NBER WORKING PAPER SERIES

WINNING THE WAR:
POVERTY FROM THE GREAT SOCIETY TO THE GREAT RECESSION

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Working Paper 18718
http://www.nber.org/papers/w18718

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
January 2013

We would like to thank the Annie E. Casey Foundation, the Earhart Foundation, and the National Poverty Center for support and Cristobal Gacitua, Matt Gunden, Tom Murray, Vladimir Sokolov, Laura Wherry, and April Wu for excellent research assistance. We have also benefited from the comments of Steven Haider, Hilary Hoynes, Erik Hurst, Christopher Jencks, Steve Landefeld, Kathleen McGarry, Doug McKee, David Romer, Tim Smeeding, Justin Wolfers, and seminar participants at the Brookings Institution, Colby College, Harvard University, the Higher School of Economics, the Institute for Research on Poverty at the University of Wisconsin, the National Bureau of Economic Research, the University of California, Davis, the University of California, Los Angeles, the University of California, Santa Cruz, the University of Chicago, the University of Florida, the University of Notre Dame, and the W.E. Upjohn Institute for Employment Research. This paper supercedes earlier papers titled "Dimensions of Progress: Poverty from the Great Society to the Great Recession," "Five Decades of Consumption and Income Poverty" and "Three Decades of Consumption and Income Poverty". The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

Winning the War: Poverty from the Great Society to the Great Recession
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NBER Working Paper No. 18718
January 2013
JEL No. D12,I32

ABSTRACT

This paper considers the long-run patterns of poverty in the United States from the early 1960s to 2010. Our results contradict previous studies that have argued that poverty has shown little improvement over time or that anti-poverty efforts have been ineffective. We find that moving from traditional income-based measures of poverty to a consumption-based measure (which we argue is superior on both theoretical and practical grounds) and, crucially, adjusting for bias in price indices leads to the conclusion that the poverty rate declined by 26.4 percentage points between 1960 and 2010, with 8.5 percentage points of that decline occurring since 1980. Consumption poverty suggests considerably greater improvement than income poverty for single parent families and the aged, but relatively less improvement for married parent families. Our analyses of the proximate causes of these patterns indicate that changes in tax policy explain a substantial part of the decline in poverty and that social security has been important, but that the roles of other transfer programs have been small. Changes in education have contributed to the decline, while other demographic trends have played a small role. Measurement error in income is likely to explain some of the most noticeable differences between changes in income and consumption poverty, but saving and dissaving do not appear to play a large role for most demographic groups.

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An online appendix is available at:
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1. Introduction

Few measures of U.S. economic performance receive greater attention and scrutiny than the poverty rate. The official poverty rate, which is an absolute measure that is intended to capture the fraction of people below a threshold that is constant in real terms, suggests deprivation has become more widespread over the past four decades. The rate in 2010 was 2.5 percentage points higher than the rate in 1970 despite a doubling of real GDP per capita and trillions of dollars spent on anti-poverty programs. Pundits and academics often rely on these numbers as the benchmark indicator of trends in poverty and draw important conclusions based upon them. Notable examples include Burtless and Smeeding (2001), Haskins and Sawhill (2009), and Meyer and Wallace (2009).

Trends in official poverty inform the conventional wisdom that the U.S. has made little progress in reducing poverty. Many have argued that trends in official poverty show that the panoply of income support programs, from food stamps to unemployment insurance, have been ineffective anti-poverty tools. In 1995 former House Ways and Means Committee Chairman Archer stated, "Government has spent $5.3 trillion on welfare since the war on poverty began, the most expensive war in the history of this country, and the Census Bureau tells us we have lost the war." More concisely, President Reagan said, "we fought a war on poverty, and poverty won." This line of argument has led to calls to abandon the safety net (Murray 1984, Tanner 2012).[1]

At the same time, a large literature has pointed out various flaws in the official poverty measure, including a narrow definition of income and a biased adjustment for price changes (Citro and Michael 1995; Jencks, Mayer and Swingle 2004a). However, studies of poverty trends typically conclude that these flaws may affect the level of poverty, but they have little impact on trends. In their overview of poverty trends, Hoynes, Page, and Stevens (2006) conclude, "Although poverty can be measured in ways other than the official definition, our work, and the work of others, shows that most of these different ways will alter the level of poverty but not the trend." Similarly, Lang (2007) states, "Although… there is considerable

[1] There are other problems created by the mis-measurement of poverty. For example, poverty rates are a key determinant of the allocation of federal funds to states and localities for use in education and other programs for the disadvantaged.

support for improving the poverty measure, doing so has only a small effect on recent trends." (U.S. Census various years-b, 1995; Triest 1998; Short et al. 1999; and Dalaker 2005).

This paper examines changes in poverty from the early 1960s to 2010 after correcting shortcomings of the official measure. We present results for several measures of income poverty as well as poverty based on consumption. Consumption better reflects the material circumstances of disadvantaged families not only because it more closely captures permanent income but also because it is measured with less error than income at the bottom, and studies have shown that consumption is a better predictor of well-being than income (Meyer and Sullivan 2003, 2011a, 2012). We examine the standard head count measure of poverty as well as other measures such as deep poverty and poverty gaps. Our results contradict previous studies that have argued that poverty has shown little improvement over time, or that anti-poverty efforts have been ineffective. We find that consumption poverty, after adjusting for bias in price indices, declined by 26.4 percentage points between 1960 and 2010, with 8.5 percentage points of that decline occurring since 1980. We also provide a different set of facts for researchers to explain regarding the time pattern of poverty and its differences by demographic groups.

We have several key results. First, we show that the well-known upward bias in the Consumer Price Index (CPI-U), the index used to adjust official poverty thresholds for inflation, has an enormous effect on changes in poverty over long periods. A conventional money income based measure that accounts for the consensus estimate of the bias in the CPI-U declined by nearly ten percentage points more than the official measure over the 1960s and 1970s.[2] Since 1980, an estimate that accounts for CPI-bias has declined a further 2.9 percentage points while the official measure has risen 2.1 percentage points.

Second, conceptually better measures of resources available for consumption indicate a further acceleration of the decline in poverty over time. The official measure does not reflect tax credits like the Earned Income Credit and Child Credit and does not include food stamps, housing benefits and other in-kind transfers. Such programs are an increasing share of our anti-poverty efforts. Accounting for taxes reduced poverty by an additional 2.4 percentage points

[2] These numbers are based on comparisons of official poverty to a measure using our adjusted CPI-U-RS price index and the National Academy of Sciences (NAS) equivalence scale. We show that moving from the official scale to the NAS scale has little impact on changes in poverty.

over the 1960s and 1970s, while taxes and noncash benefits combined have reduced poverty an additional 1.8 percentage points since 1980.

Third, measuring the consumption of families directly indicates an even greater decline in poverty. Since 1980, poverty has fallen an additional 3.8 percentage points beyond that indicated by after-tax income plus non-cash benefits. These patterns are not uniform across family types, with the decline in consumption poverty greatly exceeding the decline in income poverty for some groups, such as single parents and the aged, but with much smaller differences across measurers for married couples with children. Strikingly, we show that income and consumption measures of the poverty gap (the amount of money needed to raise families up to the poverty line) have generally moved sharply in opposite directions in the last two decades with income based poverty gaps rising and consumption based poverty gaps falling. Our general finding of a decline in poverty is corroborated by other indicators of well-being for those with low income such as the increased ownership of cars and other durables and improved housing conditions (Meyer and Sullivan 2011c).

Fourth, some government policies have played an important role in reducing the poverty rate over the last five decades. Changes in tax policy, specifically cuts in rates at the bottom in the 1960s and expanded tax credits, deductions and exemptions starting in the mid-1980s, explain a substantial part of the decline in poverty particularly for families with children. Rising social security benefits account for a decline in poverty, particularly in the late 1960s and early 1970s, but other cash and noncash government transfer programs have only had a small impact on changes in poverty since 1980. We should emphasize that these other government programs may have reduced poverty over earlier periods and related work has shown that they lift people out of poverty at a point in time (Hoynes et al. 2006; Ben-Shalom 2012). While we find that rising educational attainment accounts for some of the decline in poverty over the past five decades, other changes in the demographic characteristics of the population account for only a small fraction of the overall improvement in well-being of the poor.

Finally, we consider possible explanations for the differences between the income and consumption based poverty patterns. We suspect that measurement error in income explains much of the large differences between income and consumption measures, with this difference accentuated when the focus is the distribution below the poverty line such as poverty gaps. Given the evidence on low asset holdings, particularly for groups such as single parents, saving

and dissaving are likely to explain only a small portion of the differences between income and consumption measures of poverty.

In the next section we highlight some of the goals of a poverty measure as it relates to capturing changes in well-being over time, and we summarize the key decisions entailed in the construction of such a measure. In Section 3 we discuss the conceptual advantages of consumption based measures of poverty. We describe our data and methods for constructing income and consumption based measures of poverty in Section 4. Section 5 discusses concerns about under-reporting and changes in income and consumption data quality over time. We address inflation adjustments to poverty thresholds in Section 6. In Section 7 we present our results for changes in a number of different income and consumption based poverty measures over the past five decades. We also examine poverty gaps and poverty trends for various family types. We consider a number of potential explanations for changes in poverty and differences across measures in Section 8. In Section 9 we examine the trends for some alternative measures of deprivation including near and deep poverty, and relative poverty. In Section 10 we conclude.

2. Goals and Decisions when Measuring Changes in Poverty

Our main goal in examining changes in poverty is to assess how the level of material disadvantage at the bottom of the distribution has changed over time. In looking at changes in well-being, we seek indicators that will allow us to assess changes due to public policies and broad social and economic trends. While we focus on single dimensional measures, we present several of them and examine other indicators as well. We emphasize single dimensional-measures that are highly correlated with other indicators of well-being. A second goal of a poverty measure may be to assess changes over time in the case for public transfers to different groups. In standard social welfare analyses, the case for transfers depends both on the level of well-being of a group, which determines their welfare weight, and the extent to which additional resources would increase that well-being, i.e. their marginal utility of income. Depending on the nature of changes over time and the preferences of individuals, these indicators may be aligned or distinct.

In Meyer and Sullivan (2012) we discuss eight choices that are essential to the construction of a single-dimensional poverty measure: 1) How should the resources available to

people be defined? Typically, resources are measured using income or consumption, but there is debate about how to define income and consumption. 2) Is an annual measure of poverty about the right time period, or should poverty be measured over shorter or longer time periods? 3) Should the resource-sharing unit that is pooling income and making joint purchases be a group of related family members, or another unit such as a group of people sharing a residence? 4) Should the measure count the number of people with resources below a cutoff or threshold (a head count measure) or should it specify the total resources needed to raise all of the poor up to the poverty threshold (a poverty gap measure)? 5) Should the poverty threshold be set as an absolute level of resources or relative to some standard, such as the median level of income? For example, the European Union focuses on a measure of poverty defined as the fraction below 60 percent of median income. 6) Where should the poverty line, or thresholds, be drawn, recognizing that this essentially arbitrary choice will have a large effect on the estimated poverty rate? 7) Should poverty thresholds be adjusted over time using the rise in the cost of living or the rise in income levels, and should it be adjusted for geographic price differences or other factors? 8) How should the "equivalence scale" be determined to set poverty thresholds for families that differ in size or composition?

In this paper we will discuss how some of these choices affect estimates of changes in poverty over time. Our main results focus on how different measures of resources and different price adjustments yield very different patterns for poverty. In addition, we will consider the impact on trends of different resource sharing units and equivalence scales, and we will examine both headcount measures and poverty gaps, and both absolute and relative measures of poverty.

3. The Conceptual Advantages of Consumption Measures of Poverty

Throughout this paper we emphasize the differences between income and consumption based measures of poverty. Previous work has presented evidence that consumption provides a better measure of well-being than income for families with few resources (Meyer and Sullivan 2003, 2011a, 2012). Conceptual arguments as to whether income or consumption is a better measure of the material well-being of the poor almost always favor consumption. For example, consumption more closely reflects permanent income (for further discussion see Cutler and Katz 1991; Poterba 1991; Slesnick 1993). Income measures fail to capture disparities in consumption

that result from differences across families in the accumulation of assets or access to credit. Consumption measures will reflect the loss of housing service flows if homeownership falls or the decline in consumption that might be required to repay debts, both of which would be missed by an income measure. Consumption will also better reflect the insurance value of government programs, and is more likely to capture private and government transfers. In addition to these reasons, available consumption data are better suited than available income data for imputing some non-money resources, particularly those related to housing and vehicle ownership.[3]

That consumption can be divided into meaningful categories, such as food and housing, provides several advantages over income. First, expenditures on categories such as food and housing are of interest in their own right, and second, one can better account for relative price changes. Even more importantly, subcategories of consumption such as nondurable consumption have been used extensively in past work. In this paper, we will report results for what we call core consumption, a measure that closely approximates essentials and only includes items that are well measured over time. Furthermore, we can examine the effects of excluding categories of consumption that may not directly increase well-being, such as work expenses and out-of-pocket medical expenses.

Meyer and Sullivan (2003, 2011a) provide evidence that consumption is a better predictor of well-being than income. They show that other measures of material hardship or adverse family outcomes 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 these families. In an even more direct evaluation of poverty measures, Meyer and Sullivan (2012) compare the characteristics of those added to poverty and subtracted from poverty when going from an income based measure to a consumption based measure, holding the poverty rate constant. They find that those added to poverty by the consumption based measure are less likely to have health insurance, have less education, smaller and cheaper cars, fewer household appliances and amenities, where these last indicators are measured prior to consumption spending so are not part of that spending.

[3] For example, a better value of housing subsidies can be computed using Consumer Expenditure (CE) Survey data than the Current Population Survey (CPS) because the survey provides information on out of pocket rent and the characteristics of the living unit including the total number of rooms, the number of bathrooms and bedrooms, and appliances such as a washer, dryer, etc. These characteristics can be used to impute a total rental value as explained

Some researchers have argued that income may have some conceptual advantages over consumption.[4] One reason is that individuals can choose to have low consumption, while income reflects access to resources that can be used for consumption, and as such is not driven by consumption decisions (Atkinson, 1991). However, individual choices affect the level of income as well through education, occupation and labor supply choices. Furthermore, consumption is more likely than income to be affected by the ability to borrow and by access to public insurance programs. Thus, consumption will do a better job of capturing the effects of changes in access to credit or the government safety net. Another potential advantage to income is that current consumption fails to capture the welfare benefits of leaving bequests. While this is an important concern, the effect of bequest motives on consumption is likely to be small for the poor.

In their evaluation of poverty measurement, the NAS panel concluded that "On balance, many members of the panel find more compelling the arguments in favor of a consumption definition that attempts to assess actual levels of material well-being" (Citro and Michael 1995, p. 213). The panel's final recommendation, however, calls for an income based measure because of concerns about adequate consumption data. One important concern is that small samples in consumption datasets make it difficult to construct poverty statistics at the subnational level, but this is less of an issue for the national statistics we report here. We discuss other concerns regarding data quality below.

4. Data and Methods

4.A. Income Measures from the Current Population Survey

The official poverty measure in the U.S. is based on data from the Annual Social and Economic (ASEC) Supplement (formerly the Annual Demographic File or ADF) to the Current Population Survey (CPS) for approximately 100,000 households annually (60,000 households prior to 2002). For the previous calendar year, respondents report the income amounts for a

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in the Data Appendix. In addition, for homeowners the CE provides self-reported values of the rental equivalent of the home.

[4] Blundell and Preston (1998) is sometimes characterized as finding that income has advantages over consumption. A more accurate summary is that some comparisons of consumption across cohorts or age will not give the correct sign to the difference in utility, but income suffers from the same types of problems in the situations they consider.

number of different sources that are included in the money income measure used to determine official poverty statistics. In addition, the survey collects information on the dollar value of food stamps received by the household, as well as whether household members received other noncash benefits including housing and school lunch subsidies. Starting with the 1980 survey, the ASEC/ADF also provides imputed values for these and other noncash benefits. Online Appendix Table 1 provides descriptive statistics for the full sample from the CPS.

For our analyses of income poverty, we focus on three different measures of income. First, we examine money income, which is the measure used by the Census to calculate official poverty statistics. Second, we examine after-tax money income, which adds to money income the value of tax credits such as the EITC, and subtracts state and federal income taxes and payroll taxes. Finally, we examine after-tax income plus the dollar values of food stamps and housing and school lunch subsidies, the fungible value of Medicaid and Medicare, the value of housing equity converted into an annuity, and the value of employer health benefits. See the Online Data Appendix for more details.

4.B. Consumption Measures from the Consumer Expenditure Survey

Our consumption data come from the Consumer Expenditure Survey (CE), which is the most comprehensive source of consumption data in the U.S. We use the CE Interview Survey component for the years 1960-1961, 1972-1973, 1980-1981 and 1984-2010 (see Online Data Appendix for details). The CE provides annual or annualized data for 13,728 families in 1960-1961 and 19,975 families in 1972-1973. From 1980-2010 the survey is a rotating panel that includes about 5,000 families each quarter between 1980 and 1998 and about 7,500 families thereafter. Each consumer unit, or family, in the survey reports spending on a large number of expenditure categories for up to four consecutive quarters. Online Appendix Table 1 provides descriptive statistics for the full sample from the CE.

To convert reported expenditures into a measure of consumption, we make a number of adjustments. While previous studies have made similar adjustments, our approach involves several important methodological improvements. First, we convert vehicle spending to a service flow equivalent. Instead of including the full purchase price of a vehicle, we calculate a flow that reflects the value that a consumer receives from owning a car during the period that is a function of a depreciation rate and the current market value of the vehicle. To determine the

current market value of each car owned, we use detailed information on vehicles (including make, model, year, age, and other characteristics). This approach accounts for features and quality improvements through what purchasers are willing to pay. See the Online Data Appendix for more details on how we calculate vehicle service flows.

Second, to convert housing expenditures to housing consumption for homeowners, we substitute the reported rental equivalent of the home for the sum of mortgage interest payments, property tax payments, spending on insurance, and maintenance and repairs. Third, for respondents living in government or subsidized housing, we impute a rental value using detailed housing characteristics available in the survey including the number of rooms, bedrooms and bathrooms, and the presence of appliances such as a microwave, disposal, refrigerator, washer, and dryer.

Finally, we exclude 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.[5] We exclude out of pocket medical expenses because high out of pocket expenses are arguably more likely to reflect substantial need or lack of good insurance rather than greater well-being. However, given the importance of health coverage and changes over time in public and private insurance, we report alternative consumption measures that include a value for public and private health insurance (more details on our measure of consumption are in the Online Data Appendix).

4.C. Constructing Poverty Measures

In the results that follow, we compare official poverty to several alternative measures of poverty. Official poverty in the U.S. is determined by comparing the pre-tax money income of a family or an unrelated individual to specified poverty thresholds that vary by family size and composition. If the total money income of a family is less than the threshold for that family, all individuals in the family are designated as poor. The original poverty thresholds were developed

[5] We also exclude spending on charitable contributions and spending on cash gifts to non-family members. This category is very small relative to total consumption. We considered subtracting estimated monetary work expenses from consumption. However, work related expenses that are reported in the CE, such as child care and domestic services, on average tend to be very small relative to total spending. We have also examined the difference in transportation and clothing expenditures for those who work and those who do not as an estimate of additional work expenses, but again this estimate is small relative to total consumption. To account for how work affects consumption more generally, one may want to examine the consumption of leisure (Aguiar and Hurst 2007, Meyer and Sullivan 2008).

in 1964. These thresholds are adjusted for inflation annually using the CPI-U. For a detailed summary see Citro and Michael (1995) or Blank (2007).

We construct alternative measures of poverty that address well-known shortcomings in the official measure (Citro and Michael, 1995). One of the most commonly criticized features of the official measure is that it defines resources as pre-tax money income, failing to reflect other resources at a family's disposal including tax credits, food stamps, housing subsidies, and other in-kind transfers. These tax credits and in-kind transfers have greatly expanded in recent decades. Our alternative poverty measures are based on different measures of resources, including after-tax income, after-tax income plus noncash benefits, and consumption. Conceptually, these alternative measures more closely reflect the resources available for consumption.

We should note that in practice, it is not necessarily the case that measures of disposable income more accurately identify the disadvantaged given poorly reported income and inaccurate tax and benefit imputations. For example, evidence from Meyer and Sullivan (2012) indicates that some alternative income measures, that conceptually closely approximate resources available for consumption, do a worse job of identifying the most disadvantaged families at a point in time. While there is a widely held presumption that such disposable income measures better capture disadvantage over time, this presumption is untested. Given how widely held this presumption is, we emphasize such measures here and encourage future research to examine the validity of the measures.

Rather than using the official poverty thresholds, for these alternative measures we specify thresholds that equate poverty in the baseline year (1980). This anchoring of poverty rates in 1980 facilitates comparisons of trends across different measures of poverty. Specifically, for each alternative poverty measure we find thresholds such that the poverty rate for that measure (after adjusting for family size) is equal to that of the official poverty rate in 1980 (13.0 percent).[6] Anchoring our alternative measures to the official measure allows us to examine the same point of the distribution in 1980 so that different measures do not diverge simply because

[6] In 1980, the 13.0 percentile of the distribution is actually quite similar across several of our different scale adjusted measures of resources. For example, the ratio of the thresholds for after-tax money income to that of money income is 0.97; for after-tax money income plus noncash benefits, 1.27; and for consumption, 1.09 or 0.97 excluding health insurance.

of differential changes at different points in the distribution.[7] To obtain thresholds for other years, the thresholds are adjusted for inflation using a price index.

Our alternative measures also differ from the official measure in how adjustments are made for family size and composition. The equivalence scale implicit in the official poverty thresholds does not exhibit diminishing marginal cost over the whole range of family sizes (Ruggles 1990). A National Academy of Sciences panel report (Citro and Michael, 1995) recommended an equivalence scale of the form: $(A + PK)^F$, where A is the number of adults in the family and K is the number of children. This scale allows for differences in costs between adults and children and exhibits diminishing marginal cost with each additional adult equivalent. For most of the results that follow we will use the NAS scale with P and F equal to 0.7.

Our consumption-based measures of poverty also differ from official poverty in how the family unit is defined. The unit of analysis for the official measure of poverty includes only individuals within a housing unit who are related by blood or marriage. This measure excludes from family resources the resources of unrelated individuals, such as a cohabiting partner. Analytically, the unit should be based on those who share resources. However, in the CPS ADF/ASEC we do not observe whether the cohabitor is sharing resources with other family members. By contrast, the unit of observation in the CE, the consumer unit, includes all those related by blood and marriage as well as cohabitors who share responsibility for housing, food, or other living expenses, but excludes cohabitors who do not contribute to these expenses.

5. Data Quality and Under-reporting in the CPS and CE

Evidence on the tendency of surveys to capture more accurate information on income or consumption is split. 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 this argument is less valid, as these families tend to have many, sporadic income sources. Additionally, while income may be easier to report, it is likely to be a more sensitive topic for survey respondents than consumption. The CPS has slightly lower survey non-response than the CE, but much higher item non-response on income questions than the CE has on expenditure

[7] Triest (1998) and Joint Economic Committee Democrats (2004) use a similar approach.

questions. Taken together, the CPS has appreciably higher nonresponse than the CE (Meyer and Sullivan 2011a).

5.A. Income Under-Reporting

Income in the CPS is substantially under-reported, especially for categories of income important for those with few resources. Furthermore, the extent of under-reporting has increased over time. Meyer and Sullivan (2003, 2011a) and Meyer, Mok and Sullivan (2009) report comparisons of weighted micro-data from the CPS to administrative aggregates for government transfers and tax credits. These ratios are substantially below one and have declined over time, falling to below 0.6 for Food Stamps and 0.5 for Temporary Assistance for Needy Families (TANF) in recent years. Comparisons of CPS micro-data to administrative micro-data for the same individuals corroborate the severe under-reporting of government transfers (Meyer and Goerge 2011). Concerns about income under-reporting are not limited to transfer income. Davies and Fisher (2009) summarize evidence finding under-reporting in surveys of earnings at the bottom of the distribution based on comparisons of survey and administrative data. Consistent with these results, income is often far below consumption for those with few resources, even for those with little or no assets or debts (Meyer and Sullivan 2003, 2011a).

5.B. Consumption Under-Reporting

There is also substantial evidence that aggregate consumption is under-reported in the CE and that this under-reporting has increased over time. Given that we generally find that consumption exceeds income at the bottom, and that in recent years consumption poverty declines more than income poverty, the main findings of the paper are likely somewhat understated by consumption under-reporting. To assess the degree of under-reporting, CE data have been compared to data from many sources, but the most extensive and heavily cited comparisons are to the Personal Consumption Expenditure (PCE) data from the National Income and Product Accounts (NIPA). Focusing on comparable expenditure categories is important because past studies have indicated that half or more of the discrepancy between the two sources is due to definitional differences (Slesnick 1992, General Accounting Office 1996).

Bee, Meyer and Sullivan (2012) survey and update these analyses, focusing on the CE Interview Survey data rather than the published integrated data examined in the literature. Among the eight largest comparable categories of expenditures six are reported at a high rate in the CE Interview Survey and that rate has been roughly constant over time. These well-measured categories are the imputed rent on owner-occupied nonfarm housing, rent and utilities, food at home, gasoline and other energy goods, communication and new motor vehicles. In 2010, the ratio of CE to PCE is 0.95 or higher for imputed rent, rent and utilities, and new motor vehicles. It is 0.86 for food at home, 0.80 for communication, and 0.78 for gasoline and other energy goods. The largest poorly measured expenditure categories are food away from home with a ratio of 0.51, furniture and furnishings at 0.44, clothing at 0.32, and alcohol at 0.22.

However, these aggregate numbers likely overstate the weakness of the data for the typical person and even more so for the poor. Sabelhaus et al. (2012) examine the representativeness of the CE Interview Survey by income. They match CE respondent and non-respondent households to income at the zipcode level. They find that there is a small under-representation of those from the top four or five percentiles of zipcode level income and no under-representation (maybe a slight over-representation) at the bottom of the zipcode level income percentiles. Much more important quantitatively, they find that the income reported in the survey, either because high income people are missing or because income is under-reported at the top, does not match well to other sources such as the Survey of Consumer Finances and tax records. Furthermore, reported spending relative to income is very low at the top. The finding that much of the under-reporting of expenditures occurs at the very top of the income distribution means that the aggregate under-reporting statistics likely overstate the weakness of the CE for a typical person.

Our measures of consumption also include the value of the flow from the ownership of durables such as houses and cars. Reporting ownership of houses and vehicles is very different from reporting the mostly small, discretionary purchases that are badly reported in the CE. Validation of these data suggests that ownership of these durables is reported reasonably well. See the Data Appendix Sections B and D.3 and Bee, Meyer and Sullivan (2012).

5.C. Core Consumption

Incorporating the lessons of the previous section, we construct an alternative core consumption measure that includes only the best measured expenditures, ones that have reporting ratios that are high and constant or that decline slowly over time. This core consumption measure closely approximates necessities, consisting of food at home, rent plus utilities, transportation, gasoline, the value of owner-occupied housing, rental assistance, and the value of owned vehicles. Overall, our core consumption measure is 73 percent of total consumption, but is on average 80 percent of consumption for those near the poverty line.

6. Price Indices

Because the official poverty thresholds are adjusted over time using the CPI-U, bias in this price index will lead to bias in poverty trends. Although this bias can be very substantial for changes over long time periods, the implications of this observation have received little attention in the poverty literature.[8] There are four types of biases in the CPI-U that have been emphasized: substitution bias, outlet bias, quality bias, and new product bias. Substitution bias refers to the bias in the use of a fixed market basket when people substitute away from high relative price items. Outlet bias refers to the inadequate accounting for the movement of purchases toward low price discount or big box stores. Quality bias refers to inadequate adjustments for the quality improvements in products over time, while new product bias refers to the omission or long delay in the incorporation of new products into the CPI. The Boskin Commission (Boskin et al. 1996), a group of distinguished economists appointed by the Senate Finance Committee, provides an authoritative source on the extent of these biases. They concluded that the annual bias in the CPI-U was 1.1 percentage points per year at the time of the report, but 1.3 percentage points prior to 1996 (the extra 0.2 percentage points was due to an inadvertent bias added by a 1978 change that was later corrected).

The BLS has implemented several methodological improvements in calculating the CPI-U over the past 25 years (Johnson, Reed, and Stewart 2006). Although the BLS does not update the CPI-U retroactively, it does provide a consistent research series (CPI-U-RS) that incorporates

[8] Exceptions to this rule include Jencks, Mayer and Swingle (2004a) and Broda, Leibtag and Weinstein (2009).

many of the changes. However, the CPI-U-RS only corrects for about 0.4 percentage points on average of the 1.1 to 1.3 percentage point annual bias in the CPI-U. Thus, our base price index, what we call the adjusted CPI-U-RS, subtracts 0.8 percentage points from the growth in the CPI-U-RS index each year.[9] We also base this adjustment on Gordon (2006) who argues that even with recent alterations to the CPI-U methodology that make it and the CPI-U-RS essentially the same for recent years, a bias of 0.8 percentage points per year remains. Berndt (2006) reports that the bias remaining in 2000 as estimated by each of the individual Boskin Committee members ranged from 0.73 to 0.9 percentage points per year.

This adjustment to the CPI-U-RS could be too big or too small. Gordon and vanGoethem (2005) and Gordon (2006), for example, find that over some periods the CPI-U *understated* price increases for housing and clothing. The Commission itself argued that the estimates were on the "conservative" side and tended to understate the bias (Boskin et al. 1996 Section VI, Gordon 2006 p. 13), though they also indicated that the truth could lie anywhere in a fairly wide band. Others, such as Hausman (2003), have argued that the commission understated the bias. Costa (2001) concludes that the CPI-U overstated inflation by 1.6 percentage points per year between 1972 and 1994. Hamilton (2001) uses a different data source and concludes that the CPI-U overstated inflation by 3.0 percentage points per year between 1972 and 1981 and by 1.0 percentage point per year between 1981 and 1991.[10]

An additional issue is whether the price adjustment for the poor should be the same as the adjustment for overall price changes given that the market basket chosen by the poor is different, and the poor may pay different prices. The evidence for differences in price changes by income either suggests little difference or, when the difference is substantial, it applies to a short time period or small share of expenditures (see Section G of the Data Appendix). If anything, the evidence suggests slower price increases for the poor, which would tend to amplify our main findings of a reduction in poverty.

[9] Because the CPI-U-RS provides a consistent series only back until 1978, we subtract the full 1.1 percentage points from changes in CPI-U inflation for earlier years. Results using the CPI-U-RS are similar to those using the PCE deflator.

[10] The Boskin Commission and several other surveys have estimated CPI bias by assembling direct bias estimates for parts of the index from a variety of sources. Costa (2001) and Hamilton (2001) use an alternative approach that essentially determines how much CPI-U adjusted income needs to be further adjusted so that spending patterns at inflation adjusted income are unchanged over time.

7. Results

In this section we describe the main changes in income and consumption poverty over the past five decades. As discussed in Section 2, how one measures resources and how one adjusts thresholds over time for inflation are two essential components of any absolute measure of poverty. Here, we first show that conceptually better measures of resources and more accurate inflation corrections tend to indicate greater poverty reduction over time. We then discuss the patterns for poverty gaps and poverty by family type. In the following section we will examine potential explanations for these patterns.

7.A. Income and Consumption Based Measures of Poverty

Over the past five decades, the official poverty rate has fallen by only 4.4 percentage points, and it has actually risen (by 2.5 percentage points) since 1970 (Figure 1). Citing this rise, many have concluded that we have lost the war on poverty (Tanner 2012). However, our results show that the pattern for an improved measure of poverty is dramatically different—a consumption based poverty measure that corrects for bias in the CPI-U falls by 26.4 percentage points over the past five decades.

Figure 1 and the first four columns of Table 1 report changes in poverty since 1963 for several income measures. Each measure is anchored as described above so that the poverty rate is the same as the official measure in 1980 (13.0%). In all of the series besides the official measure, we use the adjusted CPI-U-RS price adjustment and the NAS equivalence scale. Online Appendix Table 2 reports these same results using the CPI-U-RS. There are two main lessons to take from these results. First, conceptually better resource measures give poverty rates that show greater improvement over time.[11] A comparison of columns 2 and 3 or the corresponding series in Figure 1 shows the effects of accounting for income and payroll taxes and tax credits. In each decade the income poverty measure that incorporates taxes declines more (or rises less) than the pre-tax money income measure. In the 1960s, for example, after-tax income poverty fell by 16.1 percentage points while pre-tax money income poverty fell by 14.1

[11] Standard errors for changes in some of the key poverty measures and the differences between them are reported in Online Appendix Tables 3 and 6. Changes and differences between poverty measures between 1980 and 2010 are

percentage points.[12] During the 1990s, after-tax income poverty declined by another 0.8 percentage points more than pre-tax money income poverty. After 1996, the relative movements of the two measures were small. Second, adding the value of noncash government benefits as calculated by the Census Bureau (column 4) has very little additional impact on changes in poverty except for small effects during short periods in the mid-1980s and mid-1990s. As we discuss later, this result may, in part, be due to a sharp rise in under-reporting of noncash benefits in the CPS. It is important to note that although these results show that noncash benefits do not affect changes in poverty over time, these programs do play an important role in lifting people out of poverty at a point in time (Hoynes et al. 2006, Ben-Shalom et al. 2012).

Consumption based measures of poverty indicate greater overall improvement than income poverty measures. As shown in Figure 2 and Table 1, over the past five decades consumption poverty has fallen by 26.4 percentage points, and since 1980 it has declined by 8.5 percentage points. The patterns for consumption poverty and after-tax money income poverty were fairly similar in the 1970s, 1980s, and 1990s.[13] However, after-tax money income based poverty fell more than consumption based poverty (by 1.7 percentage points) during the 1960s, and these two poverty measures diverged in the 2000s with income poverty indicating greater deprivation, while consumption poverty showed improvement.[14,15] Even more pronounced

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typically significantly different from zero if they exceed 0.6 percentage points. If one groups years, much smaller changes are significant.

[12] Our finding that including taxes noticeably alters the patterns for income poverty contrasts with others who have concluded that alternative income poverty measures have similar trends (Hoynes et al. 2006; Lang 2007). These conclusions are based on Census reports such as Dalaker (2005), which show that a poverty measure based on pre-tax money income and one based on after-tax money income plus noncash benefits have similar trends in recent years. However, these similar trends are the result of offsetting effects of including taxes (which result in a greater decline in poverty) and the annuitized value of home equity (which leads to a less decline).

[13] We compare consumption to income excluding noncash benefits here and in much of the discussion that follows because this income measure is available for all years since 1963. Also, as shown in Figure 1, for the most part, including noncash benefits does not noticeably affect changes in income poverty since 1980. We highlight a few cases where noncash benefits affect the patterns for poverty in the discussion below.

[14] This difference is consistent with findings from previous research. Cutler and Katz (1991) do not examine after-tax income poverty or a measure that incorporates noncash benefits. To facilitate comparisons of our consumption results for this earlier period to those from Table 13 of Cutler and Katz (1991), we recalculate our consumption poverty measure using their price index (PCE) and anchoring poverty in 1980 at 7.5 percent to match their consumption poverty rate for that year. The change for this measure of consumption poverty is very close to that of Cutler and Katz over their full 1960-1961 to 1988 period, although there are some differences for sub-periods; our measure of consumption poverty falls by about a percentage point less in the 1960s and it does not show their rise of about a percentage point in the 1970s. These differences arise due to different approaches in calculating service flows from housing and vehicles in these early years.

[15] Given the standard errors of these estimates, differences of this magnitude between income and consumption poverty changes are strongly statistically significant.

differences between income and consumption poverty are evident when we examine trends by family type, which we discuss below.

The different patterns during the recent, rather severe, recession are of particular note. After-tax money income poverty rose in 2007 and 2008, while consumption poverty fell. Between 2008 and 2010, consumption poverty rose by 0.9 percentage points (23 percent), while after-tax money income poverty rose by only 0.6 percentage points (8 percent). Although the recession officially began in 2007, unemployment rates did not start to rise sharply until mid-2008 and the sharpest rise in unemployment occurred from November 2008 through January 2010, making it all the more surprising that after-tax money income poverty did not rise more during this period. In fact, according to an income poverty measure that includes noncash benefits (column 4 of Table 1), there was no change in poverty between 2008 and 2009, and poverty rose by half a percentage point in 2010.

The pattern for other measures of consumption poverty is broadly similar to that of our main measure. For example, including the value of health insurance (column 6) does not noticeably affect changes in poverty, although poverty fell a bit more in the 1980s. The changes in consumption poverty based on our measure of core consumption (column 7), which includes components that are reported consistently well over time compared to national income accounts, suggest greater improvement in poverty than with total consumption. Differences between these two measures of consumption poverty are most notable for the period between 1973 and 1980 when core consumption poverty fell considerably more than consumption poverty. The greater improvement in poverty seen with core consumption is not surprising given the increased under-reporting of non-core consumption components discussed in Section 5. The rise in under-reporting of some components of consumption in the CE over time suggests that true consumption poverty declined even more than is shown in Table 1.

7.B. The Importance of Price Adjustments

As one moves toward a price index that uses newer methods and comes closer to what past research suggests would be an unbiased measure of inflation, trends in poverty are considerably more favorable. This point is emphasized in Figures 3a and 3b and Online Appendix Table 4, which report changes in after-tax money income poverty and consumption poverty using three different price deflators: the CPI-U, CPI-U-RS, and our adjusted CPI-U-

RS.[16] Between 1963 and 2010, moving from the CPI-U to the CPI-U-RS leads to a 3.9 percentage point greater fall in after-tax income poverty, and moving from the CPI-U to the adjusted CPI-U-RS leads to a 14.5 percentage point greater fall in poverty.

Price deflators that better approximate the change in the cost of living have an even greater effect on changes in consumption poverty because consumption is less dispersed than income. Thus, a given reduction in the thresholds will move a larger share of the consumption distribution above the poverty line. Between the early 1960s and 2010, moving from the CPI-U to the CPI-U-RS leads to a 5.4 percentage point difference in the change in poverty, while the adjusted CPI-U-RS leads to a 21.8 percentage point greater fall in poverty than that based on the CPI-U. In terms of percent rather than percentage point changes, between the early 1960s and 2010, CPI-U consumption poverty fell by 28 percent, while adjusted CPI-U-RS consumption poverty fell by 86 percent.

7.C. Poverty Gaps

The results presented thus far are for the ubiquitous, but narrow, head count measures of poverty. In statistical terms, this measure reflects the cumulative distribution function at a single point. To provide broader evidence on changes in deprivation, we also examine the poverty gap, which is often thought to be a better measure of deprivation than head count measures (Dasgupta 1993, Deaton 1997). The total poverty gap for a given poverty measure is the sum of the difference between the poverty threshold and family resources across all families in poverty. In Figure 4 and Online Appendix Table 5 we report the average gap, which is the total gap divided by the total number of people in poverty. These results show that income and consumption poverty gaps followed a similar pattern in the 1960s and 1970s. However, between 1980 and 2010 income and consumption based gaps moved in opposite directions. The gap based on after-tax money income rose by 68 percent between 1980 and 2010. During this same period the consumption based gap fell by 9 percent. Including noncash benefits in an income based measure dampens the rise in the gap somewhat, but the pattern still diverges sharply from that based on consumption during the 1990s and 2000s.

[16] Results using the PCE deflator are similar to those using the CPI-U-RS, although poverty declines slightly more between 1995 and 2005 when thresholds are adjusted using the PCE rather than the CPI-U-RS.

The difference in recent changes in the poverty gap has important implications for interpreting recent changes in poverty. For example, income based gaps suggest that while poverty fell between 1980 and 2010, those who remained in poverty were more likely to be severely deprived. By contrast, the pattern for consumption based gaps suggests that as overall poverty fell during this period the degree to which families were severely deprived also fell.

7.D. Poverty within Demographic Groups

Some of the most striking differences in trends across measures of poverty are evident within family types. We calculate income and consumption poverty rates for five mutually exclusive and exhaustive groups defined by marriage, children, and age: single parent families, married parent families, single individuals without children, married couples without children, and households with a head 65 or older.[17] We report poverty rates for these groups in Table 2 (see Online Appendix Table 6 for standard errors).

As emphasized earlier, income poverty fell more than consumption poverty during the 1960s. The results in Table 2 show that this is true within each family type except single parents, for whom consumption poverty fell more. These measures continued to diverge considerably for single parents after the 1960s as income and consumption poverty did not closely track each other. In the 2000s, the measures moved sharply in opposite directions, as income poverty rose by 2.4 percentage points, but consumption poverty fell by 6.4 percentage points.

For married couples with children—the largest of our family types, accounting for about 40 percent of the entire sample and between 25 and 40 percent of poor individuals in recent years—income poverty fell by more than consumption poverty in the 1960s and 1980s, but the reverse was true for the 1970s. So, the overall change in income and consumption poverty over the past five decades is similar. For single individuals we saw income poverty fell more than consumption poverty in the 1960s and 1970s, but after 1980, income poverty fell 1.3 percentage points while consumption poverty fell 8 percentage points. Married couples without children saw a decline in income poverty of more than 60 percent during the 1960s as compared to a 52 percent decline for consumption poverty. In more recent years, this group has seen little change in their (low) poverty rates measured with either income or consumption.

[17] Those households with a head 65 or older are included in this last category regardless of marriage or the presence of children.

Over the entire five decade period the change in income and consumption was similar for those with a head 65 or older. However, the patterns differed considerably before and after 1980. In the 1960s and 1970s income poverty fell considerably more than consumption poverty, but the reverse was true after 1980. Between 1980 and 2010, consumption poverty for the elderly fell by 15.9 percentage points (83 percent), while income poverty fell by 11 percentage points (70 percent). In separate analyses we examine income and consumption based poverty gaps within family types (Online Appendix Table 7). These results show that for all groups except single individuals, the income and consumption poverty gaps moved sharply in opposite directions.

While the focus of this paper is on changes in poverty over time, related work (Meyer and Sullivan 2012) has shown that who is designated as poor at a point in time differs considerably depending on whether poverty is defined using income or consumption. In particular, the consumption poor look much worse off than the income poor. The consumption poor are less likely to have health insurance or own a home, they have smaller houses that are less likely to have air conditioning and other amenities, they have worse cars, and less education. These results reinforce the discussion in Section 3, and the evidence from Meyer and Sullivan (2003, 2011a), that consumption is a better predictor of well-being than income for families with limited resources.

8. Explanations for Poverty Trends and Differences between Income and Consumption

We now turn to possible explanations for the changes over time and for the differences between changes in income and consumption poverty measures. Hoynes et al. (2006) provides a nice summary of the evidence on explanations for changes in official poverty for the non-elderly. The paper examines the role of four factors: macroeconomic conditions and the employment of women, family structure changes, government tax and transfer programs, and immigration. The authors estimate the effect of macroeconomic variables and the employment of women on poverty using region by year regressions. They then use these coefficient estimates to predict the aggregate poverty rate. They find that macroeconomic conditions and employment are predicted to decrease the official poverty rate (for the nonelderly) by only 1.0 percentage point between

1980 and 2003.[18] Even this small magnitude would be approximately halved if the estimated relationship between macroeconomic changes after 1980 were used for the predictions rather than the much stronger relationship of the 1970s. If the changing employment of women is incorporated, Hoynes et al. predict that poverty will rise slightly over the period, rather than fall. Their results indicate that demographic changes, such as the falling share of married couple families, predict a substantial increase in poverty. Anti-poverty programs and immigration are found to play an unimportant role in changes over time.

While Hoynes et al. focus on explaining changes in official poverty, we examine changes for alternative income measures that allow us to consider the role of taxes and noncash benefits over time (rather than the point in time analysis in Hoynes et al.). We also examine the entire population, rather than the non-elderly. Most importantly, we analyze these issues for consumption as well as income poverty and in the process begin to explain the new set of facts that our results provide.

8.A. Changes in Demographics and Poverty

We analyze the role of demographics including family type, employment, race, region and education, on the changes in income and consumption poverty rates over time. We might expect that the decline in overall employment, the increase in single parent families and single individuals, and the changes in the population by region and race would have led to higher poverty over time. On the other hand, we might expect the increase in education over time, particularly the decline in the share of those without a high school degree, would have led to lower poverty rates. We calculate the predicted changes in poverty over time if poverty rates within demographic groups remained fixed at the level in a base year, but only the shares of family types and other demographics changed. These results are reported in Table 3 using the five mutually exclusive and exhaustive family types discussed in Section 7.D, and using the poverty rates in 1980 as the base year. See Online Appendix Table 8 for results with alternative

[18] There is a large literature examining the relationship between macroeconomic conditions and income poverty. In general, this literature finds that poverty and the macroeconomy are correlated, but that this relationship is quite weak for some periods such as the 1980s. For more recent discussions see Blank (2000) and Gundersen and Ziliak (2004). Meyer and Sullivan (2011b) show that both income and consumption poverty are sensitive to macroeconomic conditions, and the evidence on whether income poverty is more responsive to the business cycle than consumption poverty is mixed.

base years (1972 and 2010). We have divided the full time period into three parts: the early 1960s-1972, 1972-1980 and 1980-2010. We examine the effect of demographics on both consumption poverty (panel A) and income poverty (panel B).[19]

In general, demographic changes other than increased education explain only a small share of changes in poverty since the 1960s. Changes in family type typically predict increasing poverty. Thus, family type changes cannot explain the fall over time in income or consumption poverty. Changes in employment and region are predicted to have small effects on poverty rates in all periods, and changes in race predict increasing poverty. Education is predicted to have a substantial poverty reduction effect for both consumption and income. Between 1980 and 2010, consumption poverty fell 8.5 percentage points, and education changes predict a 2.2 percentage point fall when combined with family type. During this same period, income poverty fell 4.8 percentage points, and education combined with family type predicts a 2.2 percentage point decline.

8.B. Changes in Tax and Transfer Policy and Poverty

We next turn to the impact of tax and transfer policy on poverty by comparing poverty trends for pre- and post-tax measures of poverty as well as those that include and exclude transfers. In interpreting changes in poverty due to tax and transfer programs, one must keep in mind that changes in taxes and transfers may alter pre-tax and transfer incomes. A full analysis of the behavioral effects of these programs is beyond the scope of this paper. However, the effects of the tax changes on poverty, ignoring the behavioral responses, are likely to understate the effects of tax changes (such as the EITC) on employment and earnings given the evidence in the literature (for summaries see Hotz and Scholz 2003, Eissa and Hoynes 2006, Meyer 2010). On the other hand, transfer programs likely reduce pre-transfer earnings, suggesting that any direct poverty reducing effects of these programs would overstate the effects incorporating behavioral responses (Danziger et al. 1981, Moffitt 1992, Krueger and Meyer 2002). Ben-Shalom, Moffitt, and Scholz (2012) conclude that the overall effect of transfer programs on pre-transfer incomes is small relative to their mechanical poverty reduction effects. Thus, they

[19] We also examined the effect of demographics on a measure of income poverty that includes noncash benefits for the years 1980 to 2010. These results are very similar to those reported in Panel B of Table 3.

would argue that the estimates we provide are a good guide to ones accounting for behavioral effects.

Tax policy has had a substantial impact on poverty rates, though the impact is not steady or even in the same direction over time. The effect of income and payroll taxes can be seen by comparing money income to after-tax money income in Figure 1 and columns 2 and 3 of Table 1. Subtracting taxes and adding tax credits to money income substantially accelerates the decline in poverty in the 1960s, but adds to the increase in poverty in the early 1980s. Between 1986 and 1996, accounting for taxes and tax credits adds nearly two percentage points to the decline in poverty.

These changes in poverty can be traced to specific changes in tax provisions. In 1964 and 1965, marginal tax rates for the lowest tax bracket fell, while in 1970 the standard deduction was sharply increased for those with incomes near the poverty line. In the early 1970s, the personal exemption was also increased, though the increases did not quite make up for inflation over this period. Overall, the result is that after-tax income poverty declines more than pre-tax income poverty during the 1960s. While the Economic Recovery Tax Act of 1981 (ERTA) cut rates and indexed tax brackets for the vast majority of people, the standard deduction and personal exemption (that together determine the income level at which low income taxpayers begin paying taxes) were not indexed until after 1984. The high inflation of this period moved an increasing number of low-income families into the range where their income was taxable. Thus, poverty accounting for taxes increased relative to pre-tax money income poverty over this period. After 1986, the situation reversed due to the Tax Reform Act of 1986. There was a large decline in after-tax money income poverty relative to money income poverty between 1986 and 1988, the first period during which the EITC was expanded (and the personal exemption and standard deduction were increased). The effect of the EITC is even more noticeable between 1990 and 1996, when after-tax money income poverty fell by 1.2 percentage points more than the rate for money income poverty. This growing gap coincides with the period of greatest expansion of the EITC under the 1990 and 1993 budget acts.[20] Between 1996, when these expansions were fully phased in, and 2008, there was little change in the difference between

[20] This difference between money income and after-tax income is partly mechanical given the implicit assumption of complete takeup in the imputation of tax credits using TAXSIM. However, the imputation does not overstate EITC dollars received since the imputed amounts fall far short of those actually received (Meyer, Mok and Sullivan 2009).

these two measures of poverty. Between 2008 and 2009, however, pre-tax income poverty rose noticeably more than after-tax income poverty, reflecting provisions in the American Recovery and Reinvestment Act of 2009 that expanded tax credits including the EITC, the child and additional child tax credits, and the Making Work Pay tax credit.

The pattern of changes in poverty by family type reinforces the evidence on the effect of tax credits (results not reported). Single parents are by far the most likely group to receive the EITC, followed by married parents. Bearing this out, the post-1986 difference between pre- and post-tax money income is most pronounced for single parents and to a lesser extent married parents. The changes in the two measures over time are almost the same for single individuals and families headed by someone 65 or older.

We conduct similar analyses to examine the importance of government cash and noncash transfers for changes in income poverty. An important caveat to these analyses is that the role of transfers is likely understated due to the under-reporting of government transfers that we described in Section 5.A. In Figure 5 we report poverty rates for money income poverty and two other income based measures: one based on pre-tax money income excluding social security and disability income (OASDI) and another based on pre-tax money income excluding cash transfers other than OASDI (UI, workers compensation, veterans' payments, SSI, and AFDC/TANF).[21] We only report poverty rates going back to 1967 because government cash transfers cannot be separated from other income in earlier years of the CPS. We examine OASDI separately from other government cash transfers because it accounts for the lion's share of government cash transfers for those in the bottom income quintile (about three-quarters of transfers in 2009). In general, these results show that OASDI has a very noticeable impact on changes in poverty, while the impact of other cash transfers is small. The importance of OASDI relative to other transfer programs is also evident at a point in time as has been emphasized by Ben-Shalom, Moffitt and Scholz (2012).

Between 1967 and 2010, poverty based on money income including OASDI declined by 8.6 percentage points more than the poverty measure that excludes OASDI. The most noticeable difference in the patterns for these two measures was evident for the period from 1967

[21] The CPS reports OASI and SSDI together. Prior to survey year 1988, social security income was reported together with railroad retirement income. For consistency, our measure of OASDI also includes these railroad retirement benefits for all years.

to 1977. During this period average reported OASDI benefits received by those in the bottom income quintile in the CPS grew by 39 percent in real terms.[22] This substantial increase was due to both a rise in initial benefits for new retirees and increased benefits for existing recipients. The increase in the former resulted from the fact that, during this period, initial benefits rose due to both wage growth and cost-of-living adjustments (COLAs). Consequently, the replacement rate for an individual retiring at age 65 with an average earnings history grew from about 30 percent in 1967 to 45 percent in 1977.[23] Replacement rates continued to rise sharply for cohorts reaching normal retirement age in the early 1980s, but the effect of these more generous benefits on poverty was offset by a noticeable decline in DI rolls as a result of eligibility reviews that the SSA was required to conduct in the early 1980s.

Starting in 1979, the Social Security Administration began indexing lifetime earnings by the growth in average earnings in the economy. After this change was phased in, replacement rates fell back towards 40 percent for those retiring at 65. In addition to the growth in initial benefits, OASDI payments grew by 89 percent between 1968 and 1974 (compared to a 42 percent rise in the CPI) as a result of legislated COLAs for existing retirees. Benefits after retirement were indexed to the CPI starting in 1975. The real value of social security benefits continued to rise over the next three decades because the CPI, which is now used to adjust benefits after retirement, overstates inflation, and because a rise in real wages continued to lead to real increases in initial benefits.

Reported government cash transfers other than OASDI have had a much less noticeable impact on poverty patterns—excluding these other cash transfers affects the change in poverty between 1970 and 2010 by less than a percentage point. Although, their impact on changes in poverty over the past four decades is small, related research has shown that these programs do lift a significant number of people out of poverty at a point in time (Hoynes et al. 2006, Ben-Shalom et al. 2012). In addition, these cash transfers appear to smooth income over the business cycle, with the poverty rate for the measure excluding other cash transfers rising more when the economy is contracting, and falling more when the economy is expanding. For example, between 1983 and 1988 and between 1995 and 2000—two periods of economic growth—

[22] This statistic is based on analyses, which are available from the authors, that use the CPS to examine receipt rates and average benefit amounts conditional on receipt for OASDI and other cash transfers for those in the bottom income quintile as well as those between the 5th and 15th percentiles.

poverty based on income excluding these other cash transfers fell by 0.3 percentage points more than the rate based on income including these transfers. As the economy contracted considerably between 2007 and 2010, the poverty rate based on income excluding other cash transfers rose by nearly 1 percentage point more than money income poverty. Much of this difference can be accounted for by rising UI benefits, which expanded considerably during this period as the number of unemployed grew and benefits were extended for the long term unemployed starting in 2008. For those in the bottom 20 percent of the income distribution, the fraction reporting receipt of unemployment benefits increased by 150 percent between 2007 and 2009, and the average amount of benefits received among those receiving benefits almost doubled.

The effects of noncash transfers (food stamps, housing and school lunch subsidies, Medicaid, Medicare, employer health benefits, and the net return on housing equity) on changes in poverty rates over time can be seen by comparing after-tax money income to after-tax money income plus noncash transfers, as reported in Figure 1 and columns 3 and 4 of Table 1. For the full population, the role of noncash transfers is not pronounced, as the two series align closely.[24] Even when we look within demographic groups such as single parents—for whom these transfers account for a larger fraction of reported family income—we find little evidence that noncash transfers affect changes in poverty (see Table 2 and Online Appendix Table 6). Again, we should note two important caveats: the role of these transfers is likely understated due to the rising under-reporting of noncash transfers, and even though reported noncash transfers have little effect on change in poverty, they have been shown to reduce the extent of poverty at a point in time (Hoynes et al. 2006, Ben-Shalom et al. 2012).

8.C. Explaining Consumption Income Differences

The two most plausible explanations for the differences between the changes in income and consumption poverty are measurement error and saving or dissaving. There is considerable evidence that changes in measurement error are important for families with few resources. First, transfer income, which is particularly relevant for these families, is significantly under-reported in surveys and the extent of under-reporting has grown over time. Meyer, Mok and Sullivan

[23] See "Social Security History," http://www.ssa.gov/history/notchfile1.html.

(2009) find that nearly half of food stamp benefits and TANF dollars are not reported in the CPS in recent years. Second, reported expenditures exceed reported income at the bottom (Meyer and Sullivan 2011a). For all families, the 5th percentile of CE expenditures distribution is 44 percent higher than the 5th percentile of the CPS income distribution in recent years. For single mothers, expenditures exceed income by 50 percent when comparing the 5th percentiles of the two distributions and by 25 percent when comparing the 20th percentiles.[25]

This evidence strongly suggests that income under-reporting is especially pronounced at the very bottom and that measurement error is a likely candidate for the large differences in poverty measures that focus on the distribution below the poverty line such as the poverty gap. We showed that income and consumption based measures of the gap diverged sharply after 1985. Between 1985 and 2010 the income poverty gap grew by $32 billion in nominal terms, while the consumption poverty gap fell by $23 billion. During this same period the amount of food stamp dollars that went unreported in the CPS grew by $26 billion (Meyer, Mok, and Sullivan 2009), suggesting that under-reporting of food stamps, alone, can account for nearly half of the rise in the difference between the income and consumption gaps.

A second explanation for differences between income and consumption is that consuming out of past saving or borrowing against future income allows some groups to spend more than their income, and this saving or borrowing has changed over time. To address this possibility, we examine changes over time in various percentiles of the financial asset and non-mortgage, non-vehicle debt distributions in the CE for the entire population as well as for the income poor, the consumption poor, and for different family types. We also examine various percentiles of the one year change in financial assets for these same groups.[26] A summary of these numbers is reported in Table 4 for the income or consumption poor. Additional evidence for these groups and for the full sample is available in Online Appendix Table 9. The 85th percentile of the

[24] There is evidence that some of these programs affect changes in poverty for some periods. For example, between 2000 and 2010, a poverty measure that includes food stamps rose 0.7 percentage points less than a measure that excludes food stamps.

[25] Meyer and Sullivan (2006) find that, after accounting for the under-reporting of Food Stamp and TANF dollars, changes in income and consumption distributions between 1993 and 2000 are similar for single mothers. We consider alternative ways of allocating under-reported dollars, but, without knowing explicitly who is not reporting, the evidence is inconclusive.

[26] There is evidence that assets are under-reported in the CE. For example, a comparison of the distribution of financial assets for the PSID and CE for 1994 and 1999 indicates that the median and 75th percentiles for the distribution in the CE are 30 to 50 percent lower than the respective percentiles in the PSID. However, the fraction of families with positive financial assets is very similar across surveys.

financial asset distribution for the income poor was just over $1,200 in 1972-1973, and it rose slightly over time, which suggests limited opportunities among the income poor to support consumption in excess of income.[27] Looking at the bottom of the distribution of the change in assets for the income poor (to focus on those who may be dissaving), there was some evidence of dissaving for a small fraction of the income poor in the 1960s and 1970s, but the 15th percentile was zero in more recent years, providing little evidence of overall dissaving. If dissaving were to explain why consumption poverty falls more than income poverty in the 2000s, we would expect to see sizeable declines in financial assets for the income poor during this period. We see little evidence to support this explanation. Similarly, the fraction of the income poor with substantial debt is small, and there is little evidence of increased borrowing over time for this group. Even if, due to under-reporting, the true levels and changes in assets were two or three times the reported amounts, the role of dissaving overall would be small.

While dissaving does not seem to be the dominant explanation for differences between income and consumption poverty, for some families, such as those with an elderly head, dissaving is likely to be an important part of the difference between these poverty measures.[28] We report asset and debt information by family type for the income poor (Online Appendix Table 10) and for the income poor by consumption poverty status (Online Appendix Table 11). For income poor families with a head 65 or older, financial assets are substantial at the 85th and 90th percentiles. After 1990, ten percent of the aged income poor had financial assets over $28,000, and five percent had assets over $132,000. For those aged income poor who are not consumption poor (Online Appendix Table 11, panel A), which is most of the aged income poor in recent years, assets were even higher—about $37,000 at the 85th percentile during the 1990s and about $20,000 during the 2000s. Some dissaving is also suggested by the change in asset

[27] To examine assets for the income poor (Table 4 and Online Appendix Tables 9, 10 and 11) we use data from the CE because asset information is not available in the CPS. For these tables we restrict the CE sample to those with complete income information as explained in the Data Appendix. Because the CE did not impute missing values for income prior to 2004, the level of income is lower (and consequently the level of poverty is higher) than that from the CPS, even after restricting the sample to complete income respondents. However, changes in income poverty based on CE data are very similar to changes in income poverty based on CPS data for the years before and after 2004.

[28] Several studies, summarized in Hurd (1990) have found that the elderly as a whole dissaved even back in the 1970s. Venti and Wise (2004) find that it is uncommon for the aged to draw down housing equity to support consumption, although they find that housing equity is consumed in the case of negative shocks, such as nursing home entry or the death of a spouse. However, these papers do not specifically examine the poor or show how the distribution of dissaving rates or amounts for the elderly has changed over time.

distribution, which shows that at least five percent of those aged who were income poor, but not consumption poor, drew down their assets by more than $8,000 in the past year. In contrast, after the 1980s the aged who were both income poor and consumption poor (Online Appendix Table 11, panel B) had assets under $1,100 at the 90th percentile, and the 5th percentile of the change in assets was zero. Married couple families, especially those without children, also had substantial assets if they were income poor, but not consumption poor.

For income poor single parents on the other hand, reliance on savings was rare. The 95th percentile of assets was below $1400 for all time periods and the 5th percentile of the change in assets was essentially zero for the 1990s and 2000s (Online Appendix Table 10). Even for single parent families who were income poor, but not consumption poor, the 90th percentile of the distribution of financial assets was only $1,054 for the 1990s and $620 for the 2000s, and at the 5th percentile of the change in assets distribution, assets fell by only a few hundred dollars after 1990 (Online Appendix Table 11, panel A). Non-mortgage, non-vehicle debt for those who are income, but not consumption poor was under $4,000 at the 90th percentile for single parents. These patterns indicate essentially no consumption out of wealth or borrowing by some groups (single parents) and suggest dissaving for a small share in some other groups (the elderly and married couples without children).

We have also examined several other possible explanations for the differences between consumption and income that we find. We are able to rule out that the use of consumption flows rather than expenditures is a key explanation for differences in trends, though who is poor differs noticeably depending on whether poverty is defined using consumption or expenditures. We also find that educational spending (which is excluded from consumption) does not explain the differences between income and consumption poverty changes for couples with children.

One potential driving force behind the fall in consumption poverty in the past two decades is the sharp rise in housing prices, particularly since the late 1990s. To determine the importance of housing we examine poverty based on non-housing consumption. We do not emphasize this measure for several reasons. First, housing is the largest component of consumption for the poor, so excluding it could give a distorted picture of well-being for those with few resources. Second, non-housing consumption over-weights the components of consumption that are measured poorly and have seen declining reporting in recent years. Our results show that non-housing consumption poverty fell noticeably less than a measure that

includes housing between 1998 and 2006—the period when real housing prices were rising fastest (Online Appendix Table 12). However, the discrepancy between total consumption and non-housing consumption appeared in the late 1980s and grew steadily, implying that differences were not solely due to the sharp rise in housing prices in the early 2000s. Also, both consumption poverty and non-housing consumption poverty rose sharply between 2008 and 2010, suggesting that this change was not driven by changes in declining housing prices in recent years.

9. Other Poverty Measures and Robustness

In this section we examine changes in income and consumption poverty at other points in the distribution by looking at deep poverty (the fraction below 0.5 times the original thresholds) and near poverty (the fraction below 1.5 times the original thresholds). We also present results for relative poverty. Finally, we discuss results for poverty measures that use different equivalence scale adjustments or a different resource sharing unit. Our results for deep poverty and near poverty are reported in Online Appendix Table 13. Deep poverty based on consumption shows a much more favorable trend than one based on income, particularly in recent years. Near poverty shows changes for consumption based measures that are more similar to those that are based on after-tax income plus noncash benefits.[29]

The emphasis of this paper is on absolute poverty measures that rely on an unchanging absolute standard to gauge the change over time in material deprivation. Relative poverty measures provide another way of characterizing the extent of deprivation. The most common type of relative poverty measure, which is essentially an inequality measure, sets the poverty thresholds as a given percentage of median income or consumption. Following the most common international standard, we examine the share of the population living in families with resources below half of the median value (Smeeding 2006).[30] Figure 6 presents relative poverty trends for several income and consumption measures. In general, the level of consumption

[29] Due to the lower dispersion of consumption, the level of consumption poverty is higher than that of income poverty at this higher cutoff even though the original thresholds are very similar.

[30] An important limitation with such a measure is that the standard for overcoming poverty changes, making understanding what it captures much more difficult. This is particularly problematic for evaluating policy.

relative poverty is much lower than that of income relative poverty due to the lower dispersion of consumption. Unlike absolute poverty, which fell noticeably during the 1960s, relative poverty remained flat for both income and consumption based measures. Relative poverty also changed very little in the 1970s. Both income and consumption relative poverty rose in the early 1980s. After-tax income relative poverty trended downward slightly in the 1990s, but rose after 2000. That income relative poverty did not rise more is consistent with work on income inequality which shows that inequality for the bottom half of the distribution has risen much less than that for the top half in recent years (Meyer and Sullivan 2010). Consumption relative poverty has trended downward since the mid-1980s.[31] See Online Appendix Table 14 for relative poverty rates by family type over the past 5 decades.

The results in Online Appendix Table 15 verify that our general findings for changes in poverty are not very sensitive to how we adjust for differences in family size. There is little difference in the change in poverty between official poverty and income poverty calculated using the NAS equivalence scale for the years 1963 through 2010. The resource sharing unit does matter noticeably, as income poverty rates fell 2 percentage points more over the period from 1963 to 2010 when resources are measured at the household level instead of the family level.

10. Conclusions

Citing official poverty statistics many have concluded that the U.S. has made little progress in reducing poverty. Furthermore, trends in official poverty have led some to argue that we have lost the war on poverty—that the panoply of income support programs, from food stamps to unemployment insurance, have been ineffective anti-poverty tools. While the deficiencies in the official poverty measure have been the subject of much previous research, most poverty scholars still rely on the official measure as the definitive measure of trends in poverty and draw important conclusions based upon it. The results in this paper contradict the

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Antipoverty policies that affect incomes around the median as well as at the bottom might very well reduce the extent of deprivation but have no impact on a relative poverty measure.

[31] While the fall in consumption reporting may be less important at the bottom, the poorly reported items are a higher share at the median, which might lead to substantial bias at that point. Thus, core consumption relative poverty may be the most appropriate relative measure and it has fallen since the mid-1980s. The pattern for core consumption relative poverty (not reported) mirrors the patterns for consumption relative poverty reported in Appendix Figure 1.

notions that poverty has shown little improvement over time and that anti-poverty efforts have been ineffective. We show that moving from traditional income-based measures of poverty to a consumption-based measure (which is arguably superior on both theoretical and practical grounds) and, crucially, accounting for bias in the cost of living adjustment leads to the conclusion that the poverty rate declined by more than 25 percentage points between 1960 and 2010, with 8.5 percentage points of that decline occurring since 1980.

There are several explanations for these improvements. Poverty has been sharply reduced through tax rate cuts and tax credits. Increases in social security have played a large role in reducing poverty, but other transfers have played only a small role. Some of the decline can also be accounted for by rising educational attainment. Saving and dissaving by households is not the main reason income and consumption differ near the poverty line. A great deal of evidence suggests that under-reporting of income is a likely source of differences, but this explanation merits further examination to fully determine its importance.

Our results for consumption and improved income based measures of poverty have different policy implications and they sharply alter what needs to be explained by researchers. Who has benefitted from economic growth or redistributive policies and who would benefit from additional targeted policies depends critically on whether one examines consumption or income. Since 1980, our consumption based poverty results suggest much greater improvement than those for income poverty for single parent families and the aged. However, relying on consumption we find little additional improvement in poverty for married parent families, suggesting that additional anti-poverty efforts for these households with children merit further investigation.

Despite repeated claims of a failed war on poverty, our results show that the combination of targeted economic policies and policies that support growth has had a significant impact on poverty. Better standard headcount measures of poverty show a sharp improvement in recent decades. Going beyond traditional headcount poverty measures, deep poverty and poverty gaps show even greater improvement, implying that considerable progress has been made at reducing severe deprivation. There have been noticeable improvements in the last decade, though they are not as big as the improvements in some prior decades, (but comparable or better than the progress in the 1980s). We may not have won the war on poverty, but we are certainly winning.

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Online Data Appendix

This appendix provides supplementary information on the data used in the paper. We first briefly describe the two data sources: the Consumer Expenditure Survey and the Current Population Survey. We then describe how we construct our measures of consumption and income. Next, we provide the details behind how we estimate three specific components of consumption: a service flow for owned vehicles, the imputed rental value of the living unit for those living in government or subsidized housing, and the imputed value of health insurance. Finally, we briefly discuss the issues related to constructing a separate price adjustment for the poor.

A. CE and CPS ASEC/ADF Samples

Income data primarily come from the ASEC/ADF Supplement to the Current Population Survey (CPS), which is the source for official measures of poverty in the U.S. The ASEC is currently administered to the March sample of the CPS as well as a subsample of the respondents in the February and April CPS. Prior to 2003 survey year, the supplement was only included in the March survey. We use data from the 1964-2010 surveys which provide data on income for the previous calendar year. Our samples exclude individuals under the age of 15 who are not related to any other member in the household, because these "secondary individuals" are not included in the official poverty count.

All expenditure and consumption data come from the Interview component of the Consumer Expenditure (CE) Survey. We use data from the 1960-1961 and 1972-1973 surveys and all quarterly waves from the first quarter of 1980 through the third quarter of 1981 and from 1984 through 2010 (some of the fourth quarter of 2010 data comes from surveys conducted in the first quarter of 2011). The 1960-1961 surveys provide data on annual expenditures collected in a single interview, while the 1972-1973 surveys provide data on annualized expenditures collected from quarterly interviews. Since 1980, quarterly data are available that include expenditures for the 3 months prior to the interview month. To obtain annual measures we multiply these quarterly measures by four. We do not use the data from the fourth quarter of 1981 through the fourth quarter of 1983 because the surveys for these quarters only include respondents from urban areas.[32] We report a single poverty rate for the 1960-1961 period because the data are only

[32] By excluding observations from the fourth quarter of 1981, and the first quarter of 1982 if the reference period falls in 1981, our poverty statistics for 1981 will be biased due to seasonal spending patterns. To determine the extent of this bias, we calculate an alternative poverty rate for 1981 that uses the urban families from the fourth quarter of 1981. This sample while non-representative captures the bulk of the population since in the first three quarters of 1981 about 88 percent of the sample was designated as "urban". We calculate this alternative poverty rate as the weighted average of the poverty rates of the fully representative sample from the first three quarters of 1981 and the non-representative sample from the fourth quarter. The poverty rate for the non-representative sample is scaled up by the ratio of overall poverty to urban poverty in the first three quarters of 1981, and the weight for the non-representative sample is scaled up by the ratio of the sum of the weights for the full sample to the sum for the urban sample in the first three quarters of 1981. Note that this approach assumes that the poverty rate of urban families relative to rural families does not change between the first three quarters and the final quarter of 1981. Using this approach, the poverty rate for 1981 is 12.90 percent, which is 0.09 percentage points below the rate calculated by simply excluding observations from the fourth quarter of 1981, suggesting a small downward bias in

representative of the full population when the samples from these two years are combined. CE data include 13,728 observations from 1960-1961, 19,975 from 1972-1973, and 709,074 from 1980-2010. For this latter period we drop 116 observations due to missing member file information, 218 observations due to missing information on the rental equivalent value of owned homes, and 1,607 observations due to missing information on public or private health insurance enrollment, yielding a final sample of 707,133 for the years from 1980-2010. For analyses using income from the CE (Table 5 and Appendix Tables 7, and 8) we restrict the sample to those designated as complete income respondents, and exclude families whose head or spouse responds "don't know" to questions on wage and salary income or refuses to respond to these questions. This yields a sample of 13,728 observations from 1960-1961, 18,903 from 1972-1973, and 557,046 from 1980-2010.

B. Measures of Consumption from the CE

Expenditures: This summary measure includes all expenditures reported in the CE Interview Survey except miscellaneous expenditures and cash contributions because some of these expenditures are not collected in all interviews. Since 1980 a subset of miscellaneous expenditures has been collected only in the fifth interview, and cash contributions are only collected in the fifth interview for surveys conducted from the first quarter of 1980 through the first quarter of 2001.

Consumption: Consumption includes all spending in our measure of total expenditures less spending on out of pocket health care expenses, education, and payments to retirement accounts, pension plans, and social security. In addition, housing and vehicle expenditures are converted to service flows. For homeowners we subtract spending on mortgage interest, property taxes, maintenance, repairs, insurance, and other expenses, and add the reported rental equivalent of the home. For years when the rental equivalent is not reported, (1960-1961 and 1980-1981 surveys), we impute a rental equivalent using the reported market value of the home. One approach would be to impute a rental equivalent using home values for all years. This approach has the advantage of using a comparable method over time (Cutler and Katz 1991). Because we are particularly interested in the period since 1984 when a rental equivalent is always available and we expect that these reported values will be better than our imputations, we only impute for the two missing surveys rather than all years. For those in public or subsidized housing, we impute a rental value using the procedure outlined in part E of this appendix. For vehicle owners we subtract spending on recent purchases of new and used vehicles as well vehicle finance charges. We then added the service flow value of all vehicles owned by the family, as described in part D of this appendix.

Non-housing consumption: To calculate non-housing consumption we subtract from total consumption spending on rent for renters, the rental equivalent of the home for homeowners, and the imputed rent for those in public or subsidized housing.

Comparability over Time:

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the poverty rate we report for 1981. Based on this result, we suspect that the bias in other poverty measures for this year is small.

We make two minor adjustments to the measure of total expenditures provided in the CE to maintain a comparable definition of expenditures across our sample period. First, we add in insurance payments and retirement contributions for the 1960-1961 and 1972-1973 surveys because these categories were not treated as expenditures in these years. This adjustment does not affect consumption measures because these categories are excluded from consumption. Second, the wording for the question regarding spending on food at home in surveys conducted between 1982 and 1987 differed from other years. Several studies have noted that this wording change resulted in a decrease in reported spending on food at home (Battistin 2003; Browning et al. 2003). To correct for the effect of this change in the questionnaire, for the years 1984-1987 we multiply spending on food at home by an adjustment factor which is equal to the ratio of average spending on food at home from 1988 through 1990 to average spending on food at home from 1984 through 1987. These adjustment factors, which we estimate separately for different family types, range from 1.12 to 1.30. Starting with the second quarter of 2007, the question on food away from home changed from a query about usual monthly spending to usual weekly spending. This change resulted in a noticeable increase in reported food away spending. We estimate the effect of the question change by regressing food away spending on a new question indicator, controlling for interview month and reference month (respondents report spending for the previous three months) for survey years 2005 through 2007. Based on these estimates we adjust spending on food away down by 55 percent for the most recent years. Food away averaged about 3 percent of total consumption for those near the poverty line for these years.

Additional adjustments are necessary to maintain a consistent definition of consumption across our sample period. Because a rental equivalent is not reported in the 1960-1961 and 1980-1981 surveys, we impute a rental equivalent for these years. Using data from the 1984 survey, we regress log reported rental equivalent on the log market value of the home, log total non-housing expenditures, family size, and the sex and marital status of the family head. Estimates from these regressions are used to impute a value of the rental equivalent for respondents in the 1980-1981 surveys. A similar approach is used to impute a rental equivalent value for the 1960-1961 surveys using data from the 1972-1973 surveys. In addition, the reported rental equivalent is top coded, and the threshold value of this top code changes over time. In each year, we top code the reported rental equivalent at the real value of the most restrictive of these top code thresholds ($1000 per month in 1988). Also, we do not observe whether a consumer unit resides in public or subsidized housing prior to 1982, so a rental equivalent value for those in such housing is not included in consumption prior to 1982. Estimates of the rental equivalent for those in public or subsidized housing in the mid 1980s are small relative to total consumption, suggesting that this exclusion is not likely to significantly bias our estimates for changes in poverty. Finally, the availability of information on vehicles also changes during our sample period. See Section D below for more details.

Consumption Under-reporting: Past research (Gieseman 1987, Slesnick 1992, Garner et al. 2006, Attanasio et al. 2006) has emphasized a discrepancy between CE aggregates and Personal Consumption Expenditure (PCE) data from the National Income and Product Accounts (NIPA). Some of this research has sharply overstated the discrepancy by comparing noncomparable categories of CE and NIPA consumption and ignoring definitional differences. For example, many published comparisons are based on the integrated data that combine CE Diary and CE Interview data rather than the CE Interview data used exclusively here. For some important

categories, the CE Diary Survey appears to have greater downward bias. Between 1998 and 2003, average spending on food at home in the CE Interview Survey exceeded the average from the CE Diary Survey by more than 20 percent (BLS 2005).[33]

Second, unlike comparisons of income components to administrative aggregates, there are important conceptual incompatibilities between expenditure data from the CE and PCE aggregates. PCE coverage is wider, including purchases by nonprofits, purchases by those abroad, on military bases and in institutions, free financial services, and employer-paid insurance—all categories not included in CE expenditures. In recent years, medical care is over 20 percent of the PCE, but much of this is not the out of pocket spending captured by the CE. The Bureau of Economic Analysis reported that in 1992 more than half of the difference between PCE and CE consumer spending was due to coverage and definitional differences (summarized in GAO 1996). Third, the PCE numbers are the product of a great deal of estimation and imputation that is subject to error.[34]

Reporting ownership of houses and vehicles is very different from reporting the small, discretionary purchases that seem to be badly reported in the CE. Estimates of homeownership rates in the CE match up very closely with those from the CPS (see Online Appendix Table 1). For automobiles, we have compared reported cars and truck ownership to administrative data on motor vehicle registrations. Ratios of cars and trucks in the CE to those in the administrative records are about 90 percent despite the fact that vehicle registrations include commercially owned cars that are not captured in the survey data. These ratios have not fallen noticeably over time. We have also examined the validity of estimates of the value of the flow from these durables conditional on ownership. We know from past work that respondents seem to report house values fairly accurately in household surveys (Kiel and Zabel 1999; Bucks and Pence 2006). We have compared the reported rental equivalent of homes to the reported house values. The rental equivalent and home value are highly correlated, at around 0.6 in a typical year. The ratio of the rental equivalent to home value has been fairly stable, though it declined appreciably in the mid 2000s, as one might expect during a period of rising home prices. We have also verified that the purchase price of vehicles in the CE is reported fairly well. We find a high correlation between the reported purchase prices of cars and blue book prices (see the Data Appendix, Section D.3). Furthermore, Garner et al. (2006) note that there has not been deterioration in the reporting of new car purchases. Thus, these flows seem less likely to be

[33] There is some disagreement over why food at home spending from recall surveys exceeds that from diary surveys. Recall data on food at home may be over-reported if respondents include in this category non-food items purchased at a grocery store (Battistin 2003). However, evidence from Dubreuil et al. (2011) suggests that food at home from recall surveys is reported more accurately. This evidence is based on two versions of the Canadian Survey of Household Spending in 2009 that were conducted in parallel—one was a 12-month recall interview survey, while the other was a two-week diary. The interview spending on average exceeds the diary spending for comparable categories by 9 percent for frequent expenses and by 14 percent for less frequent expenses. The authors suggest that one possible explanation for the difference is that insufficient motivation may lead diary respondents to omit many items to reduce the burden of the process.

[34] The PCE estimates come from business records reported on the economic censuses and other Census Bureau Surveys. These business surveys are subject to a number of sources of error and are adjusted using input-output tables to add imports and subtract sales that do not go to domestic households. These totals are then balanced to control totals for incomes earned, retail sales, and other benchmark data. One indicator of the potential error in the PCE is the revisions that are made from time to time (Slesnick 1992).

under-reported or exhibit increased under-reporting over time than other spending components in the CE.

C. Measures of Income in the CPS ASEC/ADF

ASEC/ADF respondents report annual measures of money income for the previous calendar year. Respondents also report the dollar value of food stamps received by the household, as well as whether household members received other noncash benefits including housing subsidies and subsidies for reduced or free school lunch. Starting with the 1980 survey, the Census also provides imputed values for these and other noncash benefits. For more details see U.S. Census (various years-a,b), Appendices B and C.

Money Income: The Census definition of money income that is used to measure poverty. As reported in the ASEC codebook, this measure includes: earnings; net income from self employment; Social Security, pension, and retirement income; public transfer income including Supplemental Security Income, welfare payments, veterans' payment or unemployment and workmen's compensation; interest and investment income; rental income; and alimony or child support, regular contributions from persons outside the household, and other periodic income.

After-Tax Money Income: adds to money income the value of tax credits such as the EITC, and subtracts state and federal income taxes and payroll taxes. Federal income tax liabilities and credits and FICA taxes are calculated for all years using TAXSIM (Feenberg and Coutts 1993). State taxes and credits are also calculated using TAXSIM for the years 1977-2005. Prior to 1977 we calculate state taxes using IncTaxCalc (Bakija, 2008). We confirm that in 1977 net state tax liabilities generated using IncTaxCalc match very closely those generated using TAXSIM.

After-tax Money Income Plus Noncash Benefits: this adds to After-Tax Money Income the cash value of food stamps, and imputed values for housing subsidies, school lunch programs, Medicaid and Medicare, employer health benefits, and the net return on housing equity.

Face Value of Food Stamps: The value of food stamps for each family is determined by the Census using reported information on the number of persons receiving food stamps in the household and the reported total value of food stamps received.

Income Value of School Lunch Program: The Census imputes a value for lunch subsidies for families that report having children who receive free or reduced price school lunch. The value is determined using information on the dollar amount of subsidy per meal as reported by the USDA. If a child participates in school lunch, it is assumed that the child receives that subsidy type (reduced price or free) for the entire year.

Fungible Values of Medicaid and Medicare: The Census imputes a "fungible" value of Medicaid or Medicare for families that include an individual who is reported to be covered by Medicaid or Medicare. Fungible means that "Medicare and Medicaid benefits are counted as income to the extent that they free up resources that could have been spent on medical care" (U.S. Census various years-b). Thus, these programs have no income value if the family does

not have resources (the sum of money income, food stamps, and housing subsidies) that exceed basic needs, which surely understates the value of public health insurance for this group.[35] If these resources do exceed basic needs, then the fungible value of medical benefits is equal to the smaller of: a) the market value of these benefits and b) the value of resources less basic needs. The market value of Medicaid is equal to mean government outlays for families in a given state and risk class. The four risk classes are: 65 and over, blind and disabled, 21-64 nondisabled, and less than 21 nondisabled. The market value of Medicare is equal to mean government outlays for families in a given state and risk class. The two risk classes are: 65 and over and blind and disabled.

Housing Subsidies: The Census imputes a value of housing subsidies for households that report living in public housing or receiving a public rent subsidy. The value of the subsidy is calculated as follows. Using data from the 1985 American Housing Survey (AHS), reported rent for unsubsidized two-bedroom housing units is regressed on housing characteristics. Separate regressions are estimated for each of four regions, and the coefficients from these models are used to predict rent for those living in subsidized units in the AHS. The subsidy for those in subsidized housing in the AHS sample is then calculated as the difference between out of pocket rent and imputed total rent. Region-specific adjustment factors for smaller and larger units are estimated using data on rent for units with different numbers of bedrooms in the 1985 AHS. Thirty-six different subsidy values are calculated which vary by four regions, three income brackets, and three different unit sizes. Because unit size is not observed in the ASEC/ADF, this is imputed from family composition. Subsidy values for each year are based on estimates using the 1985 data, but are updated to reflect changes in shelter costs using the CPI residential rent index. Before 1985 housing subsidies in the ASEC/ADF were imputed using the 1979 or 1981 Annual Housing Survey.

Employer Contributions to Health Insurance: The Census imputes a value of health insurance for persons who were covered by an employer health insurance plan. Using data from the 1977 National Medical Care Expenditures Survey, the value of the employer contribution was imputed as a function of observable characteristics including earnings, full-time/part-time, industry, occupation, sector, public/private, residence, and personal characteristics of the worker such as age, race, marital status, and education, and information on whether the employer paid all, part, or none of the cost of health insurance as reported in the supplement.

Net Return on Home Equity (annuitized value): Using data from the 1985 or 1989 AHS, a value of home equity is imputed for each ASEC/ADF household by statistically matching the two surveys on observable characteristics including geographic location, income, household size, number of living quarters, and the age, race, sex, and education of the household head. The equity value of the home and property taxes for homeowners in the ASEC/ADF are determined by using these values from a household with similar characteristics in the AHS. This equity is converted to an annuity using a rate of return based on high grade municipal bonds from the Standard & Poor's series. The value of home equity is net of imputed property taxes. Poverty rates based on an income measure that includes this net return on home equity are highly

[35] See Citro and Michael (1995), p. 223-237 for a discussion of the inclusion of health insurance and health expenditures in a measure of poverty.

sensitive to changes in the municipal bond rate. When the bond rate rises, poverty will fall even if disposable income or consumption does not change.

D. Estimating Vehicle Service Flows

Our measure of consumption replaces the purchase price of vehicles and vehicle maintenance costs with the service flow value from owned vehicles. We improve upon previous studies in how we calculate a flow that reflects the value that a consumer receives from owning a car during the period. Previous studies have imputed flows based only on recent spending on vehicles and descriptive characteristics of the family (Cutler and Katz 1991), recent spending on vehicles, vehicle age, and descriptive characteristics of the family (Meyer and Sullivan 2003, 2004), or reported purchase prices and vehicle age (Slesnick 1993). Our approach provides two important improvements upon previous work. First, in addition to vehicle age, our approach uses detailed information for each vehicle (such as make, model, year, automatic transmission, and other characteristics) to determine the market price. Second, we estimate depreciation rates by comparing the reported purchase prices for similar vehicles of different ages. We use the detailed expenditure data for owned vehicles from the 1980-2010 CE. A detailed explanation of the procedure used to estimate these service flows along with the data are available at www.nd.edu/~jsulliv4/data.html.

D.1 Calculating the Market Price of a Vehicle

We determine a current market price for each of the 1.4 million vehicles in the data from 1980-2010 in one of three ways. First, for vehicles that were purchased within twelve months of the interview and that have a reported purchase price (the estimation sample), we take the current market price to be the reported purchase price. This estimation sample accounts for about 14 percent of all vehicles in the 1980-2010 surveys. Second, for vehicles that were purchased more than twelve months prior to the interview and that have a reported purchase price (about 15 percent of all vehicles), we specify the current market price as a function of the reported purchase price and an estimated depreciation rate as explained below.

Finally, for the remaining 71 percent of vehicles, we impute a current market price because the purchase price is not reported. Using the estimation sample, we regress the log real purchase price on a cubic in vehicle age, vehicle characteristics, family characteristics, and make-model-year fixed effects.[36] The vehicle characteristics include indicators for whether the vehicle has automatic transmission, power brakes, power steering, air conditioning, a diesel engine, a sunroof, four-wheel drive, or is turbo charged. Family characteristics include log real expenditures (excluding vehicles and health), family size, region, and the age and education of

[36] 75 percent of the vehicles without a reported purchase price can be matched to at least one vehicle in the estimation sample with the same make, model, and year. About three-fourths of the remaining 25 percent do not have a match because they are not a car, truck, or van so make and model are not observed. Starting in 2006, vehicles can be matched on make, but not model, because the CE stopped providing information on vehicle model after 2005. For those vehicles without a reported purchase price that do not have the same make, model, and year as at least one vehicle in the estimation sample, but do have the same make and year as a vehicle in the estimation sample, a separate regression is estimated that includes make-year fixed effects instead of make-model-year fixed effects.

the family head. Coefficient estimates from this regression are then used to calculate a predicted log real purchase price for the i[th] vehicle ($x_i\hat{\beta}$). The predicted current market value for each vehicle without a reported purchase price is then equal to $\hat{\alpha} * \exp(x_i\hat{\beta})$, where $\hat{\alpha}$ is the coefficient on $\exp(x_i\hat{\beta})$ in a regression of y_i on $\exp(x_i\hat{\beta})$ without a constant term.[37]

D.2 Estimating a Depreciation Rate and Service Flows

To estimate a depreciation rate for vehicles, we compare prices across vehicles of different age, but with the same make, model, and year. In particular, from the estimation sample we construct a subsample of vehicles that are in a make-model-year cell with at least two vehicles that are not the same age. Using this sample, we regress the log real purchase price of the vehicle on vehicle age and make-model-year fixed effects.[38] From the coefficient on vehicle age (β), we calculate the depreciation rate (δ): $\delta = 1 - EXP(\beta)$. The service flow is then the product of this depreciation rate and the current market price. If the vehicle has a reported purchase price but was not purchased within 12 months of the interview we calculate the service flow as: (real reported purchase price)*$\delta(1-\delta)^t$, where t is the number of years since the car was purchased.

Although the 1972-1973 CE data files include an inventory of vehicles owned, we do not use these data to calculate service flows from vehicles for several reasons. First, we do not observe the year the car was manufactured, only whether it was manufactured before or after 1967. Second, we do not observe the model for vehicles manufactured during or before 1967, and for those manufactured after 1967 we only observe a broadly defined model group: subcompact domestic, compact domestic, etc. Thus, rather than using the vehicle inventory data, we impute service flows for owned automobiles using data on reported spending on new and used automobile purchases during the survey year and the reported number of automobiles owned during the year. Specifically, for a sample with positive spending on automobiles, we regress annual spending for new and used automobiles on a quadratic in total (non-automobile) spending and observable characteristics of the family including family income, family size, and the age, sex, and education of the family head. Parameter estimates from these regressions are used to predict spending on new and used car purchases for all families that own automobiles. We calculate the service flow from automobiles as the product of predicted automobile spending, the number of owned automobiles and a depreciation rate. This approach will understate total automobile flows for some families because the number of automobiles is topcoded at 2. This approach will overstate vehicle flows for families that dispose of an automobile during the survey year if this automobile is included in the total count of automobiles owned. This approach will also overstate vehicle flows for families that have owned their vehicles for an extended time, because we are predicting the value based on recent automobile purchases. Note that unlike our approach for 1980-2010, we calculate service flows only for automobiles, not for

[37] This adjustment is made because $\exp(x_i\hat{\beta})$ will tend to underestimate y_i.

[38] The distribution of service flows does not differ noticeably when alternative specifications for depreciation are estimated. For example, specifications that allow the depreciation rate to vary by age of the vehicle (by including a cubic in vehicle age in the regression) yield similar results.

other vehicles such as trucks, motorcycles, campers, etc., because we do not have reliable information on the total number of each of these types of vehicles owned.

D.3 Validation

We validate our procedure for predicting the current market value of vehicles for those observations where we do not have a purchase price by comparing the predicted values to published values in National Automobile Dealers Association (NADA) guides. For a given year of the CE we take a random sample of 100 vehicles for which a purchase price was not observed. We then find the average retail price of the vehicle reported in the NADA Official Used Car Guide, using observable vehicle characteristics including make, model, year, number of cylinders, and number of doors. In cases where a unique match is not found in the NADA guide (for example, there might be multiple sub-models listed in the NADA guide), we use the midpoint of the range of prices for the vehicles that match the description of the vehicle from the CE. For the sample of vehicles randomly drawn from the 2000 CE, the correlation between our imputed price and the 2000 NADA price was 0.88. Similarly, for a sample of 100 cars with a reported purchase price, the correlation between the reported price and the NADA price was 0.91.

E. Estimating a Rental Equivalent for Families Living in Government or Subsidized Housing

We impute a rental equivalent for families in the CE living in government or subsidized housing using reported information on their living unit including the number of rooms, bedrooms and bathrooms, and the presence of appliances such as a microwave, disposal, refrigerator, washer, and dryer. Specifically, for renters who are not in public or subsidized housing we estimate quantile regressions for log rent using the CE housing characteristics mentioned above as well as a number of geographic identifiers including state, region, urbanicity, and SMSA status, as well as interactions of a nonlinear time trend with appliances (to account for changes over time in their price and quality). We then use the estimated coefficients to predict the 40th percentile of rent for the sample of families that do not report full rent because they reside in public or subsidized housing. We use the 40th percentile because public housing tends to be of lower quality than private housing in dimensions we do not directly observe. Evidence from the PSID indicates that the average reported rental equivalent of public or subsidized housing is just under the predicted 40th percentile for these units using parameters estimated from those outside public or subsidized housing.

F. Estimating the Value of Health Insurance

We impute a measure of the value of public and private health insurance using the coverage information in the CE and data on insurance costs. The worker and firm cost of employer provided insurance is obtained from a combination of sources including the National Medical Care Expenditure Survey and the Mercer/Foster Higgins National Survey of Employer Sponsored Health Plans. From these surveys we calculate a cost of employer provided health insurance that varies by year and nine geographic regions. The cost of Medicaid and Medicare is

taken from expenditures per person in a given state and year. For Medicaid we calculate these expenditures separately for children, adults under 65, and adults 65 and over. A detailed explanation of the procedure used to estimate the value of health insurance along with the data are available at www.nd.edu/~jsulliv4/data.html.

The value a family places on health coverage may exceed its cost because of its insurance value. On the other hand, this in-kind transfer may be valued at much less than cost given the one size fits all nature of insurance and the lower value of purchases of most goods by the poor. The compromise that we consider here is to count desired health expenditures. Assuming that desired health expenditures by those with few resources can be characterized by Cobb-Douglas preferences with a coefficient of 0.33 on health and 0.67 on other goods, only health expenditures up to one-third of total expenditures are included. This compromise values health coverage at cost for those with substantial resources as they likely spend less than one-third of consumption on health, but at much less than cost for those with few other resources. Because information on health insurance coverage is not available in 1960-1961, 1972-1973 and from 1984 to 1987, we do not report consumption measures that include health insurance for these years.

G. Inflation Differences by Income

Here we summarize the evidence on whether the price adjustment for the poor should use the same market basket as overall official price indices. McGranahan and Paulson (2005) have compared a CPI-U based index using a market basket of the poor to the official index and found little difference. However, one could go one step further and ask if the bias calculations in the literature should be directly applied to the poor given that the market basket for the poor is different from that of the overall population—food at home, rent, and utilities have particularly large shares for the poor. The research on CPI bias for specific commodities provides mixed evidence on how the CPI bias for the poor might compare to the overall bias. Food at home is the main source of outlet bias that is estimated to be quite substantial in Hausman and Leibtag (2005). On the other hand, the largest single component of expenditures by the poor, rent, has been found to have bias in the opposite direction—true prices have gone up faster than suggested by the CPI through the mid-1980s (Gordon and vanGoethem 2005). However, because of BLS changes in the mid-1980s, there is negligible bias in the shelter CPI for the second half of our period. Furthermore, given that the rental weight in the CPI is only slightly lower than its share in the consumption of the poor (because the cost of homeownership is calculated using a rental equivalent), but the food at home weight is much lower, the bias in an index reweighted for the poor is unlikely to be appreciably smaller than that in the CPI-U.

Broda and Romalis (2008) find that inflation for the lowest ten percent of households was 6 percentage points lower than inflation for the highest ten percent. Applied to poverty measures, this would lead to a greater decline in poverty over time. However, what is relevant for poverty measures is the difference between the poor and the average household rather than the difference between the bottom and top deciles reported by Broda and Romalis. The former differences appear to be much smaller. We have chosen not to adjust for their findings because the results only apply to a small part of our time period, are for a small fraction of consumption, and they depend on how price changes are measured.

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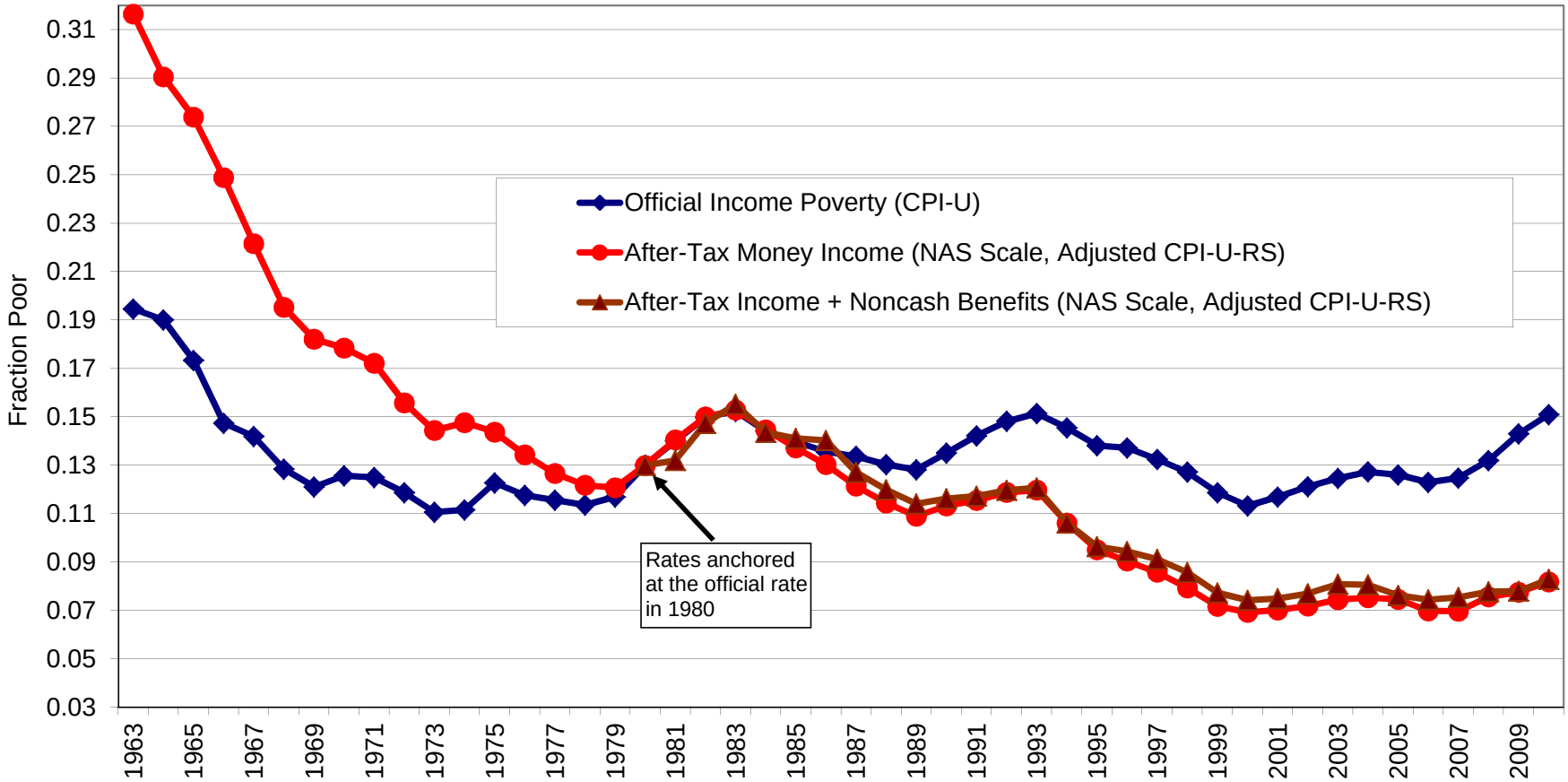
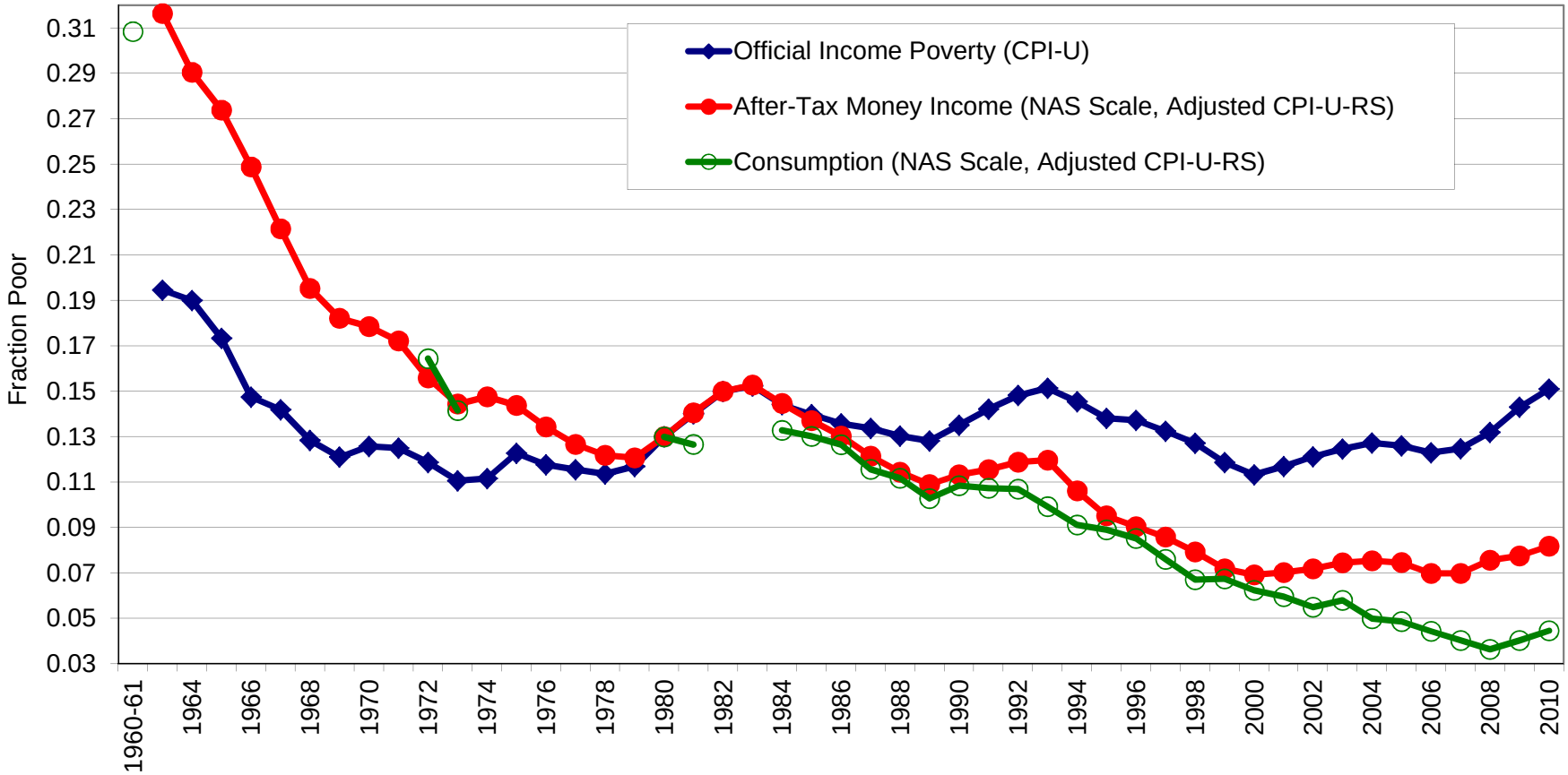
Figure 1: Official and Alternative Income Poverty Rates, 1963-2010



Notes: Data are from the CPS-ASEC/ADF. Official Income Poverty follows the U.S. Census definition of income poverty using official thresholds. For measures other than the official one, the threshold in 1980 is equal to the value that yields a poverty rate equal to the official poverty rate in 1980 (13.0 percent). The thresholds in 1980 are then adjusted over time using the adjusted CPI-U-RS, which subtracts 1.1 percentage points from the CPI-U-RS each year from 1960-1977 and 0.8 percentage points from the CPI-U-RS each year from 1978-2010. Poverty status is determined at the family level and then person weighted. After-Tax Money Income includes taxes and credits (calculated using TAXSIM). After-Tax Money Income + Noncash Benefits also includes food stamps and CPS-imputed measures of housing and school lunch subsidies, the fungible value of Medicaid and Medicare, employer health benefits, and the net return on housing equity. This last series is only available starting with the 1980 CPS-ASEC/ADF. See Data Appendix for more details.

Figure 2: Consumption and Income Poverty Rates, 1960-2010



Notes: The rates are anchored at the official rate in 1980. Poverty status is determined at the family level and then person weighted. Consumption data are from the CE and income data are from the CPS-ASEC/ADF. Official Income Poverty and After-Tax Money Income Poverty are as in Figure 1. CE data are not available for the years 1962-1971, 1974-1979 and 1982-1983.

Figure 3a: Income Poverty Rates with Alternative Price Adjustments, 1963-2010

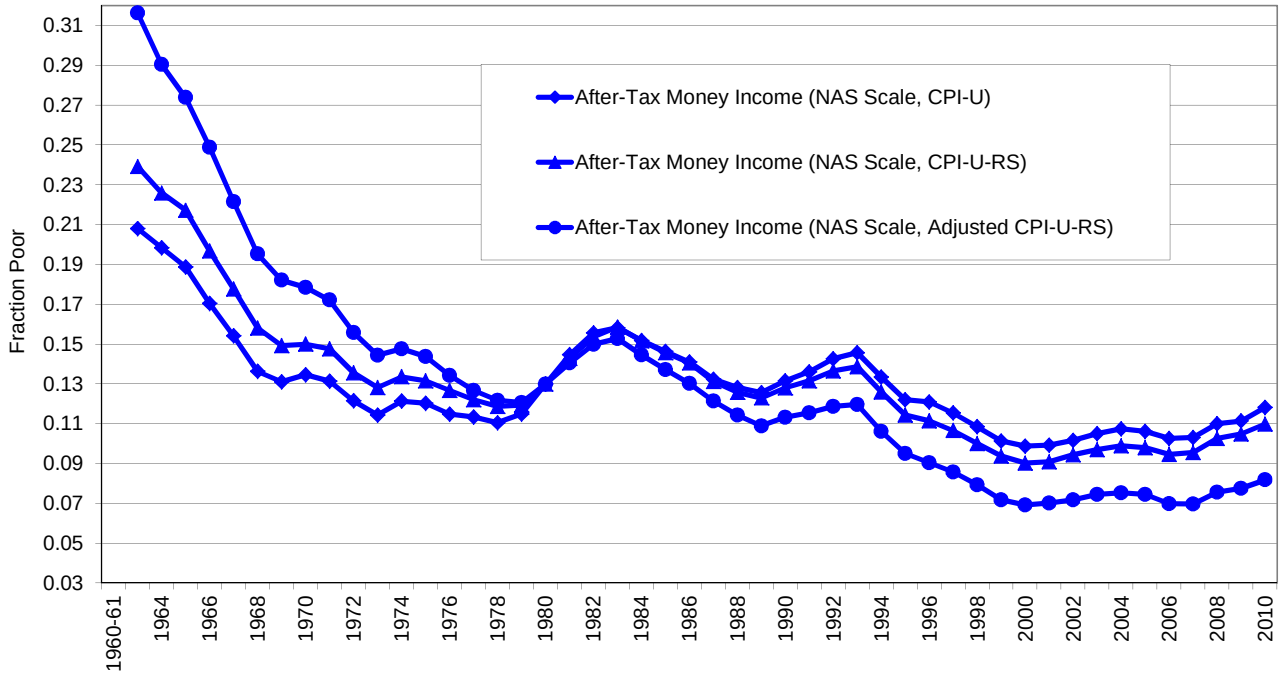
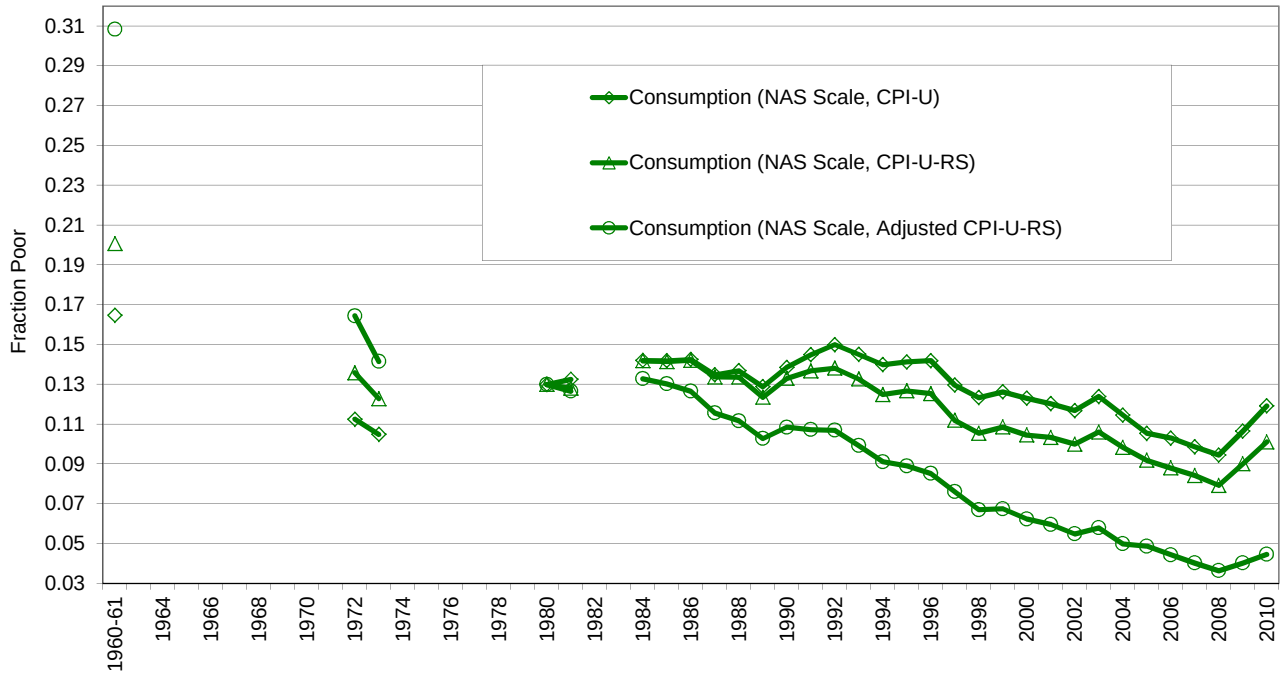
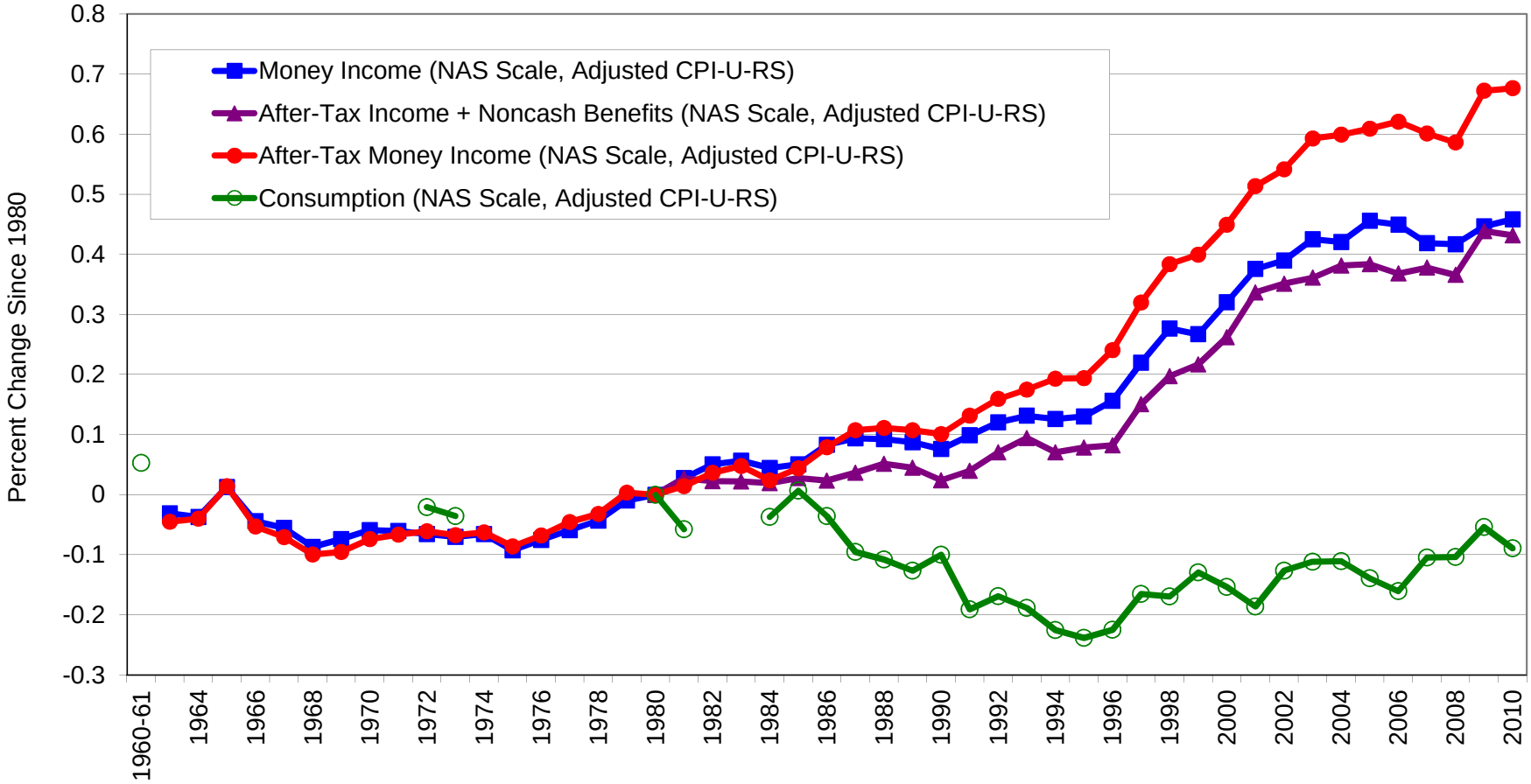


Figure 3b: Consumption Poverty Rates with Alternative Price Adjustments, 1960-2010



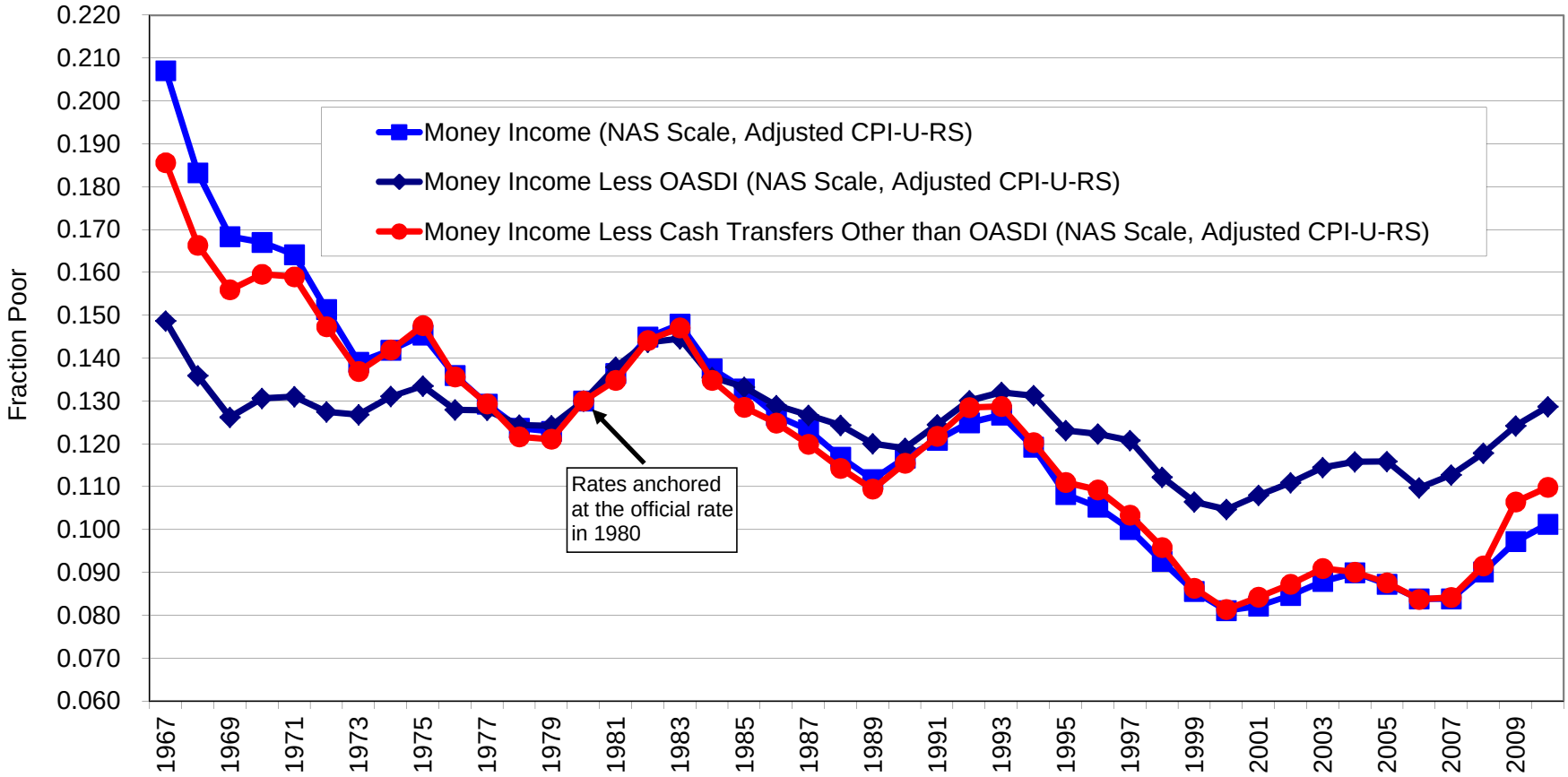
Notes: The rates are anchored at the official rate in 1980. Consumption data are from the CE and income data are from the CPS-ASEC/ADF. Poverty status is determined at the family level and then person weighted. Adjusted CPI-U-RS subtracts 1.1 percentage points from the CPI-U-RS each year from 1960-1977 and 0.8 percentage points from the CPI-U-RS each year from 1978-2010. See text for more details.

Figure 4: Percent Change in Average Poverty Gap Since 1980, Selected Income and Consumption Measures, Poor Families, 1960-2010



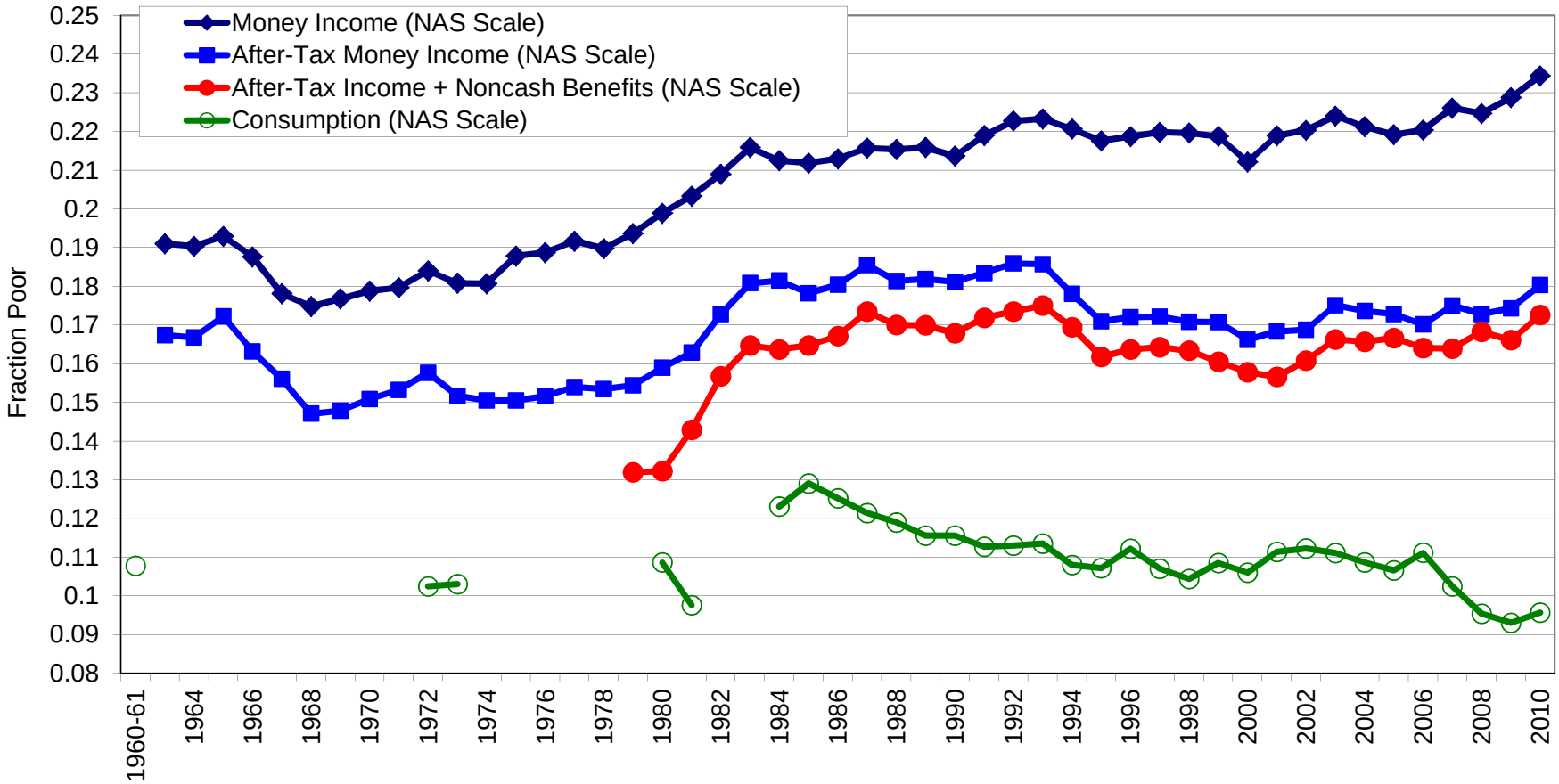
Notes: The average gap (reported in Appendix Table 6) is calculated as the sum of the gap for each family in poverty divided by the total number of poor individuals. The gaps are calculated using the same thresholds as in Figures 1-3. Consumption data are from the CE and income data are from the CPS-ASEC/ADF.

Figure 5: Income Poverty Rates with and without Cash Transfers, 1967-2010



Notes: Poverty status is determined at the family level and then person weighted. Data are from the CPS-ASEC/ADF. Social Security (OASDI) includes OASI, SSDI and railroad retirement. The other cash transfers include UI, workers' compensation, veterans' payments, SSI, and AFDC/TANF. Social security income cannot be identified separately from other income in the CPS prior to 1967. SSI payments are first available in the CPS in survey year 1976.

Figure 6: Consumption and Income Relative Poverty Rates (Fraction below 50% of Median), 1960-2010



Notes: Poverty status is determined at the family level and then person weighted. An individual is designated as poor if the measure of resouces falls below 50 percent of the median of the individual weighted, scale-adjusted distribution for the respective resource measure. Consumption data are from the CE and income data are from the CPS-ASEC/ADF.

Table 1: Consumption and Income Poverty Rates, 1960-2010

	Income Measures of Poverty				Consumption Measures of Poverty		
	Official Income Poverty	Money Income	After-Tax Money Income	After-Tax Income + Noncash Benefits	Consumption	Consumption Including Health Insurance	Core Consumption
Scale	Official	NAS	NAS	NAS	NAS	NAS	NAS
Year	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1960-61/1963	0.195	0.292	0.316		0.308		
1972	0.119	0.151	0.156		0.164		0.220
1973	0.111	0.139	0.144		0.141		0.191
1980	0.130	0.130	0.130	0.130	0.130	0.130	0.130
1981	0.140	0.136	0.141	0.132	0.127	0.128	0.125
1982	0.150	0.145	0.150	0.147			
1983	0.152	0.148	0.153	0.155			
1984	0.144	0.138	0.145	0.144	0.133		0.137
1985	0.140	0.133	0.137	0.141	0.130		0.131
1986	0.136	0.127	0.130	0.140	0.127		0.131
1987	0.134	0.123	0.121	0.127	0.116		0.122
1988	0.130	0.117	0.114	0.120	0.112	0.113	0.121
1989	0.128	0.112	0.109	0.114	0.103	0.099	0.105
1990	0.135	0.117	0.113	0.116	0.108	0.102	0.113
1991	0.142	0.121	0.116	0.117	0.107	0.104	0.104
1992	0.148	0.125	0.119	0.120	0.107	0.103	0.104
1993	0.151	0.127	0.120	0.121	0.099	0.093	0.096
1994	0.145	0.119	0.106	0.106	0.091	0.088	0.089
1995	0.138	0.108	0.095	0.096	0.089	0.086	0.085
1996	0.137	0.105	0.090	0.094	0.085	0.084	0.077
1997	0.133	0.100	0.086	0.091	0.076	0.076	0.072
1998	0.127	0.093	0.079	0.086	0.067	0.069	0.064
1999	0.119	0.086	0.072	0.077	0.067	0.067	0.064
2000	0.113	0.081	0.069	0.074	0.062	0.061	0.060
2001	0.117	0.082	0.070	0.075	0.060	0.059	0.053
2002	0.121	0.085	0.072	0.077	0.055	0.054	0.050
2003	0.125	0.088	0.074	0.081	0.058	0.056	0.049
2004	0.127	0.090	0.075	0.081	0.050	0.048	0.039
2005	0.126	0.087	0.075	0.076	0.049	0.047	0.039
2006	0.123	0.084	0.070	0.074	0.044	0.040	0.035
2007	0.125	0.084	0.070	0.075	0.040	0.039	0.032
2008	0.132	0.090	0.076	0.078	0.036	0.035	0.027
2009	0.143	0.097	0.078	0.078	0.040	0.038	0.033
2010	0.151	0.101	0.082	0.083	0.045	0.043	0.036
Change:							
1960*- 1972	-0.076	-0.141	-0.161		-0.144		
1972 - 1980	0.011	-0.021	-0.026		-0.034		-0.090
1980 - 1990	0.005	-0.013	-0.017	-0.014	-0.021	-0.028	-0.017
1990 - 2000	-0.022	-0.036	-0.044	-0.042	-0.046	-0.041	-0.052
2000 - 2010	0.038	0.020	0.013	0.009	-0.018	-0.018	-0.024
1980 - 2010	0.021	-0.029	-0.048	-0.047	-0.085	-0.087	-0.094
1960*- 2010	-0.044	-0.191	-0.235		-0.264		

Notes: For measures other than the official one, the threshold in 1980 is equal to the value that yields a poverty rate equal to the official poverty rate in 1980 (13.0 percent). The thresholds in 1980 are then adjusted over time using the adjusted CPI-U-RS (except for Column 1). Poverty status is determined at the family level and then person weighted. Consumption data are from the CE and income data are from the CPS-ASEC/ADF. Core Consumption includes key components that compare more favorably to NIPA data totals including food at home, housing, utilities, transportation, and gasoline and motor oil. See notes to Figure 1 for other definitions. CE data are not available for the years 1962-1971, 1974-1979 and 1982-1983. Also, consumption measures that include health insurance are not available for 1984-1987 and before 1980.
*Data from the 1960s are for 1960-1961 (CE Survey) or 1963 (CPS).

Table 2: Consumption and Income Poverty by Family Type, 1960-2010

	Single Parent Families		Married Parent Families		Single Individuals		Married without Children		Head 65 and Over	
	After-Tax Income	Consumption	After-Tax Income	Consumption	After-Tax Income	Consumption	After-Tax Income	Consumption	After-Tax Income	Consumption
Year	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1960-61/1963	0.653	0.602	0.288	0.297	0.343	0.230	0.168	0.149	0.494	0.473
1972	0.514	0.413	0.109	0.146	0.199	0.129	0.057	0.072	0.266	0.266
1973	0.490	0.415	0.097	0.112	0.183	0.124	0.053	0.048	0.239	0.251
1980	0.420	0.369	0.093	0.100	0.143	0.136	0.039	0.041	0.157	0.191
1981	0.433	0.350	0.105	0.104	0.161	0.127	0.048	0.040	0.149	0.177
1982	0.473		0.119		0.159		0.053		0.139	
1983	0.471		0.123		0.170		0.054		0.134	
1984	0.448	0.343	0.117	0.125	0.153	0.133	0.052	0.037	0.119	0.135
1985	0.438	0.316	0.106	0.117	0.146	0.126	0.051	0.045	0.113	0.153
1986	0.442	0.352	0.093	0.110	0.145	0.112	0.043	0.040	0.111	0.131
1987	0.417	0.336	0.084	0.099	0.131	0.099	0.037	0.033	0.111	0.117
1988	0.408	0.348	0.074	0.095	0.131	0.080	0.038	0.021	0.096	0.115
1989	0.387	0.296	0.071	0.094	0.124	0.069	0.035	0.027	0.089	0.103
1990	0.395	0.283	0.076	0.099	0.122	0.097	0.035	0.030	0.090	0.104
1991	0.402	0.296	0.077	0.102	0.129	0.091	0.034	0.030	0.085	0.087
1992	0.400	0.277	0.077	0.100	0.132	0.092	0.036	0.025	0.093	0.085
1993	0.395	0.265	0.079	0.093	0.136	0.081	0.039	0.023	0.087	0.082
1994	0.352	0.234	0.066	0.081	0.129	0.077	0.035	0.036	0.076	0.073
1995	0.309	0.229	0.056	0.086	0.122	0.073	0.033	0.019	0.065	0.069
1996	0.298	0.229	0.052	0.078	0.110	0.072	0.033	0.024	0.067	0.059
1997	0.283	0.204	0.047	0.069	0.113	0.072	0.029	0.021	0.066	0.048
1998	0.251	0.175	0.044	0.064	0.107	0.067	0.029	0.019	0.062	0.043
1999	0.233	0.161	0.036	0.063	0.106	0.075	0.029	0.019	0.053	0.049
2000	0.211	0.151	0.037	0.059	0.102	0.066	0.031	0.018	0.052	0.045
2001	0.211	0.149	0.035	0.056	0.106	0.067	0.033	0.016	0.053	0.034
2002	0.207	0.133	0.036	0.047	0.114	0.068	0.032	0.014	0.058	0.040
2003	0.226	0.143	0.036	0.052	0.116	0.064	0.032	0.019	0.054	0.039
2004	0.218	0.114	0.035	0.049	0.118	0.053	0.035	0.017	0.062	0.036
2005	0.224	0.110	0.036	0.045	0.118	0.059	0.030	0.015	0.055	0.035
2006	0.211	0.099	0.032	0.040	0.111	0.048	0.029	0.016	0.053	0.038
2007	0.212	0.095	0.034	0.037	0.107	0.046	0.024	0.013	0.051	0.030
2008	0.220	0.093	0.039	0.031	0.116	0.049	0.032	0.010	0.054	0.021
2009	0.219	0.093	0.041	0.038	0.128	0.055	0.029	0.013	0.046	0.020
2010	0.236	0.087	0.042	0.045	0.130	0.055	0.031	0.014	0.048	0.032
Change:										
1960*- 1972	-0.139	-0.189	-0.179	-0.151	-0.144	-0.100	-0.110	-0.077	-0.228	-0.207
1972 - 1980	-0.094	-0.044	-0.016	-0.046	-0.056	0.006	-0.018	-0.031	-0.109	-0.074
1980 - 1990	-0.026	-0.086	-0.017	-0.001	-0.020	-0.039	-0.004	-0.011	-0.068	-0.087
1990 - 2000	-0.184	-0.132	-0.040	-0.040	-0.021	-0.031	-0.004	-0.012	-0.037	-0.059
2000 - 2010	0.024	-0.064	0.005	-0.014	0.028	-0.011	-0.000	-0.005	-0.005	-0.013
1980 - 2010	-0.185	-0.282	-0.051	-0.055	-0.013	-0.080	-0.008	-0.028	-0.110	-0.159
1960*- 2010	-0.417	-0.515	-0.247	-0.252	-0.213	-0.174	-0.137	-0.135	-0.447	-0.441

Notes: Poverty status is determined at the family level and then person weighted. For each measure, thresholds are the same as those used in Figures 1-3. Thus, thresholds are anchored in 1980 for the full sample, rather than for each demographic group. Thresholds are adjusted over time using the adjusted CPI-U-RS. Consumption data are from the CE and income data are from the CPS-ASEC/ADF. Each series is adjusted using the NAS recommend equivalence scale. See notes to Figures 1-3 for additional details.

Table 3: The Effect of Changes in Demographic Characteristics on Changes in Poverty, 1960-2010

	1960-61/ 1963	1972	1980	1990	2000	2010	Change 1963-1972	Change 1972-1980	Change 1980-2010
A. Consumption Poverty									
Actual Poverty	0.308	0.164	0.130	0.108	0.062	0.045	-0.144	-0.034	-0.085
Predicted poverty holding within group poverty at 1980 rate									
Changes in family type	0.117	0.121	0.130	0.138	0.141	0.144	0.004	0.009	0.014
Changes in family type and education	0.159	0.142	0.130	0.121	0.109	0.108	-0.017	-0.013	-0.022
Changes in family type and race	-	-	0.130	0.140	0.152	0.167	-	-	0.037
Changes in family type and region	0.119	0.119	0.130	0.134	0.136	0.137	0.000	0.011	0.007
Changes in family type, education, and employment	0.163	0.141	0.130	0.122	0.110	0.118	-0.022	-0.011	-0.012
B. After-tax Income Poverty									
Actual Poverty	0.316	0.156	0.130	0.113	0.069	0.082	-0.161	-0.026	-0.048
Predicted poverty holding within group poverty at 1980 rate									
Changes in family type	0.112	0.120	0.130	0.136	0.140	0.145	0.008	0.010	0.015
Changes in family type and education	0.148	0.137	0.130	0.121	0.113	0.108	-0.011	-0.007	-0.022
Changes in family type and race	0.102	0.118	0.130	0.141	0.151	0.161	0.015	0.012	0.031
Changes in family type and region	0.110	0.118	0.130	0.137	0.140	0.146	0.008	0.012	0.016
Changes in family type, education, and employment	0.144	0.131	0.130	0.122	0.116	0.126	-0.013	-0.001	-0.004

Notes: Predicted poverty is the weighted average of the poverty rates for each group in the base year using as weights the distribution across groups in the year listed in the column headings. Actual income and consumption poverty rates are from Table 1.

Table 4: Demographic Characteristics of All Individuals and by Poverty Status, 1960-2010

	Consumption Poor					Income poor					Income Poor but Not Consumption Poor				
	1960-1961	1972-1973	1980-1989	1990-1999	2000-2010	1960-1961	1972-1973	1980-1989	1990-1999	2000-2010	1960-1961	1972-1973	1980-1989	1990-1999	2000-2010
	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
Homeowner	0.440	0.400	0.322	0.274	0.256	0.421	0.390	0.399	0.357	0.379	0.719	0.460	0.534	0.451	0.444
Own a car	0.654	0.589	0.593	0.624	0.609	0.580	0.603	0.640	0.660	0.672	0.761	0.736	0.787	0.754	0.730
Family size	5.122	5.030	4.414	4.438	4.401	5.063	4.998	3.911	3.827	3.535	3.659	3.900	3.374	3.396	3.278
N	4,075	2,716	13,280	11,528	9,721	2,921	1,619	16,644	17,201	18,157	431	682	9,553	11,568	14,033
Total Financial Assets															
Median	.	0	0	0	0	.	0	0	0	0	.	33	72	27	0
75th Percentile	.	686	167	122	103	.	326	326	277	337	.	1,399	1,207	1,076	706
85th Percentile	.	2,607	734	608	459	.	1,212	1,193	1,345	1,500	.	4,321	3,221	4,019	2,520
90th Percentile	.	5,142	1,589	1,313	1,138	.	3,259	2,542	3,424	3,290	.	7,884	8,183	11,418	5,995
95th Percentile	.	15,162	4,602	3,096	2,792	.	9,598	8,898	15,600	11,528	.	22,813	23,835	43,654	25,150
Change in Total Financial Assets															
5th Percentile	-2,084	-2,057	-698	-269	-110	-4,168	-3,171	-1,573	-734	-1,122	-18,611	-6,856	-4,719	-2,211	-2,202
10th Percentile	-812	-686	-18	0	0	-1,481	-815	-159	0	-28	-10,593	-3,357	-1,193	-257	-301
15th Percentile	-333	-261	0	0	0	-631	-326	0	0	0	-7,919	-1,371	-326	0	0
N (asset sample)	4,075	2,716	2,941	2,369	2,014	2,921	1,619	3,209	3,171	3,496	431	682	1,658	2,056	2,611
Debt															
Median	.	.	0	0	0	.	.	0	0	0	.	.	0	0	0
75th Percentile	.	.	432	159	0	.	.	518	322	0	.	.	997	813	249
85th Percentile	.	.	1,440	1,216	314	.	.	1,631	1,506	1,289	.	.	2,608	2,273	2,163
90th Percentile	.	.	2,360	2,488	1,144	.	.	2,924	2,959	3,366	.	.	4,270	4,008	4,833
95th Percentile	.	.	4,147	5,040	4,402	.	.	5,609	6,653	10,080	.	.	8,640	8,841	11,561
N (debt sample)	.	.	6,567	5,738	4,783	.	.	8,081	8,409	9,065	.	.	4,616	5,639	7,022

Notes: All data are from the CE. Samples are restricted to families that are designated as complete income reporters. All estimates are person weighted. Debt includes all non-mortgage, non-vehicle debt. Financial asset statistics come from samples of families in their fifth CE interview, while debt statistics come from families in either their second or fifth interview. Poverty definitions are calculated using the NAS scale and the adjusted CPI-U-RS. Income poverty is determined using after-tax money income.