash incomes. Recent changes in Medicaid and SCHIP are likely to substantially affect family well-being without affecting measured family income. On the other hand, non-medical consumption measures would reflect the Medicaid changes. If single mothers spend less out of pocket on health care, they can spend more on food and housing.

That consumption can be divided into meaningful categories such as food and housing provides two advantages over income. First, one can directly measure well-being using essential expenditure categories such as food and housing, and one can measure child well-being using child clothing and other child goods. Second, one cannot account for relative price changes with a single deflator for income. However, one can deflate different components of consumption using different price indices. This flexibility may be particularly important if the market basket of goods consumed by those with few resources differs from the general population.

Income measures may also fail to handle appropriately illegal activity. For example, if the illicit activity is on the expenditure side (drug purchases for example), expenditures on food, housing, or total expenditures (which do not include illicit drug purchases) would still provide meaningful summary information on family well-being. In the case of an individual selling illicit drugs, this individual may not report revenue from this illicit activity as income (a problem for income data), but involvement in illicit activity does not imply that food and housing expenditures will be mis-reported. This second case is really an example of why the absolute value of the error in reported income, $\varepsilon_{Y,}$ might be much larger than the error in reported consumption, ε_C, which is the issue on which the next sub-section focuses.

B. Reporting Issues

While there are conceptual reasons to prefer consumption to income, the extent to which income and consumption are reported with error is the other main issue in choosing a measure of material well-being. We believe that the main reason to prefer consumption to income is that measurement error in consumption is less pronounced for those with few resources than is measurement error in income.

First, we should mention the key reason why income is generally more used than consumption: income is often easier to report. Income is particularly easy to report when it comes from one source and is recorded on a W-2 received in the mail which is in-turn entered on a tax form submitted to the IRS. Finding by Bound and Krueger (1991) support the idea that income is easy to report-- more than 40 percent of Current Population Survey (CPS) respondents report earnings that are within 2.5 percent of IRS earnings.[6] This argument is probably the main reason most surveys rely on income measures and is pursuasive for many demographic groups.

However, for some demographic groups that are particularly important from a poverty and public policy perspective, such as low-educated single mothers, this argument is not compelling. For low-educated single mothers, income often comes from many other sources besides earnings in formal employment. For these disadvantaged families, transfer income (which is consistently under-reported in surveys) and off-the-books income (which is likely to be unreported in surveys) account for a greater fraction of total income. For example, in the welfare

[6]This finding is for a very select subset of observations that can be matched in the CPS and Social Security earnings records with non-truncated, non-imputed earnings in covered employment.

reliant single mother sample in Edin and Lein (1997), the average single mother obtains at least ten percent of her income from each of four different sources (Aid to Families with Dependent Children (AFDC), Food Stamps, unreported work, boy friends/absent fathers) and only two percent from reported work. With many sources of income that do not appear on a W-2 statement, accurate reporting is much less likely.

Furthermore, tax payments are often not reported in household surveys. Taxes can be imputed, but there is error in this process. Thus, even if pre-tax income is typically recorded precisely, after-tax income is usually not. On the other hand, consumption already reflects net of tax resources. Since tax credits can be a forty percent addition to earned income for low-income parents, accounting for taxes is essential to properly measure material well-being.

While most families may be able to report the amount they earn (at least pre-tax) with greater accuracy than the amount they spend on goods and services, this argument is less compelling for groups that spend a large fraction of their resources on food and housing. Furthermore, the consumption of food and housing may be of interest in their own right and sufficient statistics for well-being if their share of the budget is fairly similar across families, once one controls for total expenditures. Food and housing together constitute nearly 70 percent of the consumption of low-educated single mothers and thus provide a reasonable measure of material well-being.

Another advantage of income surveys is that they tend to have larger sample sizes and thus greater precision. Because consumption data are much more costly to collect for a given sample size, datasets with consumption information are much smaller. The larger samples with income data allow patterns to be determined with greater precision, analyses of subsamples to be

performed with confidence, and hypotheses to be tested with greater power. Furthermore, income measures are available in many datasets that include other variables of interest. Nevertheless, evidence suggests that the gain in precision from using income is not as great as a simple comparison of sample sizes suggests (Meyer and Sullivan, Forthcoming).

While ease of reporting and precision may favor income, for low-resource families income is often subject to substantial under-reporting. Overall, it appears that income is under-reported, and evidence shows that specific types of income such as self-employment earnings, private transfers, and public transfers are under-reported. Part of the explanation for this finding is that income seems to be a more sensitive topic and easier to hide. An additional issue is that income under-reporting has increased, making time-series comparisons problematic. We now discuss these issues in turn.

Research looking at both family income and consumption shows that reported income falls well short of reported consumption. Cutler and Katz (1991) note that the fraction of individuals with income below the poverty line is much larger than the fraction with consumption below the poverty line. Slesnick (1993) also emphasizes that poverty rates based on total expenditures are much lower than those based on income. Several papers have pointed out that the reported expenditures of those who report low incomes often are multiples of their reported incomes (Rogers and Gray 1994; Jencks 1997; Sabelhaus and Groen 2000). We discuss these issues more in Section IV.

Self-employment tends to be concentrated at the top or the bottom of the income distribution. Under-reporting of income is of particular concern for the self-employed, so this problem may be worse for assessing the well-being of the poor. Reported income tends to miss

monetary transfers from family and friends as well as in-kind transfers.[7] In-depth interviews in ethnographic research have shown that a large share of low-resource single mothers obtain substantial income in transfers from family and friends, boyfriends, and absent fathers (Edin and Lein 1997). These transfers typically are not captured in survey data on income.

In addition to the under-reporting of earnings and private transfers, household surveys also fail to capture the full value of government transfers, particularly for single mothers. Coder and Scoon-Rogers (1996) and Roemer (2000) have documented the pattern of under-reporting for a large number of transfer programs (see Hotz and Scholz (2002) and Moore et al. (1997) for recent reviews). There are also many studies that focus on under-reporting in a few programs or a single transfer program such as Bavier (1999) and Primus et al. (1999) on AFDC/TANF and Food Stamps. Bollinger and David (1997, 2001) examine Food Stamps, Bitler, Currie, and Scholz (2003) study WIC and Food Stamps, and Giannarelli and Wheaton (2000) and Meyer (2002) examine SSI. Another strand of the evidence comes from micro-validation studies such as Marquis and Moore (1990) and Moore, Marquis, and Bogen (1996). We will discuss these issues at length in Section IV.

A view among some researchers is that individuals are more willing to report their expenditures than their income, possibly because they are primarily taxed on their income rather than their expenditures. This view is certainly consistent with the high rates of non-response in the CPS that are listed in Table 3 of Moore et al. (1997). They report non-response rates of over twenty-five percent for most of the large income categories, on top of the 7-8 percent interview

[7] Consumption will also miss some in-kind transfers, but the consumption measure we use includes the service flow from gifts of cars, and will incorporate some gifts of housing or rent.

refusal rate. For example, in 1996 the non-response rate was 26.2 percent for wage and salary income, 44.1 percent for interest income, and 30.2 for pension income. The reason for non-response is generally that the interviewee refused to answer or indicated that he/she did not know the answer. In the Consumer Expenditure Survey (CE) the interview non-response rate was 17 percent, and in a typical year about 9 percent of expenditure categories are imputed, totaling about 13 percent of total expenditures. Thus, the fraction of households with missing or imputed expenditure data is quite a bit lower in the CE than in the most used income data source.

Changes in the extent of under-reporting over time exacerbates the problem of understated income (see Meyer and Sullivan, Forthcoming, for an extended discussion of this issue). For example, a diminished dependence on cash transfers, which have high implicit tax rates, reduces the incentive to hide income. AFDC caseloads fell dramatically after March of 1994, reducing the incentive for single mothers to hide income. Consequently, reported income for these families might rise even if the true value of income does not change.[8] Recent Earned Income Tax Credit (EITC) expansions also changed the incentives to under-report income by increasing the incentive to substitute on-the-books earnings (which would be partially matched by credit dollars) for off-the-books income.

Under-reporting of means-tested cash transfers (AFDC/TANF and Food Stamps) has increased in recent years (Bavier 1999; Primus et al. 1999). Overall, unreported cash transfers grew by 68 percent from 1993 to 1997. Assuming poor families under-report these transfers at the same rate as all welfare recipients, this rise in under-reporting alone would bias downward

[8] Mayer and Jencks (1993) provide evidence for an earlier period that the growth in both means-tested transfers and illegitimate income resulted in an increase in the under-reporting of income.

measured changes over this period in income for single mothers in the bottom income quintile by nearly 8 percentage points.[9] Even if under-reporting rates were not changing, the dramatic changes in transfer and tax programs in recent years would still lead to large changes in biases over time.

Overall, there is substantial evidence to indicate that $|\varepsilon_Y|$ is often large and that ε_Y is much more likely to be a large negative number than a large positive one. Certainly, consumption is measured with error as well. However, families do not have the same incentives to under-report consumption, so there is little reason to suspect that the rate at which families mis-report consumption has changed over time. Moreover, under-reporting of consumption is not likely to be correlated with policy changes. Because the evidence shows that reported consumption often exceeds income for those with few resources, one might be concerned that consumption is systematically over-reported–an issue discussed in Section IV.

III. Data and Methods

We examine measures of material well-being from several sources including the Consumer Expenditure Survey (CE), the Panel Study of Income Dynamics (PSID), and the March Current Population Survey (CPS). This section provides a brief description of the samples drawn from these nationally representative datasets for our analysis and outlines how we construct measures of consumption, expenditures, and income. Appendix 1 provides a more

[9] This figure is based on the authors' calculations using CPS and administrative data reported in Bavier (1999).

detailed description of these datasets as well as definitions for our measures of material well-being.

Of the two data sources that provide both expenditure and income data for the same families–the CE and the PSID–the CE offers more extensive information on family expenditures, while the PSID offers high quality data on family income.[10] The Interview Survey of the CE is a rotating panel survey of approximately 5,000 households each quarter, interviewing each household for up to five consecutive quarters. This survey provides comprehensive data on household level expenditures. From the quarterly interview, information on spending for about 600 unique expenditure categories is provided. The Interview Survey also provides data on family earnings, transfer income, and tax liabilities. These data are derived from questions covering about 30 different components of income and taxes. These income and tax questions are asked of each member of the family over the age of 14.

Although the PSID does not provide data on total household expenditures, in most years respondents report spending for food at home and food away from home, as well as the dollar value of Food Stamps received. The survey also includes approximately 30 questions about housing arrangements and housing costs. The PSID income data are widely considered to be among the best available (Kim and Stafford 2000). These data include more than 250 income and tax variables derived from a very detailed list of questions about family income. These variables include separate income information for the head, the spouse, and other family members.

---

[10] The March CPS does not include data on expenditures. Limited data on food expenditures are available in the CPS Food Security Supplement, which was first administered in April of 1995.

In addition to annual measures of family income, inter-family transfers, and food and housing expenditure data, the PSID provides a detailed inventory of the family's asset and liability portfolio at five-year intervals (1984, 1989, 1994, and 1999). Data on all of these elements of the family budget constraint enable us to examine more directly how families balance their budgets.

We focus on families that are likely to be disadvantaged given their demographic characteristics, rather than restricting attention to families that report limited resources, because the latter approach will systematically bias comparisons of income and consumption by conditioning on the variables under study. To avoid stacking the deck against either income or consumption, we focus on families headed by a single mother without a high school degree as an easily definable group that typically has very limited resources–more than three-quarters of these families fall below the poverty line.[11] Many of these families benefit from government transfer programs. On average Food Stamps, TANF, and SSI account for about a third of total income for low-educated single mothers.[12] More than half of all single mothers without a high school degree were on welfare in a typical year prior to recent welfare reforms. Although our results and much of our discussion focus on low-educated single mothers, for some of our analyses we also examine other disadvantaged groups including the disabled and the aged poor. These groups also receive substantial government transfers so their income is not largely reported on a W-2. Finally, we also examine more broadly defined samples, including a sample of all single mother

[11] This poverty rate is based on the authors' calculations using the official definition of poverty from the U.S. Census and a sample of low-educated single mothers in the CPS from 1992-1999. Sixty percent of this sample have reported consumption levels that fall below the official poverty threshold.

[12] This figure is based on the authors' calculations using data from the 1999 March CPS.

families as well as a sample of all U.S. families, in order to demonstrate that our results are not limited to a few narrowly defined demographic groups.

From each dataset we construct samples of families headed by a single woman between the ages of 18 and 54 who does not have a high school degree and has at least one of her own children under the age of 18 living with her. We exclude women living with other unrelated adults. Because the CE does not allow us to identify subfamilies, these samples do not include separate observations for single mothers that live with their parents.[13] We use sample weights from each survey so that all results reported in the following section are representative of the U.S. population of primary families headed by low-educated single mothers. For the years from 1992 through 1998, we have a sample of 1,361 low-educated single mothers in the CE, 1,138 in the PSID, and 4,040 in the CPS.

We construct measures of income, consumption, and expenditures that are defined similarly across surveys (see Appendix 1). In order to express these measures on the same scale across observations with different family sizes, we adjust these measures using a scale for the number of adults and children in the family.[14] This adjustment matters little for our results given the types of analyses that we perform and the narrow demographic group on which we focus.

We define income measures that best reflect the true resources available to the family given our data. Thus, our measure of disposable family income includes all money income

---

[13] We constructed family units in the PSID and the CPS in order to most closely match the definition of single mother families as defined by the CE: "One parent, female, own children only, at least one child age under 18 years old." See Appendix 1 for more details.

[14] In particular, we use a scale factor equal to s/(mean of s), where s= 1/(number of adults + number of children*0.7)$^{0.7}$. This is a fairly standard equivalence scale that follows National Research Council (1995).

including earnings, asset income, and public money transfers for all family members. From money income, we deduct income tax liabilities including state and federal income taxes, and add credits such as the EITC. In addition, we add the face value of Food Stamps received by all family members. This income measure more accurately reflects the resources available to the family for consumption than the gross money income measure currently used to calculate official U.S. poverty figures.

Expenditure questions in the CE Interview Survey are designed to capture the current spending of a family. We exploit detailed data on many different components of expenditures in order to convert expenditures to a measure of total family consumption. Three major adjustments distinguish our measure of total consumption from the measure of total expenditures reported in the CE. First, our consumption measure excludes spending on individuals or entities outside the family. For example, we exclude charitable contributions and spending on gifts to non-family members. Second, consumption does not include spending that is better interpreted as an investment such as spending on education and health care, and outlays for retirement including pensions and social security. Finally, reported expenditures on durables tend to be lumpy because the entire cost of new durable goods is included in current expenditures. To address concerns about this lumpy nature of expenditures on durables, we convert reported housing and vehicle spending to service flow equivalents for our measure of consumption. For a detailed description of how we calculate these service flows, see Meyer and Sullivan (2001).

Because we only have reported food and housing expenditures in the PSID, following Skinner (1987) and others, we calculate predicted measures of total expenditures and total

consumption for each family in our PSID sample.[15] For example, to predict consumption we first regress total family consumption on food expenditures, housing flows, an indicator for home ownership, and a set of year dummies using CE data. We estimate a separate regression for each decile of the equivalence scale adjusted food and housing distribution for single mothers without a high school degree in the CE. Parameter estimates from each regression are then used to predict total consumption for each observation in the respective decile of the equivalence scale adjusted food and housing distribution in the PSID using reported spending on food and housing in the PSID. The correlation coefficient between predicted consumption in the CE calculated using this approach and actual consumption in the CE is 0.82.

We calculate predicted total expenditures and predicted non-durable consumption in the PSID following a similar procedure, using measures of total expenditures or non-durable consumption rather than total consumption in the CE. We predict total expenditures in the PSID using a measure of housing expenditures in the PSID rather than housing flows. The correlation coefficients between predicted and actual expenditures and predicted and actual non-durable consumption in the CE are 0.66 and 0.92 respectively. See the Appendix 1 for further discussion of how we calculated predicted consumption and expenditures in the PSID.

---

[15] Skinner (1987) uses CE data to estimate regressions of non-durable consumption on food at home, food away from home, and other components of consumption available in both the CE and the PSID. Our methodology is similar, although we impute measures of total consumption in addition to non-durable consumption. Our approach differs from Skinner's in that we use housing flows rather than the market value of the house as an explanatory variable in our equations for predicted consumption. Also, unlike Skinner, we estimate predicted consumption separately for each decile of the food and housing distribution. Other studies have taken slightly different approaches for constructing broader consumption measures in the PSID. Blundell, Pistaferri, and Preston (2002), for example, estimate a demand equation for food at home in the CE and use these estimates to impute non-durable consumption in the PSID.

IV. Results

Our first empirical strategy is to directly compare income, expenditure, and consumption measures in national datasets. Several papers have pointed out that the reported expenditures of those who report low incomes often are multiples of their reported incomes (Rogers and Gray 1994; Jencks 1997; Sabelhaus and Groen 2000). These results highlight large differences between income and expenditures for poor families. However, comparisons of income and expenditure measures at the bottom of the distribution can be misleading due to the fact that extreme values are more likely to be mis-measured values than other observations. For this reason, we not only examine the level of expenditures for families with low income (and vice versa), but we also compare income and expenditures at the same points in their respective distributions.

Table 1 reports the distribution of real annual income, expenditures, and consumption for single mothers without a high school degree from 1991 to 1998. These statistics imply that the poorest single mother families have extremely low levels of income, expenditures and consumption. For example, a CPS family at the 10th percentile has an annual total income of $5,098 (or $425 per month). More than 1 percent of all low-educated single mother headed families in the CPS have zero or negative annual total income.

These lowest income families appear to spend and consume more than their total income. In fact, the expenditure distribution for these families from the CE suggests that a family at the 10^{th} percentile of the expenditure distribution spends more than $6,600 annually. None of these

families report zero expenditures. In both the CE and the PSID–datasets that provide both income and expenditure data for the same samples–expenditures greatly exceed income at low percentiles.[16] In the CE, expenditures exceed income by 47 percent at the 10th percentile and 27 percent at the 20th percentile (compare row 3 to row 6). In the PSID, predicted expenditures exceed income by 24 percent at the 10th percentile and 13 percent at the 20th percentile (compare row 12 to row 15). Similar differences are evident for comparisons of income and consumption (compare rows 3 and 9 or rows 12 and 18), as the distributions for consumption and expenditures are very similar for low-educated single mothers. These results clearly show that measures of income and expenditures differ at low percentiles. Moreover, these comparisons strongly suggest the presence of substantial unreported income or other forms of measurement error in the income data.

We should emphasize that these are comparisons of the same percentiles, not the same individuals. When we calculate mean income and expenditures of those families in the bottom income decile in the CE (compare rows 4 and 8), average expenditures are over 4.6 times average income at $14,213/3,066. Similarly, when we examine the income and expenditures of those families in the bottom expenditure decile (compare rows 5 and 7), average income exceeds average expenditures by a factor 1.31. These patterns, we believe, are largely driven by measurement error in both income and expenditure data. By conditioning on low income, for

[16] Expenditure and consumption measures are reported for a shorter reference period than the annual income measures. Thus, since annual averages must have less variance than annualized measures over a shorter period, our expenditure and consumption measures are over-dispersed relative to those for annual consumption measures. Thus, at low percentiles our annualized expenditure or consumption measures should be lower than the true annual values, suggesting that measures of annual consumption or expenditures would exceed income by even more than the annualized measures reported in Table 1.

example, we are selecting a sample that includes all extremely low values in the distribution of income–observations that are more likely to be mis-measured–suggesting comparisons of income and consumption for this sample could be misleading. Therefore, we also emphasize comparisons of percentiles, as this approach does not condition on low values of either income or expenditures.

Evidence that reported expenditures exceed reported income at low percentiles is not unique to low-educated single mother headed families. In fact, we find similar evidence for other samples including: all families, all single mother headed families, elderly families, and families with a head who is disabled. For example, Table 2 shows comparisons of low percentiles of income to low percentiles of expenditures for a sample of all families in the CE. These comparisons suggest that expenditures exceed income by more than 30 percent (compare rows 3 and 6) at the 10th percentile and by about 11 percent at the 20th percentile. At all percentiles above the 30th, on the other hand, income exceeds expenditures. Conditioning on low income, again reveals stark differences between income and consumption. Mean expenditures for families below the 10th percentile of the income distribution are 3.6 times mean income for these same families (compare rows 4 and 8). For families with a head who is disabled (results not shown), the 10th percentile of expenditures exceeds the 10th percentile of income by 24 percent. Although we focus on low-educated single mothers for much of this paper, we emphasize that our findings are not unique to this demographic group, but rather are unique to families at low percentiles of the income, expenditure, or consumption distributions.

The results in Tables 1 and 2 show clear differences between income and expenditures and suggest that income may be mis-measured at low percentiles. However, if families with

limited resources draw down assets or borrow to finance spending, then this behavior could explain the puzzle of expenditures exceeding income. Data on assets and liabilities do not support this conjecture. In Table 3 we report various percentiles of the asset and liability distributions of those with predicted expenditures greater than income and income below given percentiles in the PSID.[17] We select years of the data so that assets are measured the year before expenditures exceed income and liabilities are measured the year after expenditures exceed income. These numbers indicate that the typical single mother who reports low income and expenditures that exceed income does not have any assets or liabilities. Total assets are always zero at the median, while the 75th percentile of assets is below $1,000 through the 30th percentile of income for these families. Liquid assets are even lower, never above $250 even at the 90th percentile. Total liabilities are always zero at the 75th percentile of assets, but substantial at the 90th percentile for those above the 10th percentile of income. Unsecured liabilities are zero or trivial amounts except at the 90th percentile for those above the 30th percentile of income. Thus, dissaving cannot explain the excess of reported spending over reported income for those with low reported income.[18]

As shown in Table 4, a comparison of the means of income and expenditures also suggests that reported income tends to be much lower than reported expenditures for low-educated single mothers. A comparison of total family income to total family expenditures from

---

[17] The reference periods for income and expenditures in the PSID do not exactly coincide. Consequently, we cannot perfectly select families whose expenditures exceed income. Nevertheless, a large fraction of the sample analyzed in Table 3 is likely to be families who outspend their income.

[18] Sabelhaus and Groen (2000) show that differences between income and consumption in the tails of the income distribution cannot be entirely explained by intertemporal consumption smoothing, and they argue that measurement error is a likely explanation for the differences.

1991 to 1998 in the CE shows that mean expenditures exceed mean income by 14.4 percent for single mother families. For single mothers who do not have a high school degree, the disparity is even larger at 22.3 percent. Consistent with Table 1, these results show that reported income and reported expenditures can differ noticeably. Moreover, for single mother headed families, expenditures exceed income not only at low percentiles, but also at the mean, providing further evidence that income is likely to be mis-measured for many of these families.

Unlike single mother families, for other types of families income tends to exceed expenditures. Single women without children spend 0.5 percent less than their income during the period of this sample, while two parent families have mean expenditures that are 11.3 percent less than mean income, implying a substantial rate of saving by these families.

Although we expect that income and consumption are fairly well measured for the vast majority of people, both income and consumption are surely measured with some error. Furthermore, observations at the bottom are more likely to have significant measurement error because the more unusual is an observation the more likely its values are due to error than truth. One possible explanation for the differences between income and consumption demonstrated in Tables 1 and 4, is that income is measured with greater error than consumption for households with very limited resources. To provide some evidence on the relative validity of reported income and reported consumption for households with few resources, we examined the correlation between low levels of these two outcomes. We find, for example, that very low consumption (for example, below the 10th percentile) is a better predictor of low income than vice versa.[19] Moreover, this pattern holds in both the CE and the PSID. This further suggests

[19]See Meyer and Sullivan (2002) for further discussion of these results.

that consumption is likely to be a better measure of the well-being of those with very few resources.

Our second empirical strategy is to examine some of the components of reported income for internal inconsistencies. CPS earnings data suggest that wages are also surprisingly low for poor single mother families. Looking at low-educated single mothers with positive earnings in Table 5, 26 percent report earnings that when divided by hours worked imply a wage below the minimum wage. More than 20 percent are earning a wage less than $4.40 per hour (in 2000 dollars), while the nominal value of the federal minimum wage was $4.75 by October, 1996 and was raised to $5.15 in September, 1997. Because some industries are not covered by federal minimum wage legislation, we exclude from the sample single mothers that work in the sectors that are least likely to be covered.[20] The inaccuracy of these reports is underscored by the low fraction of respondents who report hourly wages in the separate hourly wage question that are below the minimum wage (less than 1 percent).[21]

Because wages in the top two rows are calculated using survey reports on annual earnings and the number of weeks worked in the previous year, this result suggests that either earnings are under-reported or hours and weeks are over-reported. However, even if we make very conservative assumptions about hours and weeks worked,[22] the earnings data still suggest

---

[20] Sectors that may not be covered by the federal minimum wage include: self employment, managerial and professional, sales, service, farming, forestry, fishing, and the armed forces. Workers under the age of 20 are excluded, because, in some cases, they can be exempt from the wage floor for the first 90 days of employment.

[21] Respondents are asked to report an hourly wage if they are working in an hourly wage paying job at the time of the survey. For low-educated single mothers, 90 percent of the employed report an hourly wage.

[22] In particular, we topcode the weeks at 35 and the hours at 20.

that 7 percent of working single mothers in covered sectors earn a wage below the federal minimum, suggesting under-reporting of earnings. The validation work that has examined survey reports of earnings and hours suggests somewhat more measurement error in hours than in earnings (Bound et al. 1994). However, the magnitude of both sources is sufficiently large that it is likely that under-reported earnings explain a substantial fraction of these anomalously low wages.

A third empirical strategy is to compare how well weighted income and expenditure reports in standard datasets match aggregates for classes of income and consumption especially important for low-income families. Several recent studies provide comparisons of weighted survey responses to aggregates for the CPS and the Survey of Income and Program Participation (SIPP). Detailed analyses have been conducted by Coder and Scoon-Rogers (1996) and Roemer (2000). Hotz and Scholz (2001) and Moore et al. (1997) also provide useful reviews of this research.

In Table 6 we summarize some of the main findings of Roemer (2000) for CPS and SIPP reports for 1996. Roemer finds significant under-reporting for self-employment income and government transfers, both of which are key sources of income for those with few resources (though self-employment rates of poor women are low). The administrative data suggest that in 1996 52.6 percent of self-employment income was reported in the CPS, while 69.1 percent was reported in the SIPP. Overall, 88.3 percent of government transfers were reported in the CPS and 86.3 percent in the SIPP. However, family assistance, particularly important for single mothers, has a very low reporting rate, 68 percent in the CPS and 76 percent in the SIPP. In the CPS, wages and salaries are slightly over-reported.

Table 7 reports additional comparisons of CPS weighted microdata to aggregates from several sources. Comparisons of AFDC/TANF and Food Stamp reports in the CPS to aggregates indicate that 37 percent of these benefits were apparently not reported in 1997, a sharp rise in under-reporting compared to 1990 (Primus et al. 1999). Similarly, the CPS imputation of EITC payments (which assumes that takeup is 100 percent–in other words, that all eligible recipients receive the credit) when weighted to the population still underestimates total payments made by the IRS by 28 percent (Meyer and Holtz-Eakin 2001). The CPS particularly understates payments received by single parents, for whom 36 percent are missed. This discrepancy is not just tax non-compliance by those who are not single parents, since most in-eligible recipients have a CPS reported child in their household (Liebman 2001). Thus, the evidence suggests that a substantial share of low-income people fail to report earnings to the CPS. A sharp understatement of welfare payments and EITC payments is especially important because these sources are a large share of after-tax income for those near the bottom.[23]

An alternative explanation for a reporting ratio less than one is that the sample weights are too low for the observations with reported transfer income. The sample weights could be too low if they are based on Census numbers that are subject to an undercount. Unfortunately, we have no estimates of the undercount for the populations receiving transfer income. In 1990 for example, estimates are only available for broader groups such as non-blacks and blacks, women

[23]Based on CPS data, in 1993 earnings accounted for about a third of total after-tax income for single mothers without a high school degree, while the EITC accounted for about 4 percent of after-tax income, AFDC/TANF and Food Stamps combined to account for approximately 44 percent, and SSI about 4 percent. By 1998 earnings for this sample accounted for 40 percent of after-tax income, the EITC about 12 percent, AFDC/TANF and Food Stamps about 30 percent, and SSI about 6 percent.

and men, renters and owners, those in large urbanized areas and those in other areas, and by age (and some cross-classifications of these groups).[24] Estimates of the undercount for low-educated single mothers are not available. Overall estimates of the 1990 undercount are in the range of two percent. Estimates are higher for blacks and renters, but lower for women, especially women of childbearing age. It seems unlikely that the undercount could be responsible for even half of the 37 percent CPS under-reporting rate for Food Stamps or TANF reported above for 1997.

Our fourth empirical strategy is another way to examine under-reporting of transfer payments by comparing individual survey reports to administrative micro-data. While this approach in principle could be much more informative about who is likely to under-report and by how much, the evidence that we have is quite fragmentary. Typically these micro-data validation studies have examined one program for one state in a single survey for a single year. Often the studies are unpublished reports that do not include many of the details of the analyses.

Probably the most comprehensive micro-data validation study is the analysis by Marquis and Moore (1990) of eight transfer programs in four states.[25] These authors compare survey reports from the 1984 Panel of the Survey of Income and Program Participation to state and federal administrative data. Some of the results of this study are reported in Table 8. The study examines the binary variable for whether an individual receives any income from the program rather than examining amounts reported. Column 1 reports the ratio of the number of survey members reporting receipt to the number who received payments (expressed as a percentage).

---

[24] See Hogan (1993) and Robinson et al. (1993) for 1990 Census undercount estimates.
[25] See Mathiowetz, Brown, and Bound (2002) and Bound, Brown, and Mathiowetz (2001) for summaries of other studies.

This rate includes payments reported by individuals who did not receive transfers according to the administrative data. For AFDC this unconditional reporting rate is only 61 percent. Since AFDC/TANF is the most important transfer program for single mothers (29 percent of income of those with a high school degree in 1993), this suggests a sharp understatement of reported income. The reporting rate for Food Stamps, the next most important program for single mothers, is quite a bit higher at 87 percent, but still implies that reported recipiency rate is well below the true level. Reporting rates for SSI, unemployment insurance, and workers' compensation are 88, 80 and 82 percent respectively, while Social Security and Veterans' Benefits have rates close to one hundred percent.

The reporting rates in Tables 6 and 7 are probably best compared to these unconditional reporting rates. The 61 percent for AFDC is somewhat lower than the family assistance numbers reported in Table 6 and the AFDC/TANF numbers in Table 7 based on comparisons to aggregate data. The 87 percent reporting rate for Food Stamps though is considerably higher than the Food Stamp numbers reported in Table 7. Overall, the numbers reported in Column 1 of Table 8 are of a similar magnitude or slightly larger than those seen in the comparisons to aggregates reported in the earlier tables.[26] The numbers give the overall impression of substantial program under-reporting. This evidence also suggests that the undercount does not explain the earlier estimates of under-reporting in Tables 6 and 7 since these comparisons should not be badly biased by an undercount and yet still suggest low reporting rates.

Column 2 of Table 8 provides the percentage of true recipients of a given transfer who

[26] These micro-data numbers should be larger than those from comparisons to aggregate dollar amounts if individuals also under-report dollar amounts conditional on reporting receipt.

report that they receive the transfer in the SIPP. This reporting rate may be more relevant than the unconditional rate if one believes that true recipients are likely to be among the poorest single mothers. A substantial number of true recipients may appear extremely poor because they omit reporting transfer receipt. The conditional receipt numbers are very low. 51 percent of AFDC recipients and 61 percent of unemployment insurance recipients report their benefits. Only 77 percent of true Food Stamp and SSI recipients report receipt in the SIPP data. These numbers suggest a high frequency of spurious low income reports due to unreported transfers.

Finally, the last column of Table 8 indicates the importance of failing to report transfer receipt relative to under-reporting amounts conditional on reporting receipt. Column 3 of Table 8 indicates that the vast majority of months not reported are due to recipients entirely omitting report of transfer receipt. This lumpy nature of under-reporting makes it especially likely that there are many large negative ε_Y's in survey income data.

Perhaps consumption exceeds income for disadvantaged families because consumption is over-reported. Both Branch (1994) and Bureau of Labor Statistics (2001) provide useful comparisons of expenditure data in the CE to aggregates. However, these studies examine either the integrated data that are a complicated combination of the data from the Interview Survey and the Diary Survey, or they examine the diary data alone. Throughout our analyses we use the Interview Survey of the CE because this survey provides the most comprehensive information available to the public. We therefore perform our own comparisons of weighted microdata from the CE Interview Survey to administrative aggregates. We also report similar comparisons using the PSID expenditure data. These comparisons of key components of CE expenditures and PSID expenditures to PCE aggregates are shown in Table 9. Food at home is reported at a higher rate

than food away from home. In the PSID the comparisons suggest that 96 percent of food at home is reported, while 91 percent is reported in the CE. Only 60-65 percent of food away from home is reported in either survey. Overall, 84 percent of spending on food is reported in the PSID and 80 percent in the CE. The rent comparisons indicate substantial under-reporting in the PSID, but little under-reporting in the CE where 94 percent of rent is reported. In summary, these comparisons do not indicate that CE and PSID food and rent are overstated on average; we find no evidence to support the conjecture that reported expenditures exceeds reported income due to over reporting of expenditures.[27]

Our final validation strategy is to examine whether low consumption or low income is more closely associated with independent measures of bad health and worse material well-being.[28] In particular, we examine whether low values of income or consumption are more closely related to poor health, disability, and worse values of measures of material well-being such as the size of the residence, number of cars, whether the family took a vacation, and whether the family has access to certain appliances within the dwelling unit. We calculate whether those at the bottom of the consumption distribution are more different from other families than those at the bottom of the income distribution are from other families.

Table 10 examines how the bottom ten percent of the consumption and income

---

[27] We should note that while food and housing are a larger share of consumption of the poor than of others, we cannot examine aggregates for categories of consumption that are as specific to the poor as are transfers payments. Also, some differences between reported expenditures and PCE aggregates are due to small differences between the PCE benchmark definitions and the categories of reported expenditures in the CE and PSID.

[28] Some past research such as Mayer and Jencks (1989) has also argued that income is only weakly correlated with material hardship. In other work, these authors have found substantial differences between income and consumption based measures of changes in well-being over time (Jencks, Mayer, and Swingle 2002).

distributions compare to other families. Let X(.) denote the mean outcome for the group in parentheses, where $I_{0\text{-}10}$ represents those families in the bottom income decile, and $I_{10\text{-}100}$ represents those families in other income deciles. Then,

$$X(I_{0\text{-}10}) - X(I_{10\text{-}100})$$

is the difference in outcomes for those in the bottom decile compared to the remaining deciles. If higher values of the outcome are better, as we expect given the way all outcomes are defined in the table, this difference should be negative if those at the bottom of the income distribution fare worse than others. We report $X(I_{0\text{-}10})$, $X(I_{10\text{-}100})$, and the difference $X(I_{0\text{-}10}) - X(I_{10\text{-}100})$ in Columns 1 through 3 respectively in Table 10. Similarly, in Columns 4 through 6 we report the same statistics for groups defined by their place in the consumption distribution, so that Column 6 reports the difference in mean outcomes for those in the bottom consumption decile and those in the remaining consumption deciles,

$$X(C_{0\text{-}10}) - X(C_{10\text{-}100}).$$

Column 7 reports the key difference in differences summary measure

$$[X(C_{0\text{-}10}) - X(C_{10\text{-}100})] - [X(I_{0\text{-}10}) - X(I_{10\text{-}100})],$$

which should be negative if low consumption is a better indicator of bad outcomes than is low

income.

The results in this table indicate that low consumption is usually a better indicator of hardship than income. Starting with the CE results, Column 3 indicates that in almost all cases, those in the bottom decile of income experience worse material conditions than those above the bottom decile of income. Column 6 indicates that in all cases the bottom decile of consumption fares worse than those above the bottom decile of consumption. Finally, Column 7 indicates that in the vast majority of cases low consumption is a clearer indicator of worse outcomes than low income. In eighteen out of twenty-one cases, the statistic has a negative sign favoring consumption, and the two positive values are small and not significantly different from zero. Seven of the eighteen negative statistics are significantly different from zero. The reference period for reported income in the CE (the previous 12 months) differs from the reference period for reported expenditures (the previous three months). This shorter reference period for reported expenditures yields a less reliable measure of consumption, making these results even more strikingly favorable for consumption.

The PSID results are less clear for low-educated single mothers. Only six of the twelve statistics in Column 7 have the negative sign that would favor consumption–two of which are marginally significant. Surprisingly, low income seems to be significantly more closely associated with low automobile ownership than is low consumption in the PSID. It should also be mentioned that consumption is handicapped in the PSID where we believe the income data are of higher quality than the consumption data. Also, the results are likely biased towards favoring income due to the longer reference period for income (the previous calendar year) than

food expenditures (a typical week) in the PSID.[29]

Table 11 reports the same statistics as Table 10, but for the larger sample of all single mothers. Some of the sample sizes are quite small in Table 10, particularly for the PSID sample of low-educated single mothers, so the greater precision of this larger sample is useful. The results are similar to those in Table 10, but more clearly favor consumption. The CE results again strongly favor consumption over income, as all twenty-one of the difference in differences statistics in Column 7 are negative, and twelve are statistically significant. For the PSID, the results now favor consumption over income. Nine of the twelve statistics have the negative sign that favors consumption. However, none of these difference in differences is significantly different from zero, and income remains a better predictor of automobile ownership. Overall, the results in Tables 10 and 11 suggest that low consumption is more closely related to independent measures of poor health or low levels of material well-being than is low income. This provides a fairly strong endorsement of the use of consumption to measure the well-being of those with few resources.

Alternative specifications suggest that the results in tables 10 and 11 are fairly robust. For example, we consider other thresholds for low consumption and income, such as the 20th percentile, calculating $[X(C_{0\text{-}20}) - X(C_{20\text{-}100})] - [X(I_{0\text{-}20}) - X(I_{20\text{-}100})]$. Our analysis for these bottom quintiles yields results very similar to those for the bottom deciles reported in the paper. We also verify that our results hold not only for low levels of total consumption, but also for low levels of

[29] Although the questionnaire asks respondents to report food expenditures for an average week, it is not clear how many weeks in the past the respondents uses to calculate this reported average. Also, the PSID asks respondents to report rental expenditures per month. However, it is not clear whether the respondent reports the prior month's rent, or an average of monthly rent over a longer time period.

nondurable consumption.

To determine whether these findings are unique to single mothers, we also examine the relationship between low consumption or income and other outcomes for a number of other samples including: all families, elderly families, and families with a head who is disabled (results are not reported here). The results for these samples closely agree with those we report for single mothers. For all three of these samples in the CE, we find that the vast majority of our difference in differences calculations are significantly negative, suggesting low consumption is more strongly associated with low levels of other measures of material well-being than is income.

V. Conclusions

Conceptual arguments as to whether income or consumption is a better measure of material well-being of the poor almost always favor consumption. For example, consumption captures permanent income, reflects the insurance value of government programs and credit markets, better accommodates illegal activity and price changes, and is more likely to reflect private and government transfers. Reporting arguments for income or consumption are more evenly split, with key arguments favoring income and other important arguments favoring consumption. Income data are easier to collect and therefore are often collected for larger samples. For most people, income is easier to report given administrative reporting and a small number of sources of income. However for analyses of families with few resources these arguments are less valid. Income appears to have a higher non-response rate and to be

substantially under-reported, especially for categories of income important for those with few resources. Furthermore, the extent of under-reporting appears to have changed over time.

We present strong evidence that income is under-reported and measured with substantial error, especially for those with few resources such as low-educated single mothers. Expenditures for those near the bottom greatly exceed reported income. This result is evident in the percentiles of the expenditure and income distributions, and in comparisons of average expenditures and income among low-educated single mothers. These differences between expenditures and income cannot be explained with evidence of borrowing or drawing down wealth, as we show these families rarely have substantial assets or debts. Other evidence suggests that earnings reports are understated, as the implied hourly wage rate obtained by dividing earnings by hours is often implausibly low.

We provide evidence that commonly used household surveys have substantial under-reporting of key components of income. Weighted microdata from these surveys, when compared to administrative aggregates, show that government transfers and other income components are severely under-reported and the degree of under-reporting has changed over time. Comparisons of survey microdata to administrative microdata for the same individuals also indicate severe under-reporting of government transfers in survey data. There is also some under-reporting of expenditures, but because expenditures often exceed income, we might be more concerned about over-reporting of consumption, of which there is little evidence.

Finally, we examine other measures of material hardship or adverse family outcomes for those with very low consumption or income. These problems are more severe for those with low consumption than for those with low income, indicating that consumption does a better job of

capturing well-being for disadvantaged families. Overall, the case for consumption is fairly strong.

These findings favor the examination of consumption data when policy makers are deciding on appropriate benefit amounts for programs such as Food Stamps, just as consumption standards were behind the original setting of the poverty line. Similarly, the results favor using consumption measures to evaluate the effectiveness of transfer programs and general trends in poverty and food spending. Nevertheless, the ease of reporting income favors its use as the main eligibility criteria for transfer programs such as Food Stamps and Temporary Assistance for Needy Families (TANF).

One of the long-term goals of this research is improving income and consumption data. There is evidence from small in-depth surveys that much better data may be obtained by asking detailed questions about both income and consumption in the same survey and reconciling the two information sources. It is worth investigating whether these ideas can be applied to a nationally representative survey of a large number of families.

References

Atkinson, Anthony. 1991. "Comparing Poverty Rates Internationally: Lessons from Recent Studies in Developed Countries." World Bank Economic Review 5(1): 3-21.

Bavier, Richard. 1999. "An Early Look at the Effects of Welfare Reform." Unpublished manuscript, Office of Management and Budget, March.

Blundell, Richard and Ian Preston. 1998. "Consumption Inequality and Income Uncertainty" Quarterly Journal of Economics 113(2): 603-640.

Bitler, Marianne, Janet Currie, and John Karl Scholz. 2003. "WIC Eligibility and Participation." Journal of Human Resources (this issue).

Blundell, Richard, Luigi Pistaferri and Ian Preston. 2002. "Partial Insurance, Information and Consumption Dynamics." Working Paper 02/16, Institute for Fiscal Studies. University College London.

Bollinger, Christopher R. and Martin H. David. 1997. "Modeling Food Stamp Program Participation in the Presence of Reporting Errors." Journal of the American Statistical Association 92(3): 827-835.

Bollinger, Christopher R. and Martin H. David. 2001. "Estimation with Response Error and Nonresponse: Food-Stamp Participation in the SIPP." Journal of Business and Economic Statistics 19(2): 129-141.

Bound, John and Alan B. Krueger. 1991. "The Extent of Measurement Error in Longitudinal Earnings Data: Do Two Wrongs Make a Right?" Journal of Labor Economics 9(1): 1-24.

Bound, John, Charles Brown, Greg J. Duncan, and Willard L. Rodgers. 1994. "Evidence on the Validity of Cross-sectional and Longitudinal Labor Market Data." Journal of Labor Economics 12(3): 345-368.

Bound, John, Charles Brown, and Nancy Mathiowetz. 2001. "Measurement Error in Survey Data." In Handbook of Econometrics, Volume 5, eds. James J. Heckman and Edward Leamer, 3705-3843. Amsterdam: Elsevier.

Branch, E. Raphael. 1994. "The Consumer Expenditure Survey: a Comparative Analysis" Monthly Labor Review 117(12): 47-55.

Bureau of Labor Statistics. 2001. Consumer Expenditure Survey, 1998-99, Bulletin 955, U.S. Government Printing Office, November.

Bureau of Labor Statistics. 1997. BLS Handbook of Methods. http://www.bls.gov/opub/hom/.

Coder, John and Lydia Scoon-Rogers. 1996. "Evaluating the Quality of Income Data Collected in the Annual Supplement to the March Current Population Survey and the Survey of Income and Program Participation." Housing and Household Economic Statistics Division. Washington D.C.: U.S. Census Bureau.

Cutler, David M. and Lawrence F. Katz. 1991. "Macroeconomic Performance and the Disadvantaged." Brookings Papers on Economic Activity 2: 1-74.

Deaton, Angus. 1997. The Analysis of Household Surveys: A Microeconometric Approach to Development Policy. Baltimore, MD: Johns Hopkins University Press.

Edin, Kathryn and Laura Lein. 1997. Making Ends Meet: How Single Mothers Survive Welfare and Low-Wage Work. New York: Russell Sage Foundation.

Feenberg, Daniel and Elisabeth Coutts. 1993. "An Introduction to the TAXSIM Model", Journal of Policy Analysis and Management 12(1): 189-94. http://www.nber.org/~taxsim/.

Giannarelli, Linda and Laura Wheaton. 2000. "Under-reporting of Means-tested Transfer Programs in the March CPS." unpublished results presented at the Urban Institute, February.

Hogan, Howard. 1993. "The 1990 Post-Enumeration Survey: Operations and Results."Journal of the American Statistical Association 88(3): 1047-1060.

Hotz, V. Joseph and John Karl Scholz. 2002. "Measuring Employment and Income for Low-Income Populations With Administrative and Survey Data." In Studies of Welfare Populations: Data Collection and Research Issues, eds. Michele Ver Ploeg, Robert A. Moffitt, and Constance F. Citro, 275-313. Washington, DC: National Academy Press.

Jencks, Christopher. 1997. "Foreward." In Making Ends Meet: How Single Mothers Survive Welfare and Low-Wage Work, by Kathryn Edin and Laura Lein, ix-xxvii. New York: Russell Sage Foundation.

Jencks, Christopher, Susan E. Mayer, and Joseph Swingle. 2002. "Who Has Benefitted from Economic Growth in the United States Since 1969? The Case of Children." Working Paper. Harvard University.

Kim, Yong-Seong and Frank P. Stafford. 2000. The "Quality of PSID Income Data in the 1990's and Beyond." Unpublished manuscript, Institute for Social Research, University of Michigan.

Liebman, Jeffrey. 2001. "Who are the Ineligible Earned Income Tax Credit Recipients?" In Making Work Pay: The Earned Income Tax Credit and its Impact on America's Families, eds. Bruce D. Meyer and Douglas Holtz-Eakin, 274-298. New York: Russell Sage Foundation Press.

Marquis, Kent H. and Jeffrey C. Moore. 1990. "Measurement Errors in SIPP Program Reports." In Proceedings of the 1990 Annual Research Conference, 721-745. Washington, DC.: U.S. Bureau of the Census.

Mathiowetz, Nancy A., Charlie Brown and John Bound. 2002. "Measurement Error in Survey of the Low-income Population." In Studies of Welfare Populations: Data Collection and Research Issues, eds. Michele Ver Ploeg, Robert A. Moffitt, and Constance F. Citro, 157-194. Washington, DC: National Academy Press.

Mayer, Susan E. 1997. What Money Can't Buy: Family Income and Children's Life Chances. Cambridge, MA: Harvard University Press.

Mayer, Susan E. and Christopher Jencks. 1989. "Poverty and the Distribution of Material Hardship." Journal of Human Resources 24(1):88-113.

_____. 1993. "Recent Trends in Economic Inequality in the United States: Income versus Expenditures versus Material Well-Being." In Poverty and Prosperity in the USA in the Late Twentieth Century, ed. Edward N. Wolff, 121-203. New York: St. Martin's Press.

Meyer, Bruce D. 2002. "Comment on 'Guaranteed Income: SSI and the Well Being of the Elderly Poor,' by Kathleen McGarry." In The Distributional Aspects of Social Security and Social Security Reform, eds. Martin Feldstein and Jeffrey B. Liebman, 79-83. Chicago: University of Chicago Press.

Meyer, Bruce D. and Holtz-Eakin, D. 2001. "Introduction." In Making Work Pay: The Earned Income Tax Credit and its Impact on America's Families, eds. Bruce D. Meyer and Douglas Holtz-Eakin, 1-12. New York: Russell Sage Foundation Press.

Meyer, Bruce D. and James X. Sullivan. Forthcoming. "The Effects of Welfare and Tax Reform: The Material Well-Being of Single Mothers in the 1980s and 1990s." Journal of Public Economics.

_____. 2002. "Measuring the Well-Being of the Poor Using Income and Consumption." Institute for Policy Research Working Paper 02-14. Northwestern University.

_____. 2001. "The Effects of Welfare and Tax Reform: The Material Well-Being of Single Mothers in the 1980s and 1990s." National Bureau of Economic Research Working Paper No. 8298. Cambridge, MA: NBER.

Moore, Jeffrey C., Kent H. Marquis, and Karen Bogen. 1996. "The SIPP Cognitive Research Evaluation Experiment: Basic Results and Documentation." The Survey of Income and Program Participation, Working Paper No. 212. Washington D.C.: U.S. Census Bureau.

Moore, Jeffrey C., Linda L. Stinson and Edward J. Welniak, Jr. 1997. "Income Measurement Error in Surveys: A Review." Statistical Research Report. Washington D.C.: U.S. Census Bureau.

National Research Council. 1995. Measuring Poverty: A New Approach, eds. Constance F. Citro and Robert T. Michael. Washington, DC: National Academy Press.

Poterba, James M. 1991. "Is the Gasoline Tax Regressive?" In Tax Policy and the Economy 5, ed. David Bradford, 145-164. Cambridge, MA: MIT Press.

Primus, Wendell, Lynette Rawlings, Kathy Larin, and Kathryn Porter. 1999. "The Initial Impacts of Welfare Reform on the Incomes of Single-Mother Families." Washington DC.: Center on Budget and Policy Priorities.

Robinson, J. Gregory, Bashir Ahmed, Prithwis Das Gupta, and Karen A. Woodrow. 1993. "Estimation of Population Coverage in the 1990 United States Census Based on Demographic Analysis." Journal of the American Statistical Association 88(3): 1061-1071.

Roemer, Marc I. 2000. "Assessing the Quality of the March Current Population Survey and the Survey of Income and Program Participation Income Estimates, 1990-1996." Staff Papers on Income, Housing and Household Economic Statistics Division. Washington D.C.: U.S. Census Bureau.

Rogers, John M. and Maureen B. Gray. 1994. "CE Data: Quintiles of Income Versus Quintiles of Outlays." Monthly Labor Review 117(12): 32-37.

Rosen, Harvey. 2002. Public Finance. 6th edition. New York: McGraw-Hill Irwin.

Sabelhaus, John and Jeffrey A. Groen. 2000. "Can Permanent-Income Theory Explain Cross-Sectional Consumption Patterns?" Review of Economics and Statistics 82(3): 431-438.

Skinner, Jonathan. 1987. "A Superior Measure of Consumption from the Panel Study of Income Dynamics." Economics Letters 23: 213-216.

Slesnick, Daniel T. 1993. "Gaining Ground: Poverty in the Postwar United States." Journal of Political Economy 101(1): 1-38.

Wemmerus, Nancy and Kristin Porter. 1996. "An Ethnographic Analysis of Zero-income Households in the Survey of Income and Program Participation." Washington D.C.: Mathematica Policy Research, Inc.

World Bank. 2001. "World Development Report 2000/2001 Attacking Poverty." Washington, D.C.: The World Bank.

Appendix 1
Data Description

We use data from three nationally representative datasets in our empirical analysis: the Consumer Expenditure Survey (CE), the Panel Study of Income Dynamics (PSID), and the March Current Population Survey (CPS). This appendix briefly describes these three datasets. We also examine the validity of our methodology for predicting consumption in the PSID, and provide more detailed descriptions of our income, consumption, and expenditure measures, noting any differences in these measures across surveys.

The CE is a nationally representative survey conducted by the Bureau of Labor Statistics (BLS) that is designed to provide a continuous summary of the spending habits of U.S. households. The survey gathers expenditure data at the consumer unit level.[30] The BLS estimates that the survey accounts for up to 95 percent of all household expenditures, making it the most comprehensive survey of expenditures for U.S. households. The CE also reports detailed information on demographic characteristics as well as employment and income information for each member of the consumer unit age 14 and over. The CE includes two separate survey instruments–the Interview Survey and the Diary Survey. For our analyses we use the Interview Survey, which is a rotating panel survey that interviews approximately 5,000 households quarterly and follows each household for up to five consecutive quarters. In this paper, we treat each household-quarter observation separately and correct standard errors for within household correlation across quarters. The survey asks comprehensive questions about a wide variety of expenditures. From these questions, the BLS provides data on more than 600 unique expenditure categories. The BLS also conducts a separate diary survey that provides more detailed information on smaller or more frequent expenditures that tend to be more difficult to recall. For more information on the CE see Bureau of Labor Statistics (1997).

The PSID is an annual longitudinal survey that has followed a nationally representative random sample of families, their offspring, and coresidents since 1968. The survey provides detailed economic and demographic information on both the family and individual level for a sample of about 7,000 families each year. Although the PSID does not survey families about all expenditures, it does collect data on food and housing expenditures, which together constitute a significant fraction of total consumption for disadvantaged families. Evidence from the CE suggests that the food and housing data available in the PSID account for about 56 percent of total consumption for low-educated single mothers. This ratio is 69 percent if one includes spending on utilities, which is available in the PSID in certain years. The fraction of total consumption accounted for in food and housing is even higher for single mothers below the 10th percentile of the consumption distribution. For these families, without utilities the PSID data account for 65 percent of total consumption, and with utilities the PSID data account for 78 percent.

---

[30] The consumer unit includes all related family members or two or more persons living together who use their income to make joint expenditure decisions. For a subset of individuals within a dwelling to be considered a separate consumer unit in the CE, at least two of the three major expense categories—housing, food, and other living expenses—have to be made jointly.

The CPS is a nationally representative monthly survey of approximately 60,000 households. The CPS is the most commonly used source of nationally representative income data. We use the March CPS files that include the Annual Income Supplement data. In the March interview respondents are asked to provide detailed retrospective information including usual hours worked, weeks worked during the previous year, and income for the previous year from a variety of sources including earnings, asset income, monetary transfers, and Food Stamps.

To establish a consistent unit of analysis across the three surveys, we look at income, consumption, and expenditures at the primary family level. The CPS primary family includes only related family and subfamily members, excluding unrelated subfamilies and unrelated individuals. This is the unit of observation that is most consistent with the unit of observation available in the CE—the consumer unit—which includes all related family members or two or more persons living together who use their income to make joint expenditure decisions. The PSID family unit is very close in definition to the consumer unit in the CE. The PSID family includes all people living together that are generally related by blood, marriage, or adoption, and also includes unrelated persons living together if they share resources. The PSID does not collect data on other members residing in the housing unit that are not considered part of the family.

The calculation of after-tax income in this study varies slightly across surveys. In the CPS, state and federal income taxes, payroll taxes, and tax credits are imputed by the BLS using respondent income and family characteristics. The PSID also provides imputed tax information, but these variables are not available after 1991. In years where this information is not provided in the PSID, we calculate tax liabilities and credits using TAXSIM (Feenberg and Coutts 1993). Tax data in the CE are based on reports from the respondent. Another reason income may differ across surveys is that both the PSID and the CPS impute missing values for components of income, while the CE does not impute missing values for income. For this reason, our samples from the CE include only complete income reporters—excluding those with missing data for primary sources of income. About 10 to 15 percent of CE respondents are classified as incomplete income reporters. A final reason why income may differ is that the precise definition of the family unit varies somewhat across surveys.

Differences in reference periods for income and expenditures in both the CE and the PSID may affect comparisons of these outcomes. In both surveys the reference period is longer for income than for expenditures. In the CE, income measures are typically reported for the 12 months prior to the survey,[31] while expenditures are reported for the previous three months. In the PSID, income is reported for the previous calendar year, while food expenditures are reported for an average week. It is not clear how many weeks in the past the respondents uses to calculate this reported average. Also, the PSID asks respondents to report rental expenditures per

[31] Respondents in the CE generally report income only in the second and fifth interviews. Income reported at the second interview is carried over to the third and fourth interviews unless a member over 13 is new to the CU, or a member of the CU that was not working at the time of the second interview is working in a subsequent interview. In these cases new values for family income are reported.

month. However, it is not clear whether the respondent reports the prior month's rent, or an average of monthly rent over a longer time period.

In our analyses we convert these quarterly, monthly, or weekly reports of expenditures to annual measures. This is not of particular concern for comparing the means of these outcomes (such as those reported in Table 4), however, because annual averages must have less variance than annualized measures over a shorter period, our expenditure and consumption measures are over-dispersed relative to those for annual measures.

A. Predicting Consumption in the PSID

As discussed in section III, we predict consumption and expenditures in the PSID using food and housing spending and other variables. For example, to predict consumption we first regress total family consumption on food expenditures, housing flows, an indicator for home ownership, and a set of year dummies using CE data. A separate regression is estimated for each decile of the equivalent scale adjusted food and housing distribution for single mothers without a high school degree in the CE. Parameter estimates from each regression are then used to predict total consumption for each observation in the respective decile of the equivalent scale adjusted food and housing distribution in the PSID using reported spending on food and housing in the PSID. The procedures for calculating predicted total expenditures and predicted non-durable consumption in the PSID follows this same procedure, using measures of total expenditures or non-durable consumption rather than total consumption in the CE. Predicted total expenditures in the PSID are then calculated using a measure of housing expenditures in the PSID rather than housing flows.

Even though these predictions give our best estimate of total consumption, this approach does not give the best estimate of the distribution of consumption because the regressions predict the expected value of consumption rather than the distribution of consumption. Therefore, we adjust the distribution of predicted consumption in the PSID (in Table 1 for example) by adding a residual, which is randomly drawn from the distribution of residuals generated from the regressions using CE data. The addition of this randomly drawn residual to the distribution of predicted consumption yields a distribution which more closely matches that of actual consumption in the CE.

In table A1 we compare actual consumption and expenditures in the CE to the predicted values in the CE in order to show how this adjustment affects our distribution of predicted consumption. Although median predicted consumption ($12,740) is very close to the median of actual consumption ($12,753), as expected, the dispersion of predicted consumption (Column 2) is noticeably smaller, understating actual consumption in the highest quantiles and overstating actual consumption in the lowest quantiles. At the fifth percentile, predicted consumption is 24.8 percent higher than actual consumption. By adding residuals to the distribution, however, the resulting distribution (Column 3) follows more closely the distribution of actual consumption. At the fifth percentile, the value of predicted consumption plus a residual is within five percent of the actual consumption value. A similar pattern is evident for expenditures, where again we see the dispersion in predicted expenditures (Column 7) is smaller than that of actual expenditures (Column 6). When the residuals are added, the distribution of predicted expenditures (Column 8) more closely matches the distribution of actual expenditures.

B. Definitions of Income, Expenditures, and Consumption:

Total Family Income (CPS): Total family income is the sum of the personal incomes for all related members of a family, excluding unrelated subfamilies and unrelated individuals. Individuals in the armed forces are also excluded. The annual face value of Food Stamps is added to this measure of family income. To construct an after tax measure of income we add EITC credits and subtract state and federal income taxes and payroll taxes.

Total Family Income (CE): This closely follows the CPS definition of income. Because many respondents have missing values for major components of income, only complete income reporters are used.

Total Family Income (PSID): Again, following the CPS definition, total family income includes money income as well as Food Stamps. The annual value of Food Stamps is calculated using reported receipt of Food Stamps in the month prior to the interview. In years where state and federal income taxes are not reported, TAXSIM is used to calculated tax liabilities.

Total Family Expenditures (CE): We use the summary total expenditures variable calculated by the BLS in the interview survey. Expenditures are reported for three-month periods. We scale these quarterly expenditures to an annual level.

Total Family Expenditures (PSID): Using CE data, we regress total family expenditures on scaled food expenditures, scaled housing expenditures (see definition below), an indicator for home ownership, and a set of year dummies. Ten separate regressions are estimated, one for each decile of the equivalence scale adjusted food and housing distribution for single mothers without a high school degree in the CE. Parameter estimates from each regression are then used to predict total expenditures for each observation in the respective decile of the equivalence scale adjusted food and housing distribution in the PSID using reported spending on food and housing (both equivalence scale adjusted) in the PSID as defined below. When distributions are reported (such as in Table 1) we add to each predicted expenditure value a residual selected at random from the distribution of residuals generated from the regressions using CE data.

Total Family Consumption (CE): Consumption includes all spending in total expenditures less spending on health care, education, pension plans, and cash contributions. In addition, housing and vehicle expenditures are converted to service flows. For example, the rental equivalent for owned dwellings is used instead of spending on mortgage interest, property taxes, and spending on maintenance, repairs, and insurance. See definition of housing flows below and Meyer and Sullivan (2001) for more details.

Total Family Consumption (PSID): Consumption in the PSID is calculated following the same procedure as expenditures, except that in the CE we regress total family consumption on food expenditures, housing flows (each is equivalence scale adjusted), an indicator for home ownership, and a set of year dummies.

Non-durable Consumption (CE): Non-durable consumption includes all spending in total expenditures less spending on health care, education, vehicles, household maintenance and repairs, and household furnishings.

Non-durable Consumption (PSID): Consumption in the PSID is predicted following the same procedure as total consumption, except that in the CE we regress non-durable consumption on food expenditures, housing expenditures less maintenance and repairs and spending on other lodging, an indicator for home ownership, and a set of year dummies.

Food Consumption (CE): This includes spending for food at home (including food bought with Food Stamps), food purchased away from home, and meals received as pay.

Food Consumption (PSID): This is the sum of expenditures on food at home, expenditures on food away from home, and dollars of Food Stamps received.

Housing Expenditures (CE): We use the summary expenditure variable for total housing expenditures calculated by the BLS. It includes mortgage interest payments, property taxes, spending on maintenance, repairs, and insurance, rental costs, miscellaneous lodging expenses, utilities, spending on household operations such as domestic services, and spending on house furnishings and equipment. For the purpose of predicting total expenditures in the PSID, however, we construct a measure of housing expenditures that is more consistent with this measure in the PSID. In particular, we include only rental payments, mortgage interest payments, and property taxes.

Housing Expenditures (PSID): This variable is the sum of annual rental payments and annual mortgage payments. These data are not available in the 1988 and 1989 surveys.

Housing Flows (CE): Two different measures of housing flows are used in the analyses. First, the measure of housing flows that is used to calculate total consumption in the CE excludes from total housing expenditures (as defined above), mortgage interest payments, property taxes, and spending on maintenance, repairs, and insurance. The rental equivalent of the home, as reported by the respondent, is then added. In quarters when homeowners were not asked about the rental equivalent of the home (from the third quarter of 1993 through the fourth quarter of 1994) the rental equivalent value is imputed. See Meyer and Sullivan (2001) for details. The second measure of housing flows is constructed to be more consistent with a measure of housing flows that is available in the PSID for the purposes of predicting total consumption in the PSID. This measure is simply the sum of rental payments (for renters) and the rental equivalent of the home for homeowners.

Housing Flows (PSID): This measure includes rental payments, a service flow from owned homes, and the rental equivalent for those that receive free rent. Unfortunately, the PSID does not include data on the rental equivalent value of owned dwellings. Instead, we use information on the current re-sale value of the home. We convert these reported housing values to an annual service flow of housing consumption using an annuity formula.

Assets (PSID): Total assets equal the sum of the equity value of housing and vehicles, and liquid assets for all members of the family. Liquid assets include all assets held with financial institutions such as checking accounts, savings accounts, money market accounts, certificates of deposit, and other financial assets such as stocks, bonds, cash value in a life insurance policy, and mutual fund shares. Assets represent balances at the time of the interview.

Liabilities (PSID): Total liabilities are the sum of unsecured debt and mortgage debt for all members of the family. Questions included in the Wealth Supplement ask the head to report an aggregate measure of unsecured liabilities. Specifically, after responding to questions about mortgage debt heads are asked: "If you added up all other debts [such as for credit card charges, student loans, medical or legal bills, or loans from relatives] (for all of your family living there), about how much would they amount to right now?" Debts represent outstanding balances at the time of the interview.

Table 1

Distribution of Real Income, Expenditures, and Consumption
Single Mothers Without a High School Degree, Ages 18-54, 1991-1998

	Percentiles					
	10th	**20th**	**30th**	**50th**	**80th**	**90th**
Total Family Income (CPS)						
(1) Income of family at the given percentile of income	5,098	6,842	8,151	10,294	17,077	22,493
(2) Mean income for families below given percentile of income	2,848	4,478	5,491	6,957	9,268	10,427
Total Family Income (CE)						
(3) Income of family at the given percentile of income	4,551	6,704	7,875	10,335	16,475	22,873
(4) Mean income for families below given percentile of income	3,066	4,364	5,375	6,837	8,999	10,132
(5) Mean income for families below given percentile of expenditures	7,342	7,671	8,068	8,857	10,240	10,956
Total Family Expenditures (CE)						
(6) Expenditures of family at the given percentile of expenditures	6,681	8,504	9,880	12,685	20,295	25,747
(7) Mean expenditures for families below given percentile of expenditures	5,585	6,655	7,510	9,021	11,609	12,820
(8) Mean expenditures for families below given percentile of income	14,213	12,574	11,885	11,866	12,858	13,483
Total Family Consumption (CE)						
(9) Consumption of family at the given percentile of consumption	6,748	8,510	9,982	12,753	19,838	24,677
(10) Mean consumption for families below given percentile of consumption	5,541	6,653	7,527	9,067	11,603	12,734
(11) Mean consumption for families below given percentile of income	14,443	12,729	11,859	11,927	13,025	13,736
Total Family Income (PSID)						
(12) Income of family at the given percentile of income	6,042	8,353	9,445	12,293	21,439	30,398
(13) Mean income for families below given percentile of income	3,698	5,587	6,682	8,321	11,396	12,994
(14) Mean income for families below given percentile of expenditures	13,130	13,351	13,111	14,221	14,634	15,434
Total Family Expenditures (PSID)						
(15) Expenditures of family at the given percentile of expenditures	7,487	9,430	11,183	13,698	20,756	25,554
(16) Mean expenditures for families below given percentile of expenditures	5,603	7,003	8,080	9,824	12,309	13,509
(17) Mean expenditures for families below given percentile of income	14,814	13,587	13,458	13,944	14,562	14,977
Total Family Consumption (PSID)						
(18) Consumption of family at the given percentile of consumption	7,318	8,594	9,990	12,619	18,670	23,010
(19) Mean consumption for families below given percentile of consumption	6,051	7,023	7,804	9,204	11,416	12,390
(20) Mean consumption for families below given percentile of income	12,234	11,564	11,565	12,143	13,082	13,416

Notes : Single mothers are defined as female family heads living with at least one child of their own. All figures are indexed to 2000 dollars using the PCE deflator, and expressed on an equivalence scale. The figures reflect income, expenditure, and consumption behavior for the years 1991-1998 unless otherwise noted. All income numbers are after tax, and include all money income plus the cash value of food stamps. All figures are at the family level including all related members, and are weighted. More details for each measure are explained below and in Appendix 1.

Total Family Income (CPS) : The sum of the personal incomes for all related members of a family, excluding unrelated subfamilies and unrelated individuals. Individuals in the armed forces are also excluded. Data are from the 1992-1999 March CPS.

Total Family Income (CE) : Includes total money income and other money receipts for all members of the consumer unit, plus the cash value of food stamps. Only “complete” income reporters from the CE are used.

Total Family Expenditures (CE) : Includes all family expenditures including food purchased using food stamps.

Total Family Consumption (CE) : Includes all spending in total expenditures less spending on health care, education, pension plans, and cash contributions. In addition, housing and vehicle expenditures are converted to service flows. For example, the rental equivalent for owned dwellings is used instead of spending on mortgage interest and property taxes. See Meyer and Sullivan (2001) for more details.

Total Family Income (PSID) : Includes all money income for all family members, plus the cash value of food stamps. The income numbers are from the 1992 to 1999 surveys.

Total Family Expenditures (PSID) : Calculated using expenditure data from the CE as well as food (including Food Stamps) and housing expenditures in the PSID to predict total expenditures in the PSID. See Section III in text and Appendix 1 for more details.

Total Family Consumption (PSID) : Calculated using consumption data from the CE as well as food (including Food Stamps) and housing flows in the PSID to predict total consumption in the PSID. See Section III in text and Appendix 1 for more details.

Table 2

Distribution of Real Income, Expenditures, and Consumption
All Families with Heads Age 21-62, 1991-1998

	Percentiles				
	10th	**20th**	**30th**	**50th**	**90th**
Total Family Income (CPS)					
(1) Income of family at the given percentile of income	10,885	16,460	21,491	31,646	65,908
(2) Mean income for families below given percentile of income	5,951	9,865	12,901	18,344	30,229
Total Family Income (CE)					
(3) Income of family at the given percentile of income	9,238	14,880	20,595	32,336	75,310
(4) Mean income for families below given percentile of income	4,702	8,384	11,521	17,455	31,422
(5) Mean income for families below given percentile of expenditures	10,985	14,255	17,290	22,827	34,759
Total Family Expenditures (CE)					
(6) Expenditures of family at the given percentile of expenditures	12,133	16,457	20,314	28,217	64,272
(7) Mean expenditures for families below given percentile of expenditures	9,090	11,718	13,950	18,038	28,254
(8) Mean expenditures for families below given percentile of income	16,962	16,998	18,051	20,457	26,507
Total Family Consumption (CE)					
(9) Consumption of family at the given percentile of consumption	12,083	15,994	19,375	25,855	48,908
(10) Mean consumption for families below given percentile of consumption	9,158	11,641	13,659	17,215	24,974
(11) Mean consumption for families below given percentile of income	18,082	18,378	19,671	22,904	31,182

Notes: See Table 1.

Table 3
Percentiles of Assets and Liabilities for those with
Expenditures Greater Than Income and Income Below Given Percentiles
Single Mothers Without a High School Degree Ages 18-54, 1983-1995 (PSID)

Percentiles of Assets and Liabilities	**Percentiles of Income**					
	10th	**20th**	**30th**	**50th**	**80th**	**90th**
Total Assets						
Median	0	0	0	0	0	0
75th Percentile	562	899	562	1,124	2,344	2,344
90th Percentile	674	29,224	29,224	30,348	45,104	45,104
Liquid Assets						
Median	0	0	0	0	0	0
75th Percentile	0	0	0	0	0	0
90th Percentile	0	72	56	0	211	211
Total Liabilities						
Median	0	0	0	0	0	0
75th Percentile	0	0	0	0	0	0
90th Percentile	0	4,496	4,496	20,794	14,933	14,933
Unsecured Liabilities						
Median	0	0	0	0	0	0
75th Percentile	0	0	0	0	0	0
90th Percentile	0	0	220	2,248	2,293	2,293

Assets : Include the equity value of housing, vehicle, and financial assets. Liquid assets include savings accounts, checking accounts, and other financial assets. Numbers represent the level of assets at various percentiles for families whose income is below the given percentile in the equivalence scale adjusted income distribution, and whose expenditures exceed income. Assets are reported in 1984, 1989, and 1994, so to reflect initial asset holdings income and expenditure data from the 1985, 1990, and 1995 surveys are used.

Liabilities : Include all unsecured debts for the family. Numbers represent level of liabilities at various percentiles for families whose income is below the given percentile in the equivalence scale adjusted income distribution, and whose expenditures exceed income. Liabilities are reported in 1984, 1989, and 1994, so to reflect ex post debt, income and expenditure data from the 1984, and 1994 surveys are used. Expenditure data are not available from the 1989 survey.

Table 4
Mean Income and Expenditures
Single Mother and Comparison Households, 1991-1998 (CE)

	Income	Expenditures	Ratio	N
	(1)	(2)	(3) = (2)/(1)	(4)
All Women				
Single mothers	20,328	23,260	1.144	6,577
	(389)	(379)	(0.029)	
Single women without children	22,683	22,569	0.995	8,390
	(382)	(299)	(0.021)	
Married mothers	52,768	46,829	0.887	27,119
	(433)	(300)	(0.009)	
Women Without a High School Degree				
Single mothers	12,754	15,600	1.223	1,361
	(449)	(416)	(0.054)	
Single women without children	11,344	13,224	1.166	550
	(639)	(910)	(0.104)	
Married mothers	29,376	30,262	1.030	3,061
	(633)	(521)	(0.028)	

Notes: Calculations are from the first quarter of 1992 through the first quarter of 1999 waves of the Consumer Expenditure Survey. Samples only includes complete income reporters. All numbers are indexed to 2000 dollars using the PCE deflator and are weighted. Bootstrapped standard errors that correct for within household dependence are in parentheses.

Table 5
Wage Distribution, 1991-1999 (CPS)

	Fraction Below Minimum Wage	Percentiles 10th	20th	30th	50th	80th	90th
Wage = Annual Earnings/Annual Hours							
All families	0.04	6.40	8.27	10.00	13.29	20.29	24.61
Single mothers without a high school degree	0.26	3.32	4.38	5.22	6.54	10.04	13.37
Reported Hourly Wage for Wage Earners Only							
All families	0.00	7.14	8.46	9.68	12.27	17.98	20.88
Single mothers without a high school degree	0.00	5.49	6.05	6.33	7.25	9.52	11.69

Notes: Data come from the 1992-1999 March CPS. Samples include workers between the ages of 20 and 54 that report positive wage and salary earnings and report working positive hours in the previous year. Workers in occupations that may not be covered by the federal minimum wage are excluded, including the following sectors: self employment, managerial and professional, sales, service, farming, forestry, fishing, and the armed forces. Workers under the age of 20 are excluded as, in some cases, they can be exempt from the wage floor for the first 90 days of employment. Wages are compared to the lowest value of the federal minimum wage in the year for which the earnings are reported. All numbers are indexed to 2000 dollars using the PCE deflator and are weighted.

Table 6
Ratio of CPS March Income Supplement and SIPP Aggregate Income Estimates to Administrative Estimates for 1996

Source of Income	Administrative Estimate	CPS (%)	SIPP (%)
Earnings	4068.3	96.1	88.4
Wages and salaries	3592.6	101.9	91.0
Self-employment	475.7	52.6	69.1
Asset Income	392.6	70.9	56.6
Interest	187.0	83.8	50.2
Dividends	129.4	59.4	51.0
Rent and Royalties	76.2	58.6	82.0
Government Transfer Income	438.3	88.3	86.3
Social Security and Railroad Retirement	332.2	91.7	87.9
Supplemental Security Income	26.5	84.2	101.4
Family Assistance	19.8	67.7	76.3
Other Cash Welfare	3.4	80.5	114.0
Unemployment Compensation	21.6	81.6	69.4
Workers' Compensation	17.0	62.7	71.7
Veterans' Payments	17.8	89.6	72.9
Pension Income	231.9	92.6	86.1
Private Pensions	98.7	93.1	98.1
Federal Employee Pensions	38.8	80.8	75.6
Military Retirement	28.3	58.2	101.6
State and Local Employee Pensions	66.1	57.3	67.8
Total	5131.1	92.6	85.7

Source: Roemer (2000), Tables 2b, 3b, and Appendix I. The administrative estimate is an average of the values used to match CPS and SIPP sample coverage.

Table 7
Measures of Completeness of Income Reporting in the CPS,
Various Years and Sources of Income

Measure of Reporting	Size of Category Based on Administrative Source (billions of current dollars)	Reporting Ratio
CPS AFDC/TANF benefits/Administrative AFDC/TANF payments		
1990	18.9	0.76
1997	15.9	0.63
CPS Food Stamp benefits/Administrative Food Stamp payments		
1990	13.6	0.76
1997	19.6	0.63
CPS imputed EITC payments/ IRS reported EITC payments		
1998, All recipients	31.6	0.72
1998, Heads of household	21.2	0.64

Sources: Primus et al. (1999) Table B-4 and Meyer and Holtz-Eakin (2001) Table I.4.

Table 8
Microdata Validation Evidence on Program Receipt Reporting

Transfer Program	Unconditional Reporting Rate (%) (1)	Reporting Rate Conditional on True Receipt (%) (2)	Underreporting Share Due to Failure to Report Income Source at all (%) (3)
AFDC	61	51	81
Food Stamps	87	77	66
SSI	88	77	84
Unemployment Insurance	80	61	63
Workers' Compensation	82	45	NA
Social Security	101	95	NA
Veterans' Benefits	97	83	NA

Notes: Column (1) reports the ratio of the number of survey individuals reporting program receipt to the number of survey individuals recorded as receiving program dollars in the administrative data. Column (2) reports the fraction of those who receive income from a specific program (according to the administrative data), who report receipt in the survey data. Columns (1) and (2) are from Marquis and Moore (1990). Column (3) is the fraction of underreported months (among those underreporting at least one month) that is attributable to a failure to report ever receiving income from the program. Column (3) is from Table 13 of Moore, Marquis, and Bogen (1996).

Table 9
Comparison of PSID and CE Expenditure Measures to National Aggregates, 1997

	PCE (1)	PSID (2)	CE (3)	Ratio: PSID/PCE (4) = (2)/(1)	Ratio: CE/PCE (5) = (3)/(1)
Food at home[a]	413.9	398.3	376.2	0.96	0.91
Food away from home[b]	263.9	172.8	164.9	0.65	0.62
Total food	677.8	571.1	541.1	0.84	0.80
Rent[c]	224.5	180.6	211.5	0.80	0.94

Source: Figures are based on the authors' calculations and are weighted to reflect the 1997 calendar year. CE data are from the four 1997 interview surveys only. PSID figures are from the 1997 wave. We examine 1997 because the PSID added an immigrant sample in that year. PCE aggregates come from Bureau of Labor Statistics (2001).

[a] **CE:** The sum of food and beverages purchased and prepared on trips; food and nonalcoholic beverage purchases at grocery stores; and food and nonalcoholic beverage purchases at convenience or specialty stores. **PSID:** The sum of food used at home and the value of food stamps received. **PCE:** “Food purchased for off-premise consumption” less “alcoholic beverages purchased for off-premise consumption” less spending on pet food.

[b] **CE**: The sum of food or board at school and rooming/boarding houses; catered affairs; food and non-alcoholic beverages at restaurants; school meals for preschool and school age children; and meals as pay. **PSID:** The sum of food eaten outside the house--excluding meals purchased while at work or while at school--and food delivered to the house. **PCE:** “Purchased meals and beverages” less “other alcoholic beverages” with other adjustments per Bureau of Labor Statistics (2001).

[c] **CE:** The sum of contract rent for the dwelling, all expenditures made by the renter for maintenance, repair, and upkeep of the dwelling as well as decorating such as painting and wallpaper, and tenant's insurance. **PSID:** Contract rent. **PCE:** The sum of “tenant-occupied nonfarm dwellings--rent," "rental value of farm dwellings," and "transient hotels, motels, clubs, schools, and other group housing."

Table 10
The Relationship Between the Bottom Decile of Income or Consumption and Outcomes
Single Mothers Without a High School Degree, Ages 18-54

Outcome	Percentiles of Income			Percentiles of Consumption			Difference in Differences	Standard Error for (7)	N
	0-10	10-100	Difference	0-10	10-100	Difference			
	(1)	(2)	(3) =(1) - (2)	(4)	(5)	(6) =(4) - (5)	(7) =(6) - (3)	(8)	(9)
CE, 1991-1998									
Have a stove in residence	0.962	0.971	-0.009	0.894	0.979	-0.084	-0.075	0.0427	1,361
Have a microwave in residence	0.525	0.608	-0.082	0.401	0.621	-0.220	-0.138	0.0886	1,361
Have a refrigerator in residence	0.969	0.976	-0.007	0.922	0.981	-0.059	-0.052	0.0374	1,361
Have a freezer in residence	0.120	0.140	-0.020	0.087	0.144	-0.057	-0.037	0.0627	1,361
Have a disposal in residence	0.176	0.203	-0.026	0.163	0.204	-0.041	-0.015	0.0706	1,361
Have a dish washer in residence	0.122	0.138	-0.016	0.060	0.145	-0.086	-0.070	0.0531	1,361
Have a clothes washer in residence	0.448	0.533	-0.084	0.367	0.542	-0.175	-0.090	0.0893	1,361
Have a clothes dryer in residence	0.349	0.382	-0.032	0.189	0.399	-0.210	-0.178	0.0845	1,361
Have a color television in residence	0.958	0.921	0.037	0.855	0.933	-0.077	-0.114	0.0476	1,361
Have a computer in residence	0.083	0.053	0.030	0.037	0.058	-0.021	-0.052	0.0555	1,361
Have a stereo in residence	0.427	0.489	-0.061	0.438	0.487	-0.049	0.012	0.0913	1,361
Have a vcr in residence	0.509	0.626	-0.117	0.472	0.630	-0.158	-0.041	0.0932	1,361
Have central air conditioning	0.227	0.214	0.012	0.158	0.222	-0.064	-0.076	0.0679	1,361
Total # of rooms in residence (scaled)	4.065	4.135	-0.070	3.597	4.185	-0.587	-0.517	0.2326	1,361
Have a car	0.416	0.464	-0.048	0.116	0.497	-0.381	-0.333	0.0779	1,361
Average number of cars	0.483	0.571	-0.088	0.116	0.611	-0.495	-0.407	0.0975	1,361
Took a trip or vacation	0.083	0.112	-0.029	0.020	0.119	-0.099	-0.070	0.0318	1,361
Took an overnight trip or vacation	0.076	0.084	-0.008	0.014	0.091	-0.077	-0.070	0.0296	1,361
Did not receive free food	0.909	0.930	-0.020	0.918	0.928	-0.010	0.011	0.0593	593
PSID, 1983-1998									
Total # of rooms in residence (scaled)	4.501	4.886	-0.385	4.124	4.925	-0.802	-0.417	0.2525	2,304
Have some air conditioning	0.358	0.460	-0.102	0.366	0.459	-0.093	0.009	0.1134	1,501
South	0.604	0.748	-0.144	0.617	0.749	-0.132	0.013	0.1321	634
Midwest/Northeast	0.160	0.262	-0.102	0.079	0.267	-0.188	-0.086	0.1095	501
Have a car	0.167	0.482	-0.316	0.361	0.461	-0.100	0.216	0.1099	1,025
Average number of cars	0.200	0.584	-0.384	0.675	0.535	0.139	0.523	0.2482	660
Mother does not report poor health	0.984	0.952	0.032	0.976	0.953	0.023	-0.009	0.0246	2,354
Health does not limit mothers work	0.858	0.831	0.027	0.827	0.834	-0.007	-0.034	0.0600	2,260
No other family members in bad health	0.984	0.955	0.029	0.919	0.962	-0.043	-0.073	0.0402	1,111
Not food insecure	0.720	0.575	0.145	0.764	0.571	0.193	0.048	0.1970	158
Did not go hungry	0.979	0.935	0.044	0.848	0.950	-0.102	-0.146	0.1204	158
Have no children in poor health	0.995	0.984	0.011	0.994	0.984	0.011	-0.000	0.0118	743

CE: Data are from the first quarter of 1992 through the first quarter of 1999 waves. For durables, numbers represent the fraction of the sample that either own, rent, or have access to the good in a rental unit. Income, consumption, and number of rooms are equivalence scale adjusted. Samples only include "compete income reporters."

PSID: Data are from various surveys between 1984 and 1997 depending on the availability of outcome variables. See Appendix 1 for description of how predicted consumption is calculated in the PSID. Income, predicted consumption, and number of rooms are equivalence scale adjusted.

Table 11
The Relationship Between the Bottom Decile of Income or Consumption and Outcomes
All Single Mothers, Ages 18-54

Outcome	Percentiles of Income			Percentiles of Consumption					
	0-10	10-100	Difference	0-10	10-100	Difference	Difference in Differences	Standard Error for (7)	N
	(1)	(2)	(3) =(1) - (2)	(4)	(5)	(6) =(4) - (5)	(7) =(6) - (3)	(8)	(9)
CE, 1991-1998									
Have a stove in residence	0.979	0.984	-0.004	0.963	0.986	-0.023	-0.018	0.0128	6,577
Have a microwave in residence	0.588	0.770	-0.182	0.480	0.782	-0.302	-0.121	0.0468	6,577
Have a refrigerator in residence	0.967	0.986	-0.019	0.965	0.986	-0.022	-0.003	0.0138	6,577
Have a freezer in residence	0.157	0.176	-0.019	0.120	0.181	-0.060	-0.041	0.0358	6,577
Have a disposal in residence	0.238	0.334	-0.096	0.176	0.341	-0.166	-0.069	0.0348	6,577
Have a dish washer in residence	0.216	0.369	-0.153	0.134	0.378	-0.243	-0.091	0.0393	6,577
Have a clothes washer in residence	0.496	0.656	-0.160	0.365	0.671	-0.306	-0.146	0.0445	6,577
Have a clothes dryer in residence	0.357	0.576	-0.219	0.219	0.592	-0.373	-0.154	0.0426	6,577
Have a color television in residence	0.936	0.962	-0.025	0.913	0.964	-0.051	-0.026	0.0213	6,577
Have a computer in residence	0.126	0.196	-0.070	0.042	0.205	-0.163	-0.093	0.0271	6,577
Have a stereo in residence	0.516	0.617	-0.101	0.416	0.628	-0.212	-0.111	0.0482	6,577
Have a vcr in residence	0.591	0.753	-0.162	0.507	0.763	-0.256	-0.093	0.0493	6,577
Have central air conditioning	0.289	0.390	-0.100	0.241	0.395	-0.154	-0.054	0.0427	6,577
Total # of rooms in residence (scaled)	4.240	5.009	-0.769	3.967	5.039	-1.071	-0.302	0.1136	6,577
Have a car	0.431	0.714	-0.284	0.224	0.737	-0.514	-0.230	0.0390	6,577
Average number of cars	0.522	0.980	-0.458	0.236	1.011	-0.776	-0.318	0.0541	6,577
Took a trip or vacation	0.120	0.242	-0.121	0.048	0.250	-0.202	-0.081	0.0228	6,577
Took an overnight trip or vacation	0.103	0.207	-0.104	0.032	0.215	-0.183	-0.079	0.0196	6,577
Did not receive free food	0.939	0.961	-0.022	0.926	0.962	-0.035	-0.013	0.0285	3,046
PSID, 1983-1998									
Total # of rooms in residence (scaled)	4.363	5.297	-0.934	4.139	5.316	-1.177	-0.244	0.1585	7,593
Have some air conditioning	0.469	0.591	-0.122	0.456	0.592	-0.137	-0.015	0.0708	5,420
South	0.616	0.858	-0.242	0.671	0.852	-0.181	0.061	0.0882	2,359
Midwest/Northeast	0.326	0.457	-0.131	0.231	0.465	-0.234	-0.103	0.0901	1,658
Have a car	0.301	0.676	-0.375	0.427	0.662	-0.235	0.140	0.0700	3,032
Average number of cars	0.341	0.800	-0.459	0.553	0.779	-0.227	0.232	0.1302	1,758
Mother does not report poor health	0.975	0.974	0.000	0.973	0.975	-0.001	-0.002	0.0135	7,768
Health does not limit mothers work	0.873	0.879	-0.006	0.853	0.881	-0.027	-0.022	0.0337	7,325
No other family members in bad health	0.965	0.957	0.007	0.956	0.958	-0.003	-0.010	0.0193	3,767
Not food insecure	0.669	0.778	-0.109	0.579	0.787	-0.208	-0.099	0.1120	755
Did not go hungry	0.984	0.951	0.033	0.932	0.957	-0.025	-0.058	0.0428	755
Have no children in poor health	0.991	0.985	0.006	0.970	0.988	-0.018	-0.024	0.0152	3,058

Notes: See Table 10.

Table A1
Distribution of Actual and Predicted Consumption and Expenditures in the CE
Single Mothers without a High School Degree, 1991-1998

	Consumption					Expenditures				
	Actual	Predicted	Predicted Plus Residual	Ratio	Ratio	Actual	Predicted	Predicted Plus Residual	Ratio	Ratio
	(1)	**(2)**	**(3)**	**(4) = (2)/(1)**	**(5) = (3)/(1)**	**(6)**	**(7)**	**(8)**	**(9) = (7)/(6)**	**(10) = (8)/(6)**
95%	31,617	28,385	29,887	0.898	0.945	32,116	30,431	30,262	0.948	0.942
90%	24,677	23,885	24,774	0.968	1.004	25,747	23,470	26,264	0.912	1.020
75%	18,207	17,725	17,667	0.974	0.970	18,576	18,872	18,314	1.016	0.986
50%	12,753	12,740	12,595	0.999	0.988	12,685	13,527	13,203	1.066	1.041
25%	9,223	10,032	9,048	1.088	0.981	9,194	10,544	9,591	1.147	1.043
10%	6,748	8,034	6,777	1.190	1.004	6,681	8,743	7,357	1.309	1.101
5%	5,834	7,282	5,563	1.248	0.954	5,846	7,573	6,100	1.296	1.044

Notes: Calculations are from the first quarter of 1992 through the first quarter of 1999 waves of the Consumer Expenditure Survey. All numbers are indexed to 2000 dollars using the PCE deflator and are weighted.