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2:00PM

Measuring the Well-Being of the Poor Using Income and Consumption

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May 2002
Revised June 2002

ABSTRACT

We examine the relative merits of consumption and income measures of the material well-being of the poor. Consumption offers several advantages over income because consumption is a more direct measure of well-being than income and is less subject to under-reporting bias. Measurement problems with income complicate analyses of changes in well-being of the poor because the biases appear to have changed over time and are correlated with government policies. On the other hand, income is often easier to report and is available for much larger samples, providing greater power to test hypotheses. We begin by considering the conceptual and pragmatic reasons why consumption might be better or worse than income. Then, we employ several empirical strategies to examine the quality of income and consumption data. First, we compare income and consumption reports, along with assets and liabilities, for those with few resources to examine the importance of measurement error and under-reporting. Second, we examine 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 validate income and consumption measures by comparing them to other measures of hardship or material well-being. Although the evidence tends to favor consumption measures, our analyses suggest that both measures should be used to assess the material well-being of the poor.

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 ERS and Northwestern University for their comments, and Angus Deaton, Thesia Garner and Dean Jolliffe for suggestions.

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. There are large literatures examining the effects of low income on child outcomes such as test scores, behavior problems, and health (see Mayer, 1997, for example). While the accuracy of income reports in many datasets has been analyzed, this work has not focused on validating income measures for poor families. 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.[1] 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. There are reasons to believe that 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 reported than income. There are also conceptual and economic reasons to prefer consumption to income as consumption is a more direct measure of material well-being.

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[1] World Bank (2000) 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).

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 four 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 evaluate how closely low levels of income and consumption are related to other measures of material well-being or hardship.

II. Strengths and Weaknesses of Income and Consumption Data

There are both conceptual and pragmatic 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. We discuss past work on these issues and provide some new arguments.

A. Conceptual Issues

Economic theory suggests that current expenditures serve as a better proxy for the material well-being of the family than current income.[2] 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 (see Wemmerus and Porter, 1996, for example). While current income only reflects short term resources, consumption is more likely to capture a family's long-term prospects.[3] 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).

Income fails to capture the insurance value of means-tested transfers. This insurance value of programs might change when programs change, and would be reflected in consumption, but not income. 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. Again, the loss of insurance due to a weaker safety net would not reduce income, but could reduce consumption as families save for a

[2] For further discussion see Cutler and Katz (1991), Slesnick (1993), or Poterba (1991).
[3] 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.

rainy day.

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.

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 key 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 appropriately handle illegal activity. For example, consider 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. If the illicit activity is on the expenditure side (i.e. drug purchases), expenditures on food, housing, or total expenditures (which do not include illicit drug purchases) would still provide meaningful summary information on family well-being.

B. Reporting Issues

There are two important reasons why income may be preferable to consumption as a measure of well-being: income is often easier to report and datasets with income are often larger. 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. This simplicity is reflected in the finding by Bound and Krueger (1989) that more than 40 percent of Current Population Survey (CPS) respondents report earnings that are within 2.5 percent of IRS earnings.[4] This argument is probably the main reasons most surveys rely on income measures and is compelling for many demographic groups.

However, for some population groups that are particularly important from a poverty and public policy perspective, such as low-educated single mothers, this argument is less important. For this group, income comes from many other sources besides earnings in formal employment. For 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 reliant single mother sample in Edin and Lein (1997), the average single mother obtains at least ten percent of income from each of four different sources (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.

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[4]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.

While most families may be able to report the amount they earn 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, consumption of food and housing may be of interest in their own right and sufficient statistics for well-being given that budget shares do not differ sharply across families. Food and housing together also constitute nearly 70 percent of the consumption of low-educated single mothers and thus provide a good measure of 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 a rich set of demographic variables and other variables of interest.

While ease of reporting and precision favor income, for low-resource families income is often subject to substantial under-reporting. Overall it appears that income is under-reported, and there is evidence 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). 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 particularly important 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.[5] In-depth interviews in ethnographic research has 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. This issue has been recently documented by Coder and Scoon-Rogers (1996) and Roemer (2000) for a large number of transfer programs and recently reviewed by Hotz and Scholz (2001) and Moore et al. (1997). 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

[5] 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.

Food Stamps, and Giannarelli and Wheaton (2000) and Meyer (2002) on SSI. 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 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 2 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 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 didn't know the answer. In the CE the non-response rate was 17 percent and in a typical year about 9 percent of consumption categories are imputed, totaling about 13 percent of total consumption. Thus, the fraction of households with missing or imputed data is quite a bit lower in the CE than the CPS.

The problem of understated income is exacerbated by changes in the extent of under-reporting over time. For example, with diminished dependence on cash transfers with their high implicit tax rates, there is a reduced 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.[6] Incentives to under-report income were also changed by recent EITC expansions that increased the incentive to substitute on-the-books earnings (which would be partially matched by credit

[6] 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.

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 families at the bottom under-report these transfers at the same rate as all welfare recipients, this rise in under-reporting alone would bias downward measured changes over this period in income for single mothers in the bottom income quintile by nearly 8 percentage points.[7]

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. Since 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

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

we construct measures of consumption, expenditures, and income. The data appendix provides a more detailed description of these datasets as well as definitions for our measures of material well-being.

The CE and the PSID provide both expenditure and income data for the same families, while the March CPS does not provide expenditure data.[8] The quality of income and expenditure data varies across surveys. The PSID is widely considered to have higher quality income data than the CE. The PSID data include more than 250 income and tax variables that are 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. The income data in the CE are significantly less detailed. These data are derived from questions covering about 30 different components of income and taxes. These questions are asked of each member of the family over the age of 14.

Relative to the PSID the CE provides far more comprehensive measures of expenditures. The PSID questionnaire typically has fewer than ten questions about food expenditures, including spending for food at home and food away from home. Additional questions are asked about food stamp receipt. The survey includes approximately 30 questions about housing arrangements and housing costs. Expenditure data in the CE, on the other hand, are provided with considerable detail. From the quarterly interview surveys, information on spending for about 600 unique expenditure categories is provided.

In addition to annual measures of family income, inter-family transfers, and food and

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[8] Limited data on food expenditures are available in the CPS Food Security Supplement, which was first administered in April of 1995.

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 low-educated single mother families as an easily definable group that typically has very limited resources. Low-educated single mother families on average earn less and consume less than more educated single mother families or families with married parents. 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 we focus on single mothers, we expect that many of the points we illustrate would apply to 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.

Our samples include families headed by a woman between the ages of 18 and 54 who does not have a high school degree, and who has at least one of her own children under the age of 18 living with her. Because the CE does not allow us to identify subfamilies, the samples do not include separate observations for single mothers that live with their parents. We use sample weights from each survey so that all results reported in the following section are representative of the U.S. population of 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 5,302 in the CPS.

We construct measures of income, consumption, and expenditures that are defined similarly across surveys (see data appendix). In order to summarize on the same scale observations with different family sizes, we adjust these measures using a scale for the number of adults and children in the family.[9] 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 construct income measures that reflect the true resources available to the family. Thus, our measure of disposable family income includes all money income 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.

Questions in the CE survey are designed to capture the current expenditures of the family. We exploit detailed data on many different components of expenditures in order to convert expenditures to a measure of total family consumption. There are three major differences between our measure of total consumption and the BLS's measure of total expenditures. First, our consumption measure excludes spending on individuals or entities outside the family. For example, we exclude spending on gifts to non-family members and charitable contributions.

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[9] 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 adjustment scale that follows National Research Council (1995).

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).

Using data on reported food and housing expenditures in the PSID, we calculate predicted measures of total expenditures and total consumption for each family in our PSID sample. 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 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.

The procedures for calculating predicted total expenditures and predicted non-durable consumption in the PSID follows the procedure described above for predicted consumption, using measures of total expenditures or non-durable consumption rather than total consumption in the CE. Predicted total expenditures in the PSID are calculated 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.

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). In our view, these results are in large part due to measurement error and the effects of conditioning on a low value of income. In interpreting income and consumption measures at the bottom of the distribution, it is important to remember that extreme values are more likely to be mis-measured values than other observations. We report statistics below in the same vein, but without the potentially misleading aspects of conditioning on low income.

Table 1 reports the distribution of real income, expenditures and consumption for single mothers without a high school degree during 1991-1998. 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 $4,735 (or $395 per month). Nearly 2 percent of all single mother headed families have zero or negative 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

10th 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 where we have income and expenditure data for the same sample, expenditures greatly exceed income at low percentiles. In the CE, expenditures exceed income by 47 percent at the 10^{th} percentile and 27 percent at the 20^{th} percentile. In the PSID, predicted expenditures exceed income by 24 percent at the 10^{th} percentile and 13 percent at the 20^{th} percentile. The 10^{th} percentile of consumption is very close to expenditures in both datasets. These results 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 the mean expenditures of those families in the bottom income decile, their expenditures are over 4.6 times their income at $14,213/3,066. Similarly, when we examine the income of those families in the bottom expenditure decile, their income exceeds their expenditures by a factor 1.31 at $7,343/5,585. These patterns we believe are largely driven by measurement error in both income and expenditure data. A more meaningful analysis is a comparison of percentiles even though different individuals are being compared.

If low-educated single mothers draw down assets or borrow to finance spending, then this behavior could explain the puzzle of expenditures exceeding income. However, data on assets and liabilities do no support this conjecture. In Table 2 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. We select years 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 assets 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.

Another way to demonstrate that reported income tends to be much lower than reported expenditures for low-educated single mothers is to compare total income to total expenditures for all single mother families. Table 3 shows that these families spend much more than their reported incomes each year. In Table 3 a comparison of total after-tax family income–including earnings and transfers for all family members–to total family expenditures from 1991 to 1998 in the CE shows that expenditures exceed income by an average of 14.4 percent for single mother families. For single mothers who do not have a high school degree, the disparity is even larger–22.3 percent on average from 1991 to 1998–suggesting that income numbers are a more problematic measure of well-being for less-skilled single mothers; precisely the group of greatest concern. The relationship between expenditures and income follows a different pattern for other types of families. Single women without children spend 0.5 percent less than income on average during the period of this sample, while two parent families have expenditures that are on average 11.3 percent less than income, implying a substantial rate of saving by these families.

It is useful to keep in mind that both income and consumption are measured with error, though we expect that income and consumption are fairly well measured for the vast majority of

people. However, 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. In Table 4 we report whether those that have income below various percentiles also have low consumption, and vice versa. For example, focusing on the 10th percentile, the top row indicates that 75.1 percent of those in the bottom decile of reported consumption report income below the 40th percentile and 95.5 percent report income below the 70th percentile. Similarly, the lower entry in each of the cells of the Column 1 indicates that only 46 percent of those in the bottom decile of reported income report consumption below the 40th percentile and only 81.5 percent report consumption below the 70th percentile. If one focuses on those below the 10th percentile, those with the very least resources, the table indicates that with both good consumption and poor income data (the CE) and good income data and poor consumption data (the PSID), very low consumption is a better predictor of low income than vice versa. The tendency is more pronounced in the CE, but still evident in the PSID. This comparison favors using consumption to measure the well-being of those with very few resources.

Our second empirical strategy is to examine some of the components of 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.[10] 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 one percent). [11]

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,[12] the earnings data still suggest that 7 percent of working single mothers in covered sectors earn a wage below the federal minimum, suggesting under-reporting of earnings.

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. There are several recent studies that 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

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[10] 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 as, in some cases, they can be exempt from the wage floor for the first 90 days of employment.

[11] 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.

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

reports on 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 , i.e. 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.

Perhaps consumption exceeds income for disadvantaged families because consumption is

over-reported. There are useful validation studies of expenditure data in the CE such as Branch (1994) and Bureau of Labor Statistics (2001). However, these studies validate either the integrated data that is 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 have therefore performed our own comparisons of weighted microdata from the CE interview survey to administrative aggregates. We have also performed similar comparisons using the PSID expenditure data. These comparisons of key components of CE expenditures and PSID expenditures to PCE aggregates are reported in Table 8. 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, the comparisons indicate that CE and PSID food and rent do not on average overstate the truth, which might be a concern given that consumption tends to exceed income at the bottom.

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.[13] In particular, we examine whether low values of income or consumption are more

[13] Some past research such as Meyer and Jencks (1989) has also argued that income is only weakly correlated with material hardship.

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 9 examines how the bottom ten percent of the consumption and income 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 9. 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 difference 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 that 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. Nine of the eighteen negative statistics are significantly different from zero.

The PSID results are less clear for the low-educated single mothers. Only six of the twelve statistics in Column 7 are the negative sign that would favor consumption. Only two of these statistics are significantly different from zero. 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.

Table 10 reports the same statistics as Table 9, but for the larger sample of all single

mothers. Some of the sample sizes are quite small in Table 9, 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 9, 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. For the PSID, the results now favor consumption over income. Nine of the twelve statistics have the negative sign that favors consumption, while two of these statistics are significantly different from zero. Income remains a better predictor of automobile ownership, however. Overall, this comparison of outcomes is a fairly strong endorsement of the use of consumption to measure the well-being of those with few resources.

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 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. 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 compare 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. The case for consumption is fairly strong, and

suggests that we should use consumption to supplement income in analyses of poverty whenever possible.

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.

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DATA APPENDIX

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.[14] 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 over the age of 14. For our study we use the interview component, which is a quarterly survey that 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

[14] The consumer unit includes all related family members or two or more persons living together who use their income to make joint expenditure decisions. 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 provided by the respondent.

recall. For more information on the CE see U.S. 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 CE data 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 10^{th} 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.

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.

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 our distribution of predicted consumption leads it to more closely match the distribution of actual consumption.

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 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.

DEFINITIONS OF INCOME, EXPENDITURES, AND CONSUMPTION:

The definitions of after tax income used in this study vary somewhat across surveys. First, the reference periods for the income questions differ somewhat across surveys. Both the CPS and the PSID ask respondents to report income for the full calendar year prior to the interview.[15] In the CE, however, respondents report income for the 12 months immediately preceding the interview rather than for the previous calendar year. Second, calculations of tax liabilities and credits vary somewhat across the three 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 is based on reports from the respondent. Third, both the PSID and the CPS impute missing values for components of income, while the CE does not impute income missing values. For this reason, when reporting income statistics 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.

[15] The CPS interviews take place in March while the PSID interviews usually occur during the first six months of the year. Interviews in the CE occur throughout the year.

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 (i.e. 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)						
Percentile of income	4,735	6,856	8,199	10,608	17,758	23,307
Mean below given decile of income	2,279	4,125	5,260	6,892	9,406	10,636
Total Family Income (CE)						
Percentile of income	4,551	6,704	7,875	10,335	16,475	22,873
Mean below given decile of income	3,066	4,364	5,375	6,837	8,999	10,132
Mean below given decile of expenditures	7,342	7,671	8,068	8,857	10,240	10,956
Median below given decile of expenditures	7,556	7,674	7,842	8,386	9,411	9,816
Total Family Expenditures (CE)						
Percentile of expenditures	6,681	8,504	9,880	12,685	20,295	25,747
Mean below given decile of expenditures	5,585	6,655	7,510	9,021	11,609	12,820
Mean below given decile of income	14,213	12,574	11,885	11,866	12,858	13,483
Median below given decile of income	11,429	10,361	9,820	10,245	11,357	11,995
Total Family Consumption (CE)						
Percentile of consumption	6,748	8,510	9,982	12,753	19,838	24,677
Mean below given decile of consumption	5,541	6,653	7,527	9,067	11,603	12,734
Mean below given decile of income	14,443	12,729	11,859	11,927	13,025	13,736
Median below given decile of income	11,602	10,461	9,995	10,537	11,602	12,088
Total Family Income (PSID)						
Percentile of income	6,042	8,353	9,445	12,293	21,439	30,398
Mean below given decile of income	3,698	5,587	6,682	8,321	11,396	12,994
Mean below given decile of expenditures	13,130	13,351	13,111	14,221	14,634	15,434
Median below given decile of expenditures	9,689	9,860	10,051	10,821	11,540	11,893
Total Family Expenditures (PSID)						
Percentile of expenditures	7,487	9,430	11,183	13,698	20,756	25,554
Mean below given decile of expenditures	5,603	7,003	8,080	9,824	12,309	13,509
Mean below given decile of income	14,814	13,587	13,458	13,944	14,562	14,977
Median below given decile of income	13,653	11,803	11,803	12,591	13,277	13,575
Total Family Consumption (PSID)						
Percentile of consumption	7,318	8,594	9,990	12,619	18,670	23,010
Mean below given decile of consumption	6,051	7,023	7,804	9,204	11,416	12,390
Mean below given decile of income	12,234	11,564	11,565	12,143	13,082	13,416
Median below given decile of income	11,398	10,271	10,437	11,287	12,150	12,360

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 the data appendix.

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 data appendix 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 data appendix for more details.

Table 2
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 3
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
	(210.0)	(211.8)	(0.016)	
Single women without children	22,683	22,569	0.995	8,390
	(207.7)	(197.1)	(0.013)	
Married mothers	52,768	46,829	0.887	27,119
	(218.2)	(191.0)	(0.005)	
Women Without a High School Degree				
Single mothers	12,754	15,600	1.223	1,361
	(261.9)	(268.0)	(0.033)	
Single women without children	11,344	13,224	1.166	550
	(501.2)	(672.9)	(0.079)	
Married mothers	29,376	30,262	1.030	3,061
	(359.3)	(404.2)	(0.019)	

Notes: Calculations are from the first quarter of 1992 through the first quarter of 1999 waves of the Consumer Expenditure Survey. Sample only includes complete income reporters. All numbers are indexed to 2000 dollars using the PCE deflator and are weighted. Standard errors are in parentheses.

Table 4
Deciles of Income and Consumption
Single Mothers Without a High School Degree, Ages 18-54, 1983-1998
(The top entry is the cumulative row percentage,
the bottom entry is the cumulative column percentage)

Percentiles of Consumption		Percentiles of Income						
CE		**10th**	**20th**	**30th**	**40th**	**50th**	**60th**	**70th**
	10th	0.148	0.381	0.544	0.751	0.857	0.915	0.955
		0.148	0.233	0.163	0.207	0.106	0.058	0.040
	20th	0.100	0.254	0.494	0.642	0.764	0.845	0.911
		0.248	0.386	0.402	0.356	0.228	0.140	0.107
	30th	0.105	0.222	0.356	0.514	0.633	0.776	0.876
		0.354	0.503	0.537	0.515	0.347	0.283	0.208
	40th	0.106	0.221	0.319	0.432	0.524	0.687	0.809
		0.460	0.617	0.636	0.627	0.439	0.445	0.330
	50th	0.155	0.230	0.309	0.411	0.541	0.717	0.820
		0.616	0.692	0.715	0.730	0.570	0.622	0.434
	60th	0.118	0.191	0.270	0.351	0.489	0.610	0.760
		0.733	0.765	0.793	0.812	0.707	0.742	0.583
	70th	0.083	0.174	0.269	0.360	0.496	0.559	0.719
		0.815	0.857	0.887	0.903	0.842	0.806	0.742
PSID		**10th**	**20th**	**30th**	**40th**	**50th**	**60th**	**70th**
	10th	0.193	0.386	0.508	0.625	0.717	0.816	0.876
		0.193	0.193	0.123	0.117	0.091	0.099	0.060
	20th	0.147	0.289	0.453	0.589	0.685	0.765	0.828
		0.340	0.335	0.287	0.253	0.186	0.179	0.124
	30th	0.069	0.214	0.413	0.515	0.611	0.728	0.852
		0.409	0.480	0.486	0.355	0.282	0.296	0.248
	40th	0.146	0.292	0.416	0.569	0.672	0.789	0.852
		0.555	0.625	0.610	0.508	0.385	0.412	0.312
	50th	0.114	0.220	0.373	0.481	0.593	0.668	0.806
		0.669	0.732	0.763	0.616	0.497	0.487	0.449
	60th	0.085	0.193	0.286	0.402	0.523	0.641	0.746
		0.754	0.840	0.856	0.732	0.618	0.605	0.555
	70th	0.113	0.168	0.198	0.337	0.430	0.577	0.676
		0.867	0.895	0.886	0.871	0.711	0.752	0.654

Notes: CE data are from the second quarter of 1983 survey through the fourth quarter of 1998 survey. PSID data are from the 1984-1999 surveys.

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
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[1]	413.9	398.3	376.2	0.96	0.91
Food away from home[2]	263.9	172.8	164.9	0.65	0.62
Total food	677.8	571.1	541.1	0.84	0.80
Rent[3]	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).

[1] **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.

[2] **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).

[3] **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 9
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	0.032	1,361
Have a microwave in residence	0.525	0.608	-0.082	0.401	0.621	-0.220	-0.138	0.063	1,361
Have a refrigerator in residence	0.969	0.976	-0.007	0.922	0.981	-0.059	-0.052	0.028	1,361
Have a freezer in residence	0.120	0.140	-0.020	0.087	0.144	-0.057	-0.037	0.040	1,361
Have a disposal in residence	0.176	0.203	-0.026	0.163	0.204	-0.041	-0.015	0.048	1,361
Have a dish washer in residence	0.122	0.138	-0.016	0.060	0.145	-0.086	-0.070	0.037	1,361
Have a clothes washer in residence	0.448	0.533	-0.084	0.367	0.542	-0.175	-0.090	0.063	1,361
Have a clothes dryer in residence	0.349	0.382	-0.032	0.189	0.399	-0.210	-0.178	0.056	1,361
Have a color television in residence	0.958	0.921	0.037	0.855	0.933	-0.077	-0.114	0.036	1,361
Have a computer in residence	0.083	0.053	0.030	0.037	0.058	-0.021	-0.052	0.030	1,361
Have a stereo in residence	0.427	0.489	-0.061	0.438	0.487	-0.049	0.012	0.063	1,361
Have a vcr in residence	0.509	0.626	-0.117	0.472	0.630	-0.158	-0.041	0.064	1,361
Have central air conditioning	0.227	0.214	0.012	0.158	0.222	-0.064	-0.076	0.050	1,361
South	0.351	0.425	-0.074	0.257	0.436	-0.180	-0.106	0.104	434
Midwest/Northeast	0.048	0.070	-0.022	0.066	0.068	-0.002	0.020	0.046	585
Total # of rooms in residence	4.065	4.135	-0.070	3.597	4.185	-0.587	-0.517	0.169	1,361
Have a car	0.416	0.464	-0.048	0.116	0.497	-0.381	-0.333	0.054	1,361
Average number of cars	0.483	0.571	-0.088	0.116	0.611	-0.495	-0.407	0.069	1,361
Took a trip or vacation	0.083	0.112	-0.029	0.020	0.119	-0.099	-0.070	0.029	1,361
Took an overnight trip or vacation	0.076	0.084	-0.008	0.014	0.091	-0.077	-0.070	0.027	1,361
Did not receive free food	0.909	0.930	-0.020	0.918	0.928	-0.010	0.011	0.054	593
PSID, 1983-1998									
Total # of rooms in residence	4.501	4.886	-0.385	4.124	4.925	-0.802	-0.417	0.134	2,304
Have some air conditioning	0.358	0.460	-0.102	0.366	0.459	-0.093	0.009	0.059	1,501
South	0.604	0.748	-0.144	0.617	0.749	-0.132	0.013	0.090	634
Midwest/Northeast	0.160	0.262	-0.102	0.079	0.267	-0.188	-0.086	0.071	501
Have a car	0.167	0.485	-0.318	0.361	0.463	-0.102	0.216	0.064	1,025
Average number of cars	0.200	0.584	-0.384	0.675	0.535	0.139	0.523	0.131	660
Mother does not report poor health	0.984	0.952	0.032	0.976	0.953	0.023	-0.009	0.014	2,354
Health does not limit mothers work	0.858	0.831	0.027	0.827	0.834	-0.007	-0.034	0.036	2,260
No other family members in bad health	0.984	0.955	0.029	0.919	0.962	-0.043	-0.073	0.030	1,111
Not food insecure	0.720	0.609	0.111	0.764	0.594	0.170	0.059	0.166	158
Did not go hungry	0.979	0.936	0.043	0.848	0.946	-0.099	-0.142	0.101	158
Have no children in poor health	0.995	0.986	0.008	0.994	0.983	0.011	0.003	0.014	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 data appendix for description of how predicted consumption is calculated in the PSID.

Table 10
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	0.009	6,577
Have a microwave in residence	0.588	0.770	-0.182	0.480	0.782	-0.302	-0.121	0.028	6,577
Have a refrigerator in residence	0.967	0.986	-0.019	0.965	0.986	-0.022	-0.003	0.010	6,577
Have a freezer in residence	0.157	0.176	-0.019	0.120	0.181	-0.060	-0.041	0.020	6,577
Have a disposal in residence	0.238	0.334	-0.096	0.176	0.341	-0.166	-0.069	0.024	6,577
Have a dish washer in residence	0.216	0.369	-0.153	0.134	0.378	-0.243	-0.091	0.023	6,577
Have a clothes washer in residence	0.496	0.656	-0.160	0.365	0.671	-0.306	-0.146	0.028	6,577
Have a clothes dryer in residence	0.357	0.576	-0.219	0.219	0.592	-0.373	-0.154	0.026	6,577
Have a color television in residence	0.936	0.962	-0.025	0.913	0.964	-0.051	-0.026	0.015	6,577
Have a computer in residence	0.126	0.196	-0.070	0.042	0.205	-0.163	-0.093	0.017	6,577
Have a stereo in residence	0.516	0.617	-0.101	0.416	0.628	-0.212	-0.111	0.029	6,577
Have a vcr in residence	0.591	0.753	-0.162	0.507	0.763	-0.256	-0.093	0.028	6,577
Have a window air conditioner	0.255	0.207	0.048	0.237	0.209	0.029	-0.019	0.025	6,577
Have central air conditioning	0.289	0.390	-0.100	0.241	0.395	-0.154	-0.054	0.026	6,577
Total # of rooms in residence	4.240	5.009	-0.769	3.967	5.039	-1.071	-0.302	0.073	6,577
Have a car	0.431	0.714	-0.284	0.224	0.737	-0.514	-0.230	0.027	6,577
Average number of cars	0.522	0.980	-0.458	0.236	1.011	-0.776	-0.318	0.036	6,577
Took a trip or vacation	0.120	0.242	-0.121	0.048	0.250	-0.202	-0.081	0.017	6,577
Took an overnight trip or vacation	0.103	0.207	-0.104	0.032	0.215	-0.183	-0.079	0.016	6,577
Did not receive free food	0.939	0.961	-0.022	0.926	0.962	-0.035	-0.013	0.021	3,046
PSID, 1983-1998									
Total # of rooms in residence	4.363	5.297	-0.934	4.139	5.316	-1.177	-0.244	0.076	7,593
Have some air conditioning	0.469	0.591	-0.122	0.456	0.592	-0.137	-0.015	0.032	5,420
South	0.616	0.858	-0.242	0.671	0.852	-0.181	0.061	0.045	2,359
Midwest/Northeast	0.326	0.457	-0.131	0.231	0.465	-0.234	-0.103	0.052	1,658
Have a car	0.301	0.678	-0.377	0.427	0.663	-0.236	0.141	0.041	3,032
Average number of cars	0.341	0.800	-0.459	0.553	0.779	-0.227	0.232	0.063	1,758
Mother does not report poor health	0.975	0.974	0.000	0.973	0.975	-0.001	-0.002	0.008	7,768
Health does not limit mothers work	0.873	0.879	-0.006	0.853	0.881	-0.027	-0.022	0.019	7,325
No other family members in bad health	0.965	0.957	0.007	0.956	0.958	-0.003	-0.010	0.015	3,767
Not food insecure	0.669	0.784	-0.115	0.579	0.797	-0.218	-0.103	0.082	755
Did not go hungry	0.984	0.952	0.032	0.932	0.955	-0.024	-0.056	0.034	755
Have no children in poor health	0.991	0.986	0.005	0.970	0.987	-0.018	-0.023	0.012	3,058

Notes: See Table 9.

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.