

Child Poverty and the Great Recession in the United States

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ABSTRACT

In this paper, we comprehensively examine the effects of the Great Recession on child poverty, with particular attention to the role of the social safety net in mitigating the adverse effects of shocks to earnings and income. Using a state panel data model and data for 1980 to 2012, we estimate the relationship between the business cycle and child poverty and test whether the relationship between child poverty and the Great Recession represents a significant break from historical experience. This test is motivated by the major changes to the social safety net that have occurred since the last major recession: Welfare reform and the expansion of the EITC. Looking through the lens of these changes to the safety net, we examine how and to what extent the safety net is providing protection to at-risk children in the Great Recession. We find compelling evidence that the safety net provides protection; that is, the cyclical nature of after-tax and transfer income (ATTI) child poverty is significantly attenuated relative to the cyclical nature of private income (PI) poverty. Moreover, we find that ATTI child poverty (ATTI is below 100% of poverty) in the current period is less cyclical than it was during the early 1980s recession. On the other hand, extreme ATTI child poverty (ATTI is less than 50% of poverty) has become more cyclical in the current period (although the differences are not statistically significant).

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1. Introduction

The Great Recession led to massive job loss and historic increases in unemployment durations. Employment in the United States fell by more than 8 million between January 2008 and December 2009 and unemployment rose to a peak of 15.6 million persons in October 2009.¹ Until recently, recovery has been very slow and the unemployment rate remained high at 6.3 percent as of May 2014, almost 5 years after the recession was deemed technically over in July 2009.

In the midst of the Great Recession, median real household income also fell, from \$61,597 in 2007 to \$57,025 in 2010 and \$51,007 in 2012 (U.S. Census 2013, figures are in real 2012 dollars). Given that the effects of the Great Recession on unemployment were larger for less skilled workers (Hoynes, Miller and Schaller 2012), we would expect the effects of the Great Recession on household incomes to be larger in relative terms for individuals in the lower end of the income distribution. To explore this issue, in this paper, we comprehensively examine the effects of the Great Recession on child poverty. We focus on children because they consistently have with the highest poverty rates in the U.S. and because much policy attention is aimed at this group. Additionally, earlier work has examined these questions in the broader population (e.g., Bitler and Hoynes 2014).

To establish our main findings, we use data on child poverty by state and year for 1980 to 2012 and state panel data models to study the effect of the business cycle on child poverty, measuring the economic cycle by the state unemployment rate. This gives us the key cyclicity parameter – how changes in the business cycle affect child poverty, controlling for state and year fixed effects. We then extend our basic model to test whether the relationship between child poverty and the Great Recession represents a significant break from historical experience.

In addition to documenting this important relationship, that of the cyclicity of poverty and how it has changed over time, our interest lies in understanding the role that the social safety net

¹ All employment outcomes in this first paragraph are seasonally adjusted.

plays in mitigating the adverse effects of shocks to earnings and income. To explore this, we construct and use two measures of child poverty. The first, which we term *private income poverty*, uses a resource measure for households that includes earned income, private transfers, and asset income but compares this resource measure to the standard official poverty thresholds. The second measure of household resources, which we term *after-tax and transfer income* (ATTI) poverty, adds to the private income measure a comprehensive set of tax and transfer program income but still compares ATTI income to the official poverty thresholds. Our second measure of resources is similar to the resource measure in the new Census Bureau Supplemental Poverty Measure (Short 2011) and the recommendations of the NAS panel on measuring poverty (Citro and Michael 1995). By comparing the cyclicity of these two measures, we reveal the aggregate protection that is provided by the safety net. We explore the mediating role played by four core safety net programs—including Food Stamps (or SNAP), cash welfare (AFDC/TANF), the Earned Income Tax Credit (EITC), and Unemployment Insurance (UI)—and consider general changes to the policy landscape as well as temporary changes that were introduced with the 2009 stimulus. In so doing, we adopt a broad measure of the “social safety net” that includes not only means-tested income support and in-kind programs but also include the EITC (a tax credit) and UI (a social insurance program) as they have taken on a large role in buffering income (discussed further below).

Ex ante, we would expect the safety net to partially offset the losses to private income in downturns. Aggregate program statistics show that the social safety net provided significant support to households affected by the Great Recession. In 2011, Food Stamp expenditures amounted to 72.8 billion dollars and more than one in seven people in the U.S. received benefits from the SNAP program. The maximum duration of Unemployment Insurance benefits was extended to up to 99 weeks during the Great Recession, far beyond the normal maximum of 26 weeks or even the Extended Benefit maximum of 52 weeks in most states. Further, at the center of the 2009 stimulus, there were temporary increases in the maximum benefits paid out for Food Stamps, the EITC, and UI

as well as in temporary tax relief (the Making Work Pay Tax Credit). The total cost of these expansions was over 200 billion dollars.²

In addition to these important changes during the Great Recession, the social safety net for lower income families has undergone a transformation since the last severe recession, which took place during the early 1980s. Welfare reform in the mid-1990s led to a massive reduction in the share of families receiving cash welfare (Blank 2002). At the same time, the EITC expanded substantially in generosity (Hotz and Scholz 2003). The end result is that the U.S. safety net for low income families with children has changed from one based on *out-of-work* assistance to one based on *in-work* assistance (Bitler and Hoynes 2010, 2014). Looking through the lens of these changes to the safety net, we are interested in exploring if and to what extent the safety net is providing protection to at-risk children during the Great Recession and the ensuing weak recovery. Further, we explore how the income protection provided by the social safety net as a function of changes in the state business cycle compares between the Great Recession and earlier recessions.

Our analysis yields several important findings. In line with previous work, we find that child poverty rises in recessions and falls in expansions, and the level of cyclicalities is higher at lower levels of the income distribution. This finding is true historically and continues to be evident in the recent Great Recession. Importantly, we also find compelling evidence that the safety net provides protection; that is, the cyclicalities of after-tax and transfer income (ATTI) poverty is significantly attenuated relative to the cyclicalities of private income (PI) poverty, controlling for fixed state characteristics as well as national shocks. The net result is that our measure of after tax and transfer child poverty (ATTI child poverty) rose modestly in the Great Recession, while our measure of child poverty tied to private income (PI child poverty) increased substantially. The cyclicalities of ATTI

² The breakdown of the total costs is as follows: Food Stamps (\$48 B), EITC (\$5.1 B), UI (\$61.0 B) and Making Work Pay Tax Credit (\$104.4 B). The Unemployment Insurance costs include both increases in weekly benefits as well as the cost of extending benefits to as much as 99 weeks. While Food Stamps and the EITC are targeted at low income families, the stimulus benefits of extended UI and the Making Work Pay Tax Credit will also accrue to higher income families. For information on the stimulus, see www.recovery.gov.

child poverty in the GR shows some important changes compared to the cyclicity in the early 1980s recession. Our results show that the ATTI resource measure of 100% of poverty increased by *less* than we would have expected given the historical relationship in the early 1980s recession, showing more protection from the safety net in the current period. On the other hand, extreme ATTI child poverty (ATTI resources being less than 50% of poverty) increased by *more* than we would have expected given the evidence from the 1980s recession (although these differences are not statistically significant). In our investigation, we connect these important findings to the changes to TANF, Food Stamps, the EITC and the UI Program.

Our next section describes our data and how we measure poverty. Section 3 provides a summary of the Great Recession and presents the basic time series evidence on child poverty. Section 4 describes the major social safety net programs and how they changed during the Great Recession. Section 5 examines the cyclicity of poverty and how it has changed during the Great Recession. Section 6 discusses these results in light of the changes to the social safety net during the late 1990s. Section 7 concludes.

2. Measuring Child Poverty

Our analysis uses data from Annual Social and Economic Supplement (ASEC) to the Current Population Survey (CPS), administered to most households in March every year. The ASEC is an annual survey that collects labor market, income, and program participation information for individuals for the previous calendar year, as well as demographic information from the time of the survey. Our sample uses the 1981 through 2013 CPS surveys, corresponding to 1980-2012 calendar year outcomes. This survey is used to report official poverty each year in the United States.

Poverty in the U.S. is conceptually an “absolute” standard rather than the “relative” measure used in many other countries and the OECD. U.S. official poverty is determined by comparing total pre-tax family cash income to poverty thresholds, which vary by family size, the number of children,

and the presence of elderly persons. If the family has pre-tax cash income below the relevant threshold, then they are deemed to be poor. The family unit used for official poverty consists of all related individuals in the household; and all persons in the family have the same poverty status. In 2012, the poverty threshold for a family of four (two adults plus two children) was \$23,283.

The official poverty measure has numerous drawbacks. Of particular relevance for our work, the measure of family cash income is not a complete measure of family resources. It excludes *non-cash* government transfers (in-kind transfers such as food stamps and housing subsidies) as well as taxes and tax credits (notably the Earned Income Tax Credit as well as other income and payroll taxes and tax credits). Additionally, there is no geographic variation in the poverty thresholds, despite wide variation in costs and wages across regions.³ These limitations in the official poverty definition have been noted for decades and recently, in fall 2011, the Census released a new poverty measure – the Supplemental Poverty Measure – designed to respond to the long-standing criticisms of the official poverty measure. As described in Short (2011), the main changes reflected in the SPM are expansions of the cash resource measure to include in-kind transfers and taxes (but does not include the value of publicly provided medical benefits while it does include deductions for child support payments, medical out of pocket expenditures, and work expenses; including child care), updating of the poverty thresholds, and adjusting the thresholds for geographic variation in costs and spending (including spending on food, shelter, clothing, and utilities, with housing costs and family size adjustments), (Short, 2013).

Because of our interest in analyzing poverty in the Great Recession and putting it in a historical context we are not able to use the SPM, which is only available for the past few years. Instead we use an alternative poverty measure that is in the spirit of the SPM and the earlier National

³ Furthermore, the thresholds fail to adjust for many categories of expenses (e.g., shelter, clothing, work-related expenses, medical expenses, and utilities), and thus do not necessarily capture the relevant measures of needs. The thresholds are also updated annually by the CPI-U, which may not well capture changes in needs across all locations.

Academy of Sciences recommendations (Citro and Michael 1995), but that we can measure consistently back to 1980 using the public use CPS data. We have developed this measure in earlier work (Bitler and Hoynes 2010, 2014).⁴

We construct a measure of *after-tax and transfer income* which adds to cash income the cash value (as reported by the household or imputed by the Census Bureau) of non-cash programs (food stamps, school lunch, housing subsidies, and energy subsidies) as well as the federal employee retirement benefit contributions, and subtracts payroll taxes and nets out federal and state income taxes (including the EITC, child and child care tax credits, and stimulus payments). We then use the poverty thresholds that are the basis of official poverty, resulting in an after-tax and transfer income (ATTI) measure of poverty. To illustrate the role of the social safety net we also construct a measure of *private income* (PI) poverty, where we exclude from resources all government tax and transfer benefits (we only include market income and private transfers). Appendix Table 1 details the elements of these two income and poverty measures and compares them to the official poverty measure.⁵

For each of our poverty measures, we calculate income and poverty at the *household* level, after dropping the small number of unrelated children (as does the Census Bureau in defining official poverty). We do this in part because some in-kind transfers are only collected or imputed at the household level. Thus, total PI and ATTI is summed across household members and income is compared to the appropriate poverty threshold using the appropriate household structure and size;

⁴ Our measure differs from the SPM in several ways. First, the SPM resource measure includes all of the sources we discuss below, and includes deductions for out of pocket medical expenses, child care, child support payments, health insurance premiums, and fixed costs of work. The SPM poverty thresholds vary with geographic area and by expenditures on housing, food, clothing, and utilities. Also, the SPM has a different measure of the unit sharing expenses than ours. We use the household while the SPM uses all related individuals plus foster children and cohabitators and their children. It is not possible to measure cohabitators going back in time.

⁵ To be more precise, we calculate ATTI for calendar years 1980-1986, 1988-1990, and 1992-2011. The non-cash measures were not released in the 1988 and 1992 surveys (corresponding to the 1987 and 1991 calendar years). All variables are consistently reported for the other years with the single exception of the total dollars of LIHEAP, which was not reported until survey year 1982, Hence we have set it to zero for the 1981 survey year.

this value is then attached to all household members. Since here we study child poverty, we limit the sample to those aged below 18 at the survey month.⁶

3. Cycles, the Great Recession and Poverty

We begin by examining the changes in child poverty that have occurred, historically, across expansions and contractions in the U.S. Here and throughout the paper, we focus on the period from 1980 through 2012. This allows for the comparison of the Great Recession to the severe recessions of the early 1980s⁷ as well as to two smaller contractions (in the early 1990s and the early 2000s). These cycles can be seen in Figure 1, where we present our primary measure of the economic cycle – the unemployment rate – annually over this period. Using the NBER dating, the Great Recession officially began in December 2007 and the unemployment rate rose from 5 percent in December 2007 to a peak of 10.1 percent in October 2009 (seasonally adjusted). While the recession officially ended in July 2009, the unemployment rate remains relatively high, at 6.3 percent in May 2014 (seasonally adjusted), two percentage points above the low point prior to entering the Great Recession. Figure 1 also shows the employment to population ratio (EPOP, right axis), which is an alternative measure of the business cycle.⁸ For most of the period, the unemployment rate and EPOP track one another very well; however the recent jobless recovery is evident at the end of the period, whereby the decrease in unemployment has outpaced the small increase in EPOP. Thus, we present results using both measures of the local cycle.

Figure 2 presents our two measures of child poverty annually for the period from 1980 to 2012. For reference, the shaded regions are annualized contractionary periods, based on the NBER

⁶ We do not include the in-kind value of medical benefits (Medicaid and Medicare) because of the challenge in how to value these benefits. In practice our results are not sensitive to whether we expand our definition of resources to include the value of these benefits.

⁷ Two recessions in quick succession led to an increase in the unemployment rate from 5.8 percent in 1979 to 9.7 percent in 1982.

⁸ The EPOP is defined as annual employment divided by the population aged 16 and older.

recession dates.⁹ As defined above, our measure of private income (PI) poverty calculates poverty ignoring all additions to or deductions from income due to government tax and transfer programs – it is essentially earned income, plus private transfers, private pensions, and asset income. ATTI poverty adds to private income all cash and in-kind government transfers as well as taxes. Notably, PI child poverty varies significantly with the business cycle both historically and during the Great Recession. Using this “market” measure of resources, during the Great Recession, child PI poverty rises by 4.7 percentage points, from 18.7 in 2007 to 23.4 in 2010. Similarly, we see increases in PI child poverty during the recessions of the early 1980s, early 1990s, and 2000s and we also note the significant fall in the prevalence of PI poverty during the strong labor market of the late 1990s. Turning to the poverty measure calculated using the more comprehensive measure of resources, child ATTI poverty rose (only) by 0.8 percentage points during the Great Recession (this change is from 2007 to 2010). This is our first evidence of the extent to which the social safety net provided protection against shocks to household earnings and income in the Great Recession. The time series evidence in this graph indicates that the social safety net provided greater protection in the Great Recession overall compared to the protection provided during the historical period – for example in the early 1980s recession, ATTI child poverty increased substantially, essentially tracking the change in PI poverty. This change could potentially reflect both federal and state policy changes over time.¹⁰

In our main results, shown below, we explore these issues further and estimate the relationship between the business cycle and child poverty. In that analysis, we take advantage of the dramatic variation in the timing and magnitude of business cycles across U.S. states, controlling for fixed differences across states and aggregate secular trends. Here, we begin that analysis by

⁹ The official NBER recession dating is monthly; this figure presents annual data. We constructed an annual series for contractions based on the official monthly dates, augmented by examination of the peaks and troughs in the national unemployment rate. See Bitler and Hoynes (2010, 2014) or Appendix Table 1 for more information on the annual dating.

¹⁰ The trend in ATTI child poverty shows a fairly flat trend since the end of the strong labor market of the late 1990s. This time series trend has also been shown in other studies that update the official poverty measure and extend it back in time (e.g. Wimer et al., 2013).

presenting some descriptive findings on child poverty across states in the Great Recession. Figure 3 presents percent changes in private income, government transfers, and government taxes over the Great Recession (from peak to trough) between the average over 2005-2007 and the average over 2010-2012,¹¹ separately for each state. In order to create this figure, we first limit our sample to children and calculate averages over the relevant 3-year period in state annual household level private income, government transfers, and government taxes, and then compute the percent changes in these variables. The figure shows that during the Great Recession private income dropped for most states, but that transfers and taxes offset this drop. These changes represent average effects across all children of all income levels in the state. Figure 4 builds on this and shows the change in child poverty, by state, again between the average for 2005-2007 and the average for 2010-2012. For comparison, we present PI and ATTI poverty with the blue bars representing ATTI poverty and the open circles (with a bar) representing PI poverty. Almost all states experienced increases in the PI concept for child poverty, with North Dakota and its oil and gas boom representing a notable exception. Furthermore, the role of the safety net in providing protection against these private income losses is evident in the figure. The net effect, though, is dramatic variation in the changes in child poverty across states in the wake of the Great Recession. Some states, such as many New England states (Connecticut, Massachusetts, and Vermont) among others, experienced reductions in poverty. However, other states such as Nevada and Arkansas experienced increases in ATTI poverty on the order of 5 percentage points during this period.¹²

4. The Social Safety Net and the Policy Landscape

¹¹ We use three-year averages to increase precision when calculating state child poverty rates. The Census uses two-year averages for all person poverty levels. This averaging across years helps ensure precision for small states.

¹² It may be surprising to see Mississippi, with some of the highest poverty rates in the country, showing an improvement in child poverty at the top of the list. Prior to the Great Recession, poverty rates in Mississippi were increasing while they were flat or decreasing in the U.S. as a whole. Part of this may be due to Hurricane Katrina (in 2005).

The job losses in the Great Recession were severe and it is notable that child ATTI poverty did not increase more dramatically during this time. In this paper, we seek to explore the role of the social safety net in leading to this relative stability of child poverty during the Great Recession. We begin here by taking account of the main elements of the cash and non-cash social safety net for low-income families with children and summarizing the policy changes leading up to and during the Great Recession. We focus on four programs: Food Stamps (now called SNAP or Supplemental Assistance for Needy Families), Temporary Assistance for Needy Families (TANF, known as Aid to Families with Dependent Children or AFDC prior to the welfare reforms of the late 1990s), the Earned Income Tax Credit (EITC), and Unemployment Insurance (UI). The first three programs are explicitly targeted towards low-income families, hence explaining their obvious relevance for child poverty. UI, on the other hand, is a “universal” social insurance program – it requires of former workers both an earnings history and an involuntary job separation but is not limited to low income earners. Nonetheless, UI is an important part of the safety net that reaches down to lower income levels especially during periods of job loss. Further, it is not a “fully premium funded” program in serious downturns and the largest amount of UI benefits in recent years has come from Federal general revenues.¹³

Cash Welfare (AFDC/TANF): Since its creation as part of the 1935 Social Security Act, AFDC provided cash welfare for single parent families with children. The program is means-tested, requiring households to satisfy income and asset tests. A joint state-federal program, states set the generosity of the benefit, while federal rules dictated most of the remaining eligibility and benefit rules. The benefits were structured in a manner typical for income support programs: If a family had

¹³ Our ATTI poverty measure includes other tax and transfer programs such as Social Security Old Age and Retirement benefits and the tax credits associated with ARRA, cash disability benefits (SSI, SSDI), the census imputed value of housing benefits, and the value of other food and nutrition programs (WIC, and the National School Lunch and School Breakfast programs). So when we examine ATTI, we take those benefits into account. Here, though, we limit our attention to the elements that are most relevant for our population of interest and provide them more protection.

no income, they received the maximum benefit or “guarantee.” As their earnings increased, their benefit was reduced by the benefit reduction rate, leading to an implicit tax rate on earned income. Historically, this rate varied between 67% or 100%, providing strong disincentives for work (Moffitt 1983). Concerns about work disincentives (as well as disincentives to form two-parent families) led to the wholesale reform of the program in the late 1990s. The Personal Responsibility and Work Opportunity Reconciliation Act (PRWRORA) was enacted in 1996 and replaced AFDC with TANF. TANF now includes work requirements (with financial sanctions for non-compliance), a maximum of five years of *lifetime* use of federally funded welfare, and in many states, enhanced earnings disregards. These changes were designed to facilitate the transition from welfare to work and to reduce dependence on cash welfare. Caseloads fell to historic lows as a share of the population potentially eligible in the wake of this important reform. Under both AFDC and TANF, benefits are very low. For example, in 1996, on the eve of welfare reform, the median state provided benefits to families with income up to 68 percent of poverty and the median state’s benefit level for a family of three was about 36% of the poverty guideline (U.S. House of Representatives 1996).

Food Stamps: Like AFDC/TANF, Food Stamps is a means tested program (whereby eligible families and individuals must satisfy income and asset tests), and benefits are also assigned using maximum benefits and then reduced by a benefit disregard or tax rate as earned income increases. But in contrast to AFDC/TANF, Food Stamps is a federal program with little involvement and few rules set by the states until quite recently, with primarily national income eligibility threshold and benefits being adjusted for changes in prices each year.¹⁴ Additionally, unlike many means-tested programs, Food Stamp eligibility is not limited to certain targeted groups such as families with children, the aged, and the disabled but is universal given sufficiently low income and assets. The benefit reduction rate for SNAP is relatively low (30%), the gross income eligibility threshold is

¹⁴ Benefits are tied to the cost of a “market basket of foods which if prepared and consumed at home, would provide a complete, nutritious diet at minimal cost” (the so-called Thrifty Food Plan), and then are indexed periodically for increases in prices.

higher (at 130 percent of poverty) than other U.S. cash welfare programs, and the program serves the working and non-working poor. Benefits averaged \$133 per person per month in 2013 and these benefits can be used to buy a wide array of food items. While the benefit is in-kind and takes the form of a voucher, the behavioral response to food stamps has been found to be similar to the response to cash (Fraker et al., 1992; Hoynes and Schanzenbach, 2009; Ohls et al., 1992). Welfare reform left Food Stamp rules relatively unaffected but did limit benefits for legal immigrants (who were deemed ineligible) and limited benefits for able-bodied adults without dependents 18-49 (who were limited to 3 months of benefits in a 3 year period). The 2002 Farm Bill reinstated benefits for legal immigrants. In addition, beginning with regulatory changes in 1999 and continuing with the 2002 Farm Bill, the USDA has encouraged states to make changes in how they implement the program's rules to facilitate obtaining access to benefits. This has led to a relaxation of asset requirements and expanded gross income eligibility, in some cases beyond the federal income eligibility limit in what has been called broad-based categorical eligibility (U.S. GAO 2007). (The net income eligibility limit is unchanged.) For a recent description and analysis of the effects of these changes in SNAP policies on participation and take-up, see Ganong and Liebman (2013).

EITC: The federal EITC is a refundable tax credit with benefits targeted to families with children. The EITC functions as an earnings subsidy, and as such is only extended to working families. The goal of the EITC is to increase the after-tax income of lower earning taxpayers, primarily those with children, while incentivizing work. The expansion of the EITC, facilitated through tax acts in 1986, 1990, and 1993, has featured prominently in the movement toward more 'in-work' assistance in the U.S. safety net (and with welfare reform, a decline in out-of-work assistance). The potential income transfer is substantial – in 2014 for a single mother with two children, the maximum EITC credit is \$5,460 (annual payment) and the phase-out range extends to

those with earned income of up to \$43,756.¹⁵

UI Benefits: Unemployment insurance is a social insurance program that provides temporary and partial earnings replacement for involuntarily unemployed individuals with recent employment. As a social insurance program, UI is not means tested (limited to those with low incomes) and eligibility is a function of earnings history. UI benefits consist of three separate “programs”. Recipients receive benefits for a fixed duration, typically up to 26 weeks, through “regular” state benefits, funded by employer contributions. Under the Extended Benefits program, jointly funded by states and the Federal government, UI benefits can be extended for 13 or 20 additional weeks in states experiencing high unemployment rates. Lastly, in most major downturns, Congress has enacted emergency extensions to unemployment; these programs tend to be relatively short lived and are explicitly counter-cyclical and fully federally funded.¹⁶

Changes to the social safety net in the Great Recession

The American Recovery and Reinvestment Act of 2009 (ARRA) was passed in February 2009 and contained many elements that expanded the social safety net. The Food Stamp maximum monthly benefit was increased by 13.6 percent (this provision expired in October 2013) and the three-month time limit on Food Stamp receipt for able-bodied childless adults was suspended temporarily (states can also seek waivers if the local unemployment rate exceeds a threshold or if there are insufficient jobs). The 2009 ARRA also expanded the EITC to include a more generous schedule for families with three or more children, reduced taxes through the introduction of the Making Work Pay Tax Credit (providing up to \$400 per worker) and expanded the Child Tax

¹⁵ Beginning in 2002, the earnings eligibility range increased modestly for married couples (previously the schedule depended only on the number of children).

¹⁶ Programs are administered by the states, who set payroll taxes and benefit levels. State trust funds provide funding for regular state benefits, while the extended program is funded jointly by the states and the federal government. Many of the emergency extensions have been fully federally funded. During some recessions, the federal government has helped to fund the extended program. States can and do borrow from the federal government to fund expenditures from their UI trust funds, NCSL (2013) reports that 16 states currently have outstanding loans totaling \$19 billion. These states include AZ, AR, CA, CT, GA, IN, KS, KY, MO, NV, NY, NC, OH, RI, SC, and WI.

Credit.¹⁷

In the Great Recession, both extended and emergency programs provided extensions to the duration of UI (Rothstein 2011). In June 2008, Congress enacted the Emergency Unemployment Compensation program, which (eventually) raised maximum UI benefit durations to as long as 99 weeks given sufficiently high unemployment rates in the states. With passage of the 2009 ARRA, the full cost of extended benefits was shifted to the federal government; the ARRA also raised the weekly UI benefit by \$25.¹⁸ These UI extensions expire when the unemployment rate within a state declines below certain predetermined thresholds. Some states have responded to the slow recovery by cutting the maximum duration of their state benefits (e.g., North Carolina has a maximum state duration of 19 weeks), while sequestration also led to some reductions in EUC benefits.

To get a sense of the overall scale of these programs, in Figure 5, we plot real per capita expenditures from 1980 to 2012 for the four social safety net programs.¹⁹ The shaded regions are annualized contractionary periods (defined as above). Among the means-tested benefits, at the end of this period, total benefit spending in SNAP is largest, closely followed by spending on the EITC. TANF spending is considerably smaller on a per-capita basis. Furthermore, SNAP spending increased in the Great Recession by more than did spending on other means-tested programs. Notably, in the wake of the 1996 federal welfare reform, TANF has become a very small program – in 2010, in the depth of the Great Recession, fewer than 2 million families received TANF, a 60 percent reduction from nearly 5 million families receiving benefits in 1994. Total expenditures on cash benefits under TANF in 2010 were \$10.7 billion compared to \$64.7 billion in spending for SNAP and \$58.6 billion in spending for the EITC. As is also clear on this figure, UI is a central

¹⁷ The ARRA also included a one-time payment of \$250 per person for Social Security, SSI, and Veterans' Disability Benefits.

¹⁸ As is noted above, Extended Benefit UI program costs are shared by the states and federal government. Initially some states chose not to participate but eventually did so after the ARRA shifted the costs to the federal government.

¹⁹ TANF expenditures include only the cash benefit payments and the EITC data are available only through 2010. For details on the data and sources see the data appendix.

income replacement program in recessions and the increase in the level of total UI payments in the Great Recession is striking and dwarfs changes in other recessions. In 2010, in the depth of the Great Recession, about \$70 billion was paid out as part of the emergency program in addition to the \$69 billion for regular and extended benefits, for a total of \$139 billion.

The Census report releasing the 2012 Supplemental Poverty Measure provides tabulations of the number of persons who are kept out of poverty (using the SPM measure) for each of the social safety net programs (Short 2013), ignoring behavioral responses. The report shows that the EITC is the biggest anti-poverty program for children in this static sense, keeping 5 million children out of poverty. The second biggest anti-poverty program for children is SNAP, which keeps 2.2 million children out of poverty. These reductions are followed in magnitude by a decrease in children in poverty of 1.5 million for Social Security (retirement and disability), 1.0 million for public housing, 0.7 million for School Lunch, 0.7 million for SSI, 0.6 million for UI and 0.4 million for TANF.²⁰

This discussion of the state of the safety net and the influence of relevant policy changes illustrates important features that motivate our analysis. First, welfare reform led to a decline in cash welfare generosity. At the same time, with the expansion of the EITC, the safety net for low income families with children has been transformed from one providing *out-of-work* assistance into one supporting *in-work* assistance. Second, repeated federally-funded expansions to UI have led to longer benefit durations and more income protection. Third, the Food Stamp program expanded importantly in the Great Recession.

5. The Cyclicity of Poverty, Historically and in the Great Recession

Here we present results from our main analyses. In particular, we estimate the relationship between economic cycles and child poverty historically and test whether that relationship has

²⁰ Given our focus on child poverty, the results for Social Security may be surprising. But recall that poverty is “family” measure and evidently many households with children also contain elderly (or to disabled) individuals receiving income from Social Security old age or disability programs.

changed during the Great Recession compared to other recessionary periods. Our empirical strategy exploits variation in the timing and severity of cycles across states to estimate the effect of labor market conditions on child poverty, controlling for fixed state characteristics and common shocks. We measure the business cycle using the state unemployment rate and estimate a basic state panel fixed effects model:

$$(1) \quad y_{st} = \beta UR_{st} + \alpha_s + \delta_t + \varepsilon_{st}$$

where y_{st} is child poverty (either the PI or ATTI measure) measured for children in state s and year t ; UR_{st} is the state unemployment rate in state s and year t ; and equation (1) also controls for state and year fixed effects, α_s and δ_t , respectively. We cluster the standard errors at the state level, and the regressions are weighted using the relevant denominator (the CPS total weighted population of children in the state-year cell). Given the evidence on the downward secular trend in the employment to population rate (EPOP) beginning prior to the Great Recession (Moffitt 2012), as well as the more recent failure of EPOP to recover after the end of the Great Recession to the same extent as the unemployment rate has recovered, we explore the sensitivity of our results to using the EPOP as an alternative measure of the state economic cycle.

Our main results are presented in Table 1. Panel A presents the results of estimating equation (1), pooling data for 1980–2012. The first four columns present results for the child measure of PI poverty and the second four columns present results for child ATTI poverty. To explore the impacts of the cycle at different points of the income distribution, we present models for the share of children with household incomes below 50%, 100%, 150% and 200% of the poverty level. Our key coefficients tell us the extent to which within state over time changes in poverty of each type respond to within state over time changes in the state unemployment rate.

The first thing to note is that all of the coefficients on the unemployment rate in table 1, both those in Panel A and B (which we describe below), are positive and statistically significant, showing a high degree of cyclicity of child poverty. Looking at the results for PI child poverty in Panel A,

the results show that a one percentage point increase in the unemployment rate leads to a 1.1 percentage point increase in the probability that children's PI income is below 100 percent of poverty for a 5.0 percent effect (relative to mean child PI poverty of 21 percent). This result is well in line with the many prior studies that have examined this relationship (Bitler and Hoynes 2010, 2014; Blank 1989, 1993; Blank and Blinder 1986; Blank and Card 1993; Cutler and Katz 1991; Freeman 2001; Gunderson and Ziliak 2004; Hoynes et al., 2006; Meyer and Sullivan 2011). Our estimates here update that previous work using data through the Great Recession and focus on child poverty. The sensitivity of private income poverty for children to the cycle is the largest at the bottom of the distribution and decreases as we move up to higher poverty levels. The percent impacts of a one percentage point increase in unemployment are 6.4 percent for less than 50% poverty, and 5.0, 3.5 and 2.7 at 100%, 150%, and 200% of poverty, respectively.²¹

Columns 5 through 8 present similar models for child ATTI poverty. The responsiveness of ATTI child poverty rates to changes in the unemployment rate is lower than the responsiveness of the PI poverty rates (see the means at the bottom of the table). The reductions in the responsiveness of the ATTI measure relative to that of the PI are particularly large at the lowest income to poverty levels (below 50% and below 100% of poverty) and are less so at the higher income to poverty levels: For the full period the PI measure shows that 12 percent of children are below 50% compared to 3.3 percent for the ATTI resource concept. For 100% of poverty, 21.3 percent of children are below poverty using the PI concept and 14.7 percent are below poverty using the ATTI concept. There is little difference in the level of these measures for 150% of poverty (31.9% of children being below 150% of the PI poverty measure and 30.5 % being below the ATTI measure). In addition, for 200% of poverty the level of ATTI child poverty is actually higher than that of PI poverty as this group is composed of net taxpayers. This "tilting" of the income-to-poverty gradient reflects the high

²¹ The point estimates increase as we move up the income distribution (across columns 1-4), but given that the baseline rates vary across the multiples of poverty, it may be more appropriate to use the percent impacts (which are defined as the estimated coefficients divided by the mean of the dependent variables).

levels of various safety net program benefits and tax credits at the lowest income levels and the potentially offsetting effects of taxes and non-cash benefits for the higher income levels.²²

Comparing the results on the cyclicity of PI and ATTI poverty in the top panel, we see a strong effect of the safety net in protecting income, especially at the lowest income levels. For extreme poverty, the results show that a one percentage point increase in unemployment rates lead to a 0.2 percentage point increase in the level of ATTI poverty, compared to the 0.8 percentage point increase for the PI poverty measure. For 100% of poverty, the results show that a one percentage point increase in the unemployment rate leads to a 0.8 percentage point increase in ATTI poverty, compared to a 1.1 percentage point increase in PI poverty. This reduction in the cyclicity of poverty is an illustration of the magnitude by which the social safety exposure provides protection against shocks to earnings and income.

We next extend the analysis and regression model to explore whether the cyclicity of poverty in the Great Recession represents a significant change from historical patterns. In particular, we estimate the following model:

$$(2) \quad y_{st} = \beta_{80} D_{80} UR_{st} + \beta_{GR} D_{GR} UR_{st} + \beta_O D_O UR_{st} + \alpha_s + \delta_t + \varepsilon_{st}$$

We split 1980–2012 into three periods: the 1980s recession and expansion ($D_{80} = 1$), the Great Recession and expansion ($D_{GR} = 1$) and the rest of period ($D_O = 1$). The corresponding coefficients β_k measure the cyclicity over a given period k (there is no main effect, so comparisons across the periods can be done simply by comparing the coefficients). These periods are 1980–1989 for the 1980s recession and recovery, 1990–2006 for the rest of period, and 2007–2012 for the Great Recession, and are assigned based on the periods from the peak national unemployment rate to the

²² To be clear, the poverty thresholds are identical between the PI and ATTI measures. However, the relevant adjustments to cash income will be positive for some (reflecting the value of non-cash in kind benefits as well as the value of tax credits such as the EITC) and negative for others (reflecting the effect of taxes).

year prior to the subsequent peak of the national unemployment rate.²³ In this specification, we focus on β_{80} and β_{GR} , and test whether the cyclical responsiveness during the Great Recession is different from the 1980s cycle.

These results are presented in Panel B of Table 1. We are particularly interested here in the results for ATTI poverty and the comparison between the Great Recession (“UR x GR”) and the early 1980s recession (“UR x 1980s”). Looking at the results as a whole, there is not a consistent story across the income to poverty ratio distribution. Three of the four ATTI poverty cut-offs show more cyclicity in the GR in their response to the unemployment rate compared to the response of the 1980s recession (e.g. $\beta_{GR} > \beta_{80}$), but in none of the three cases are the differences statistically significantly different. The magnitudes and their differences are not trivial however. For example, column 5 shows that a one percentage point increase in the unemployment rate led to a 4.0 percent increase in ATTI extreme poverty in the 1980s recession compared to a response of 5.5 percent during the Great Recession. The one statistically significant difference is for 100% of ATTI poverty where we find strong evidence that the responsiveness to the cycle is *less severe* in the GR compared to the early 1980s recession – a one percentage point increase in the unemployment rate led to a 5.7 percent increase in ATTI poverty in the 1980s recession compared to 3.1 percent in the Great Recession. This finding was evident in the time series presented in Figure 2 where the increase in ATTI child poverty for the U.S. was much greater in the early 1980s than it was in the GR.²⁴ Finally, for ATTI poverty measured at the higher income cut-offs (multiples of poverty), during the GR, a one percentage point increase in unemployment led to a 3.1 percent increase in ATTI below 150% poverty and a 2.6 percent increase in ATTI below 200% poverty. This compares to a 2.7 percent

²³ It is worth noting that our identification strategy leverages variation in the timing and severity of cycles across states. Yet we use the national cycle for unemployment to identify these three periods. We do this because of the focus here on the “national” Great Recession and possible changes in the safety net that have taken place during it.

²⁴ The regression model identifies the effects of cycles using variation across states in the timing and severity of the cycle. Figure 2 instead displays the national time series variation. In this case, the two approaches yield qualitatively similar conclusions.

response (for 150% ATTI poverty) and 1.6 percent (for 200% ATTI poverty) in the 1980s recession period.

Figure 6 illustrates the importance of the safety net while also showing the nature of the variation that underlies our regression model. The figure provides a scatterplot where the x-axis shows the change in the state unemployment rate and the y-axis shows the change in the state child ATTI concept of 100% poverty. Each point is a state pair, and we plot the changes in UR and poverty over the GR (peak to trough).²⁵ The points in black (filled circle) plot the data for PI poverty and the points in blue (open circle) plot the data for ATTI poverty. We also provide a best fit line (using the child population in each state as weights) of these points.²⁶ There are several things to point out with the figure. First, there is substantial variation in the severity of the labor market shock in the GR across states – for example Nebraska and Vermont experienced an increase in the UR of less than 2 percentage points, while California, Florida and Nevada had increases of more than 5 percentage points. It is this variation in the unemployment rates (as well as the year-to-year timing of the changes) that provides the identification in our model. Second, and importantly, it compellingly helps to visualize the effect that the social safety net plays in mitigating the increases in poverty from the Great Recession. The slope of the line for private income is much steeper (dashed line) than the slope for the ATTI measure (solid line). Thus, the relationship between the size of the shock and the resulting change in child poverty is significantly lessened by incorporating the effects of the social safety net – in both cases the relationship between changes in the unemployment rates and changes in poverty is positive, but that this relationship is stronger for the PI poverty concept compared to ATTI poverty.

²⁵ Because of small sample sizes in some states, we combine three years of data for the peak and trough – in particular the change is from the average for 2005-2007 to the average for 2010-2012. This is the same combination of years as we used above in Figures 3 and 4.

²⁶ The slope of this best fit line essentially captures the coefficient presented in panel B of Table 1 (e.g., UR x GR). It is not identical because here we have a single “long difference” and the table uses data through 2012.

As a robustness exercise, we present a similar set of results in Appendix Table 2, where we instead use the EPOP rate as the measure of the state-year cycle. As with Table 1, we present results for PI and ATTI poverty and for the pooled sample period (Panel A) as well as providing specifications that allow for differential effects in the Great Recession (Panel B). Broadly speaking, the qualitative findings are similar regardless of whether we use the unemployment rate or EPOP as our measure of the cycle. All coefficients for the effect of the business cycle on measures of poverty are countercyclical and highly statistically significant (here the coefficients are negative so an increase in the EPOP—representing an improvement in labor market conditions—leads to a reduction in poverty), and the magnitudes of the percent impacts are strikingly similar for the unemployment rate and EPOP.²⁷ There are, however, a few differences to point out. First, the results in Panel B show that both 100% and 150% ATTI poverty are statistically significantly *less* cyclical in the GR compared to their cyclicity during the early 1980s recession using EPOP as the measure of the cycle (whereas in Table 1 using the UR this finding was only present for the ATTI 100% poverty measure). As before, extreme child ATTI poverty (under 50%) and being under 200% ATTI poverty are more cyclical during the GR compared to the early 1980s recession, but not statistically significantly so.

6. Discussion

Our main results show that child poverty is highly cyclical and the cyclicity is much more noticeable at lower points in the income distribution. This is consistent with the broader work on the cyclicity of the labor market, with lower skilled workers experiencing more cyclical risk (e.g.,

²⁷ A percent impact of “x” implies that a one percentage point increase in UR (or EPOP) leads to an x% increase in the poverty rate. One might be worried that these two marginal effects (a one percentage point change in UR versus a one percentage point change in EPOP) might represent very different changes relative to the magnitude of the overall fluctuations in these measures during the Great Recession. However, as shown in Figure 1, the change in the EPOP is quite similar (although oppositely signed) from the change in the UR. For example, in the Great Recession, annual unemployment rates increased from 4.6% to 9.7% while the annual EPOP fell from 61.5% to 57.2%—both representing changes of around 5 percentage points.

Hoynes, Miller, and Schaller 2012). Our results for an after-tax and transfer income measure of poverty compared to private income poverty show that the safety net indeed provides protection, and the cyclical nature of child ATTI poverty is less severe compared to the cyclical nature of child PI poverty. The effects of the responsiveness of the safety net are especially evident at the bottom of the income distribution. Given the massive job losses, historic unemployment durations, and the weak recovery, there was a real risk that child poverty would sky rocket with increases in the negative business cycle impacts. Our work shows that it did not, and that the safety net served to help buffer the private income losses in the Great Recession for children.

Our comparison of the GR to the early 1980s recession showed changes in the protection provided by the safety net for children. Extreme ATTI poverty rose by more for a similarly sized increase in the unemployment rate than we would have expected from the evidence from the 1980s recession (although the differences are not statistically significant). On the other hand, the ATTI 100% measure of poverty rose by less than we would have expected given the historical relationship in the early 1980s recession. Findings for ATTI poverty at the higher ratios of income to poverty (150% and 200%) during the GR were more mixed, and relative cyclical nature in the GR compared to the early 1980s recession depended on the measure of the business cycle we used - the state unemployment rate or the EPOP (although the results were never statistically significantly different across the GR versus early 1980s recession for the measure of 200% of ATTI poverty).

To gain some insight into the role of the specific elements of the safety net and the role they play over time, Figure 7 presents a summary of income components by source for our sample of children from the CPS. In particular, we calculate the share of total ATTI income by source for children living in extreme poverty (less than 50% of poverty, panel A); and do the same for those below 100% of poverty (panel B), those below 150% of poverty (panel C), and those below 200% of poverty (panel D). In each panel, we plot the share of ATTI income for each of five sources (earned

income, AFDC/TANF, EITC, Food Stamps, and UI²⁸) for 2010 and 1982. Several facts emerge from looking at these graphs. Earned income has declined as a share of ATTI for those with incomes below each multiple of the poverty level. The impact of welfare reform is notable – income from AFDC/TANF has declined significantly. Additionally, during this period, EITC went from being a very small program (in 1982 the maximum credit was \$500) to the sizable program that it is today. And the importance of the EITC is strong and notable at 100%, 150% and 200% of poverty. Finally, we see the importance of Food Stamps has risen, in part because of the stimulus expansions. UI, on the other hand, is both small in magnitude and shows little change compared to 1982.²⁹

With this backdrop, the finding of *greater* cyclicity during the GR for extreme child ATTI poverty is consistent with welfare reform and the large corresponding declines in participation in the cash welfare safety net. In earlier work (Bitler and Hoynes, 2014) we used administrative data on AFDC/TANF caseloads and program expenditures and estimated models similar to those presented here in Table 1. We found dramatic evidence that TANF participation and benefit amounts are not responding to changes in economic need in the GR; this is in contrast to findings during the pre-welfare reform era when AFDC did provide protection (albeit at very low benefit levels) in economic downturns. We also found that extreme poverty is significantly more cyclical during the GR for the broader sample of the non-elderly.

The changes for 100% ATTI child poverty, showing *more* protection (less cyclicity) of the safety net in the GR, are more likely the result of either changes or more take-up of SNAP, UI and the EITC. All three of these programs were expanded as part of the stimulus and the general policy environment during the GR. Our analysis of income by source above reveals that these income

²⁸ To maintain a comparable measure over time, the UI income is actually the combined income from workers' compensation, veterans' payments and unemployment compensation. (In early years, amounts were not asked separately for these income sources.) In these peak recession years, the vast majority of income is from UI.

²⁹ As shown by Meyer, Mok and Sullivan (2009), the underreporting of social safety net programs in household surveys has increased over time. This could explain some of the decline shown for TANF and perhaps the "no change" for UI, but makes the increase for SNAP more striking.

sources are important for children in households with ATTI income below 100% of poverty. We also estimated state panel data models for administrative data on SNAP, EITC, and UI caseloads and expenditures and could not reject that these programs were responding similarly in the GR and early 1980s period, but the point estimates suggested greater protection in the GR (Bitler and Hoynes 2014), a result that is echoed here.

To investigate further the role played by changes to the safety net, we extended our earlier models by including pre-GR measures of the social safety net generosity in each state. In particular, we estimated the following:

$$(3) \quad y_{st} = \beta_{lo}PLO_sUR_{st} + \beta_{hi}(1 - PLO_s)UR_{st} + \alpha_s + \delta_t + \varepsilon_{st}$$

where PLO_s is a dummy indicating that state s had a low level of safety net generosity (relative to other states; we consider several measures and define them below). We measure the generosity of the safety net on the eve of the GR (in 2006) and we limit this analysis to the GR period (years 2006-2012). In this model, we expect that $\beta_{hi} < \beta_{lo}$, that is, states with more generous safety nets would experience less cyclical poverty.

We estimated this model with several alternative policies including TANF ($PLO = 1$ if state TANF benefit levels are below the median or $PLO = 1$ if state TANF program spends less than the median state on cash benefit payments), UI ($PLO = 1$ if state UI replacement rate is below the median), EITC ($PLO = 1$ if state has an EITC add-on to the federal credit) and SNAP ($PLO = 1$ if state does not have an expansion for broad based categorical eligibility).³⁰ In none of these models did we find a statistically significant role for the specific policies that states had in place pre-Great Recession. Figure 8 provides an illustration of this finding for two policies, TANF and UI. We present state scatterplots similar to those presented above, with the change in the child PI and ATTI 100% poverty on the y-axis. Here we plot this against the policy variable on the x-axis and again we

³⁰ Broad based categorical eligibility allows eligibility for those with gross income under 200% of poverty but still net income under 100% of poverty.

plot the change in the child PI poverty percent (in black) and the child ATTI poverty percent (in blue). Figure 8a is based on a measure of the generosity of state's TANF policies, where we use the state's TANF benefits relative to poverty. Figure 8b is based on a measure of the generosity of each state's UI policy, where we use the average replacement rate (Kuka 2014) to measure generosity. These figures show that there is no relationship between the generosity of the state safety net going into the GR and the resulting change in child ATTI poverty. Other policies we considered had similar null findings.³¹

It would be incorrect to conclude that the safety net did not affect child poverty in the GR and its aftermath. Our earlier results showed conclusively that child poverty is significantly less cyclical when we include the elements of the social safety net in the measure of income of resources we compare to the poverty thresholds. However, variation in the generosity of state safety net policies on the eve of the GR does not help explain these differences. Several possibilities remain. First, by leveraging state variation in safety net generosity while controlling for state and year fixed effects, we may miss the potentially very important effects of the federal stimulus as well as the extensions to UI durations for which statutory rules about the tie of unemployment to child poverty which did not vary across states. Our state panel design is not well suited to identify the effects of those policies which affected all states at the same time (these are subsumed by the year effects). Second, the variation in safety net generosity *across states* is much smaller than the *yes/no* difference in federally mandated levels of the safety net programs that underlies our comparison of ATTI versus PI poverty. When we compare ATTI to PI poverty we are considering the world with current policies versus one *without the programs*.³² Figure 8b shows that the UI replacement rate varies from 35 to 65 percent,

³¹ This scatterplot is not quite the same as the regression we describe. First, our regressions use discrete comparisons between states (e.g., *PLO* versus *PHI* above in equation 3) while the figures illustrate effects across a continuous measure of the safety net in 2006. Second, in the regressions we are comparing the response of poverty to a change in UR across high and low safety net states while the graphs show the simple correlation between policies and outcomes (without the measure of the cycle). But the figures and regressions still illustrate the same results – we find no predictive power for these specific policy variables in explaining the protective elements in the GR.

³² This comparison is a “static” one; that is we examine the effects without the safety net programs but all else remaining constant. This misses some potential behavioral responses.

with most states in the 45-55 percent range. This is a *relatively* small amount of variation compared to eliminating the program all together.

8. Conclusion

During the 1990s and early 2002, we saw mild business cycles (some called this period the Great Moderation). Beginning in 2007, the Great Recession led to unemployment rates unseen since the deep recessions of the early 1980s. At the same time significant changes in the safety net both before and during this most recent downturn make it important to explore the role of the safety net in providing protection during the Great Recession. We focus on child poverty, as children experience some of the highest poverty rates of any group in the United States.

In this paper, we explore the role of the social safety net in buffering families against economic shocks, and test whether this relationship has changed significantly during this most recent downturn. We consider two child poverty measures – private income (PI) poverty and after-tax and after-transfer income (ATTI) poverty. By comparing the response of these two poverty measures across the business cycle, we gain insights into the role played by the social safety net in protecting children’s resources against economic shocks. We use CPS data covering the period 1980-2012 and estimate state-year panel data models where we measure state business cycles using unemployment rates. Our results are identified using the significant and sizeable variation in the timing and severity of the business cycle across states. We then test whether there is evidence that this relationship is different in the current recession.

We find that child poverty is cyclical and the cyclicity is larger in magnitude at lower points in the income-to-poverty ratio distribution. This finding is true historically and continues to be evident in the Great Recession. The safety net as a whole provides significant protection, and the cyclicity of after-tax and transfer income poverty is significantly lower than the cyclicity of the pure market based poverty measure (private income). We find that our measure of after-tax and

transfer income child poverty (ATTI is below 100% of poverty) in the current period is less cyclical than it was during the early 1980s recession. On the other hand, extreme ATTI child poverty (ATTI is less than 50% of poverty) has become more cyclical in the current period (although the differences compared to the 1980s recessions are not statistically significant). These results suggest that the changes in the safety net – declines in generosity and takeup of the AFDC/TANF program, which affect primarily extreme poverty, and increases in the generosity of and takeup of Food Stamps, the EITC and UI at higher income levels – have affected levels of child poverty in the Great Recession.

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Data Appendix

Contractions/Expansions: We identified annual periods of contractions as the range of years from lowest to highest annual unemployment and the expansions as the range of years from the highest to lowest annual unemployment rates that are near the beginning and end points of the various NBER recessions. We pooled the 2 early 1980s recessions into one contraction. The annual contraction periods are 1979-1982 (NBER recessions: 1/1980-7/1980, 7/1981-11/1982), 1990-1992 (NBER recession: 7/1990-3/1991), 2001-2003 (NBER recession: 3/2001-11/2001), and 2007-2012 (NBER recession 12/2007-6/2009).

Unemployment for U.S. and by state: Number of unemployed and unemployment rate for U.S. and states, annually and by month, come from the Bureau of Labor Statistics' Current Population Survey, accessed from: <http://www.bls.gov/lau/>. The monthly numbers used in the paper are seasonally adjusted.

Population for U.S. and by state: U.S. population from the Economic Report of the President, <http://www.gpoaccess.gov/eop/2012/B34.xls>. State population is from National Cancer Institute SEER data (<http://seer.cancer.gov/popdata/download.html>) for 1980-2012.

Data sources for Figure 5

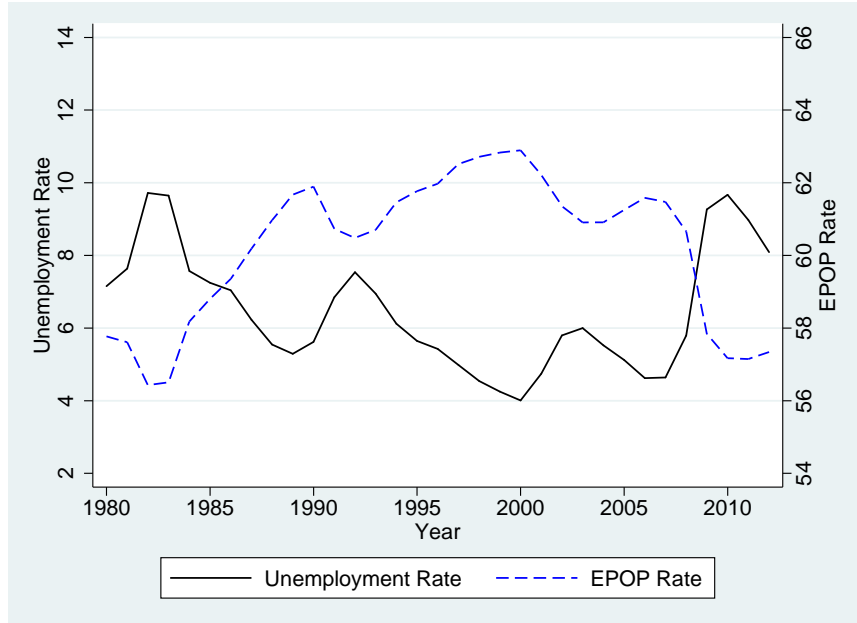
AFDC/TANF: Expenditures are annual total program expenditures during the AFDC period and are expenditures on cash benefits for the TANF period. AFDC expenditure data are not available online but were provided by Don Oellerich at ASPE/HHS. TANF expenditures are from <http://www.acf.hhs.gov/programs/ofs/data/index.html>. TANF cash expenditures are defined as "Column B of Table F-3, combined spending of federal and state funds with ARRA expended in Fiscal Year 2009, line 5a, basic assistance."

Food Stamp: Expenditures come from unpublished USDA data generously provided by Katie Fitzpatrick and John Kirlin, of the Economic Research Service, USDA.

Unemployment Insurance: Data for calendar year 2012 comes from unpublished data provided by the Office of the Chief Economist at the Department of Labor. Data for calendar years 1980-2011 comes from various downloads at the Department of Labor Website (DOL, 2014).

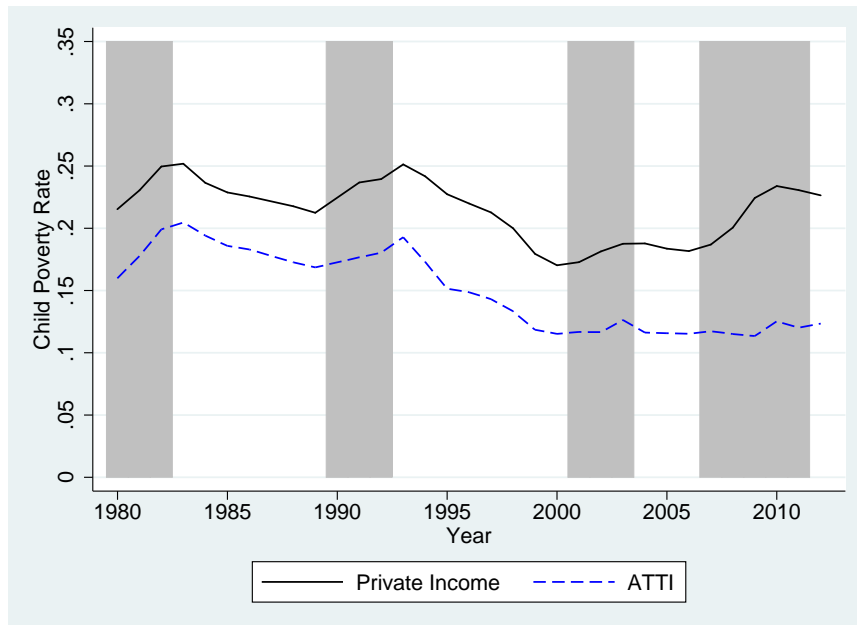
EITC: Expenditures are the total tax cost of the credit (including the reduction in taxes paid and the amount refunded). Data on the total tax cost comes from the Tax Policy Center downloaded from <http://www.taxpolicycenter.org/taxfacts/displayafact.cfm?Docid=37> (1980-2009). Data for 2010-2012 comes from various releases of the "Statistics of Income Individual Income Tax Returns Publication 1304" U.S. Department of Treasury, Internal Revenue Service.

Figure 1: Annual Unemployment Rate and Employment to Population Ratio



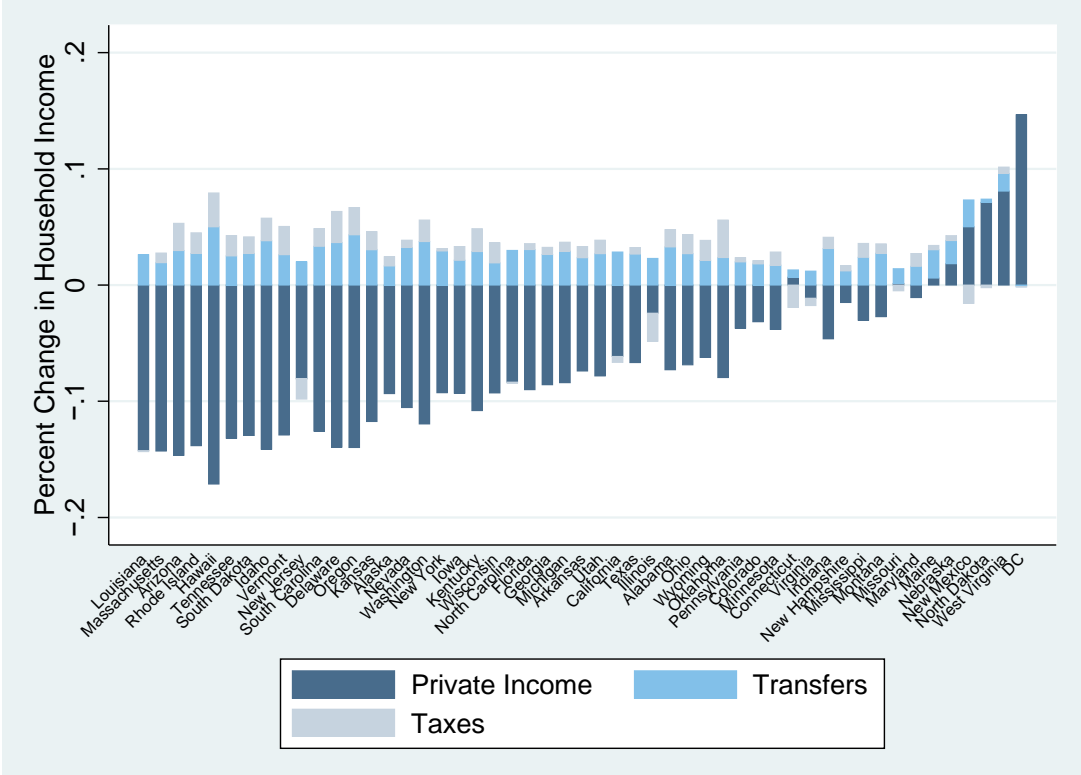
Notes: Measures directly available from published sources; see data appendix.

Figure 2: Annual Private Income and After-Tax and After-Transfer Income Poverty for Children



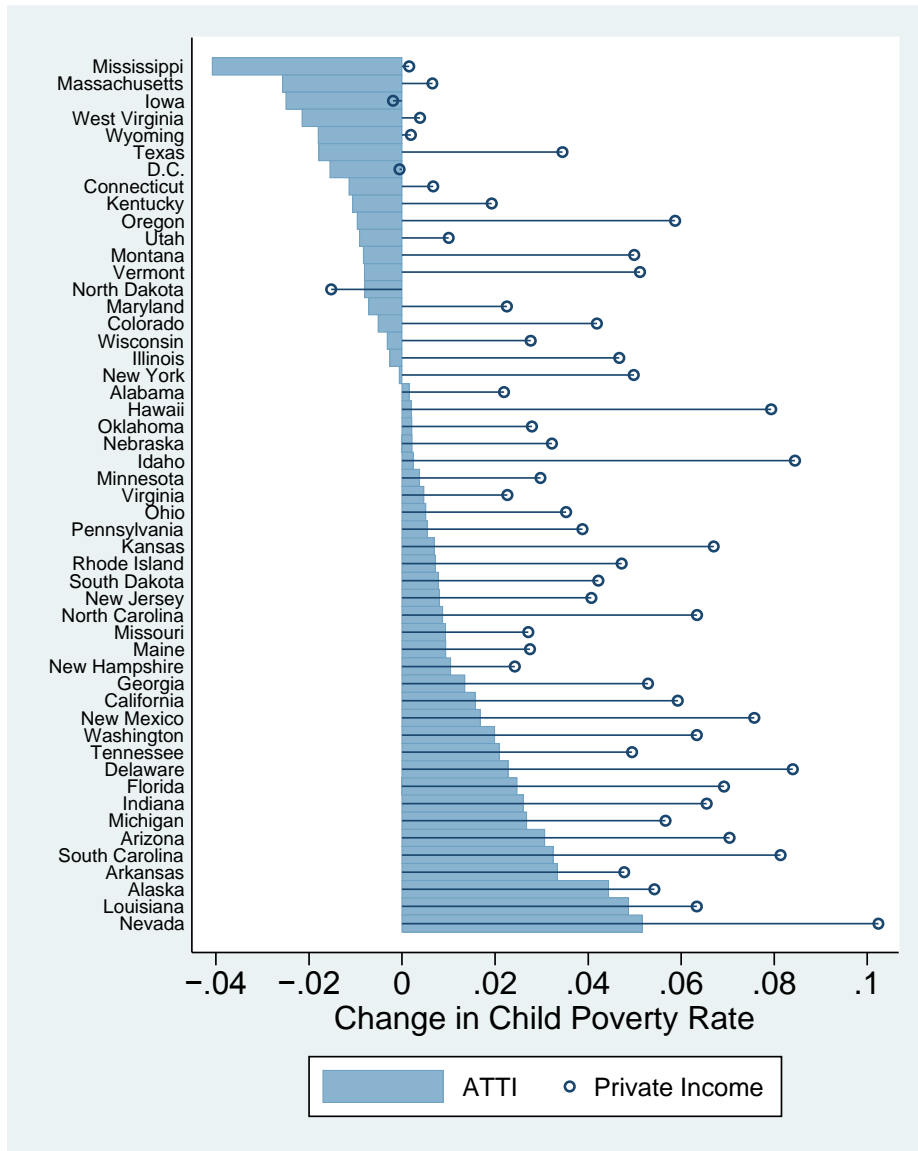
Notes: Data are from the 1981-2013 Annual Demographic File (March) of the Current Populations Survey (CPS). Poverty refers to percent of children living in households with income below the poverty line in the preceding calendar year, using various concepts for resources. Private income includes only wages and salaries, self-employment, and private transfers. ATTI includes public in-kind and cash transfers and nets out taxes and tax credits. For more details, see data appendix.

Figure 3: Percent Change in Average State Income by Source in the Great Recession for Children



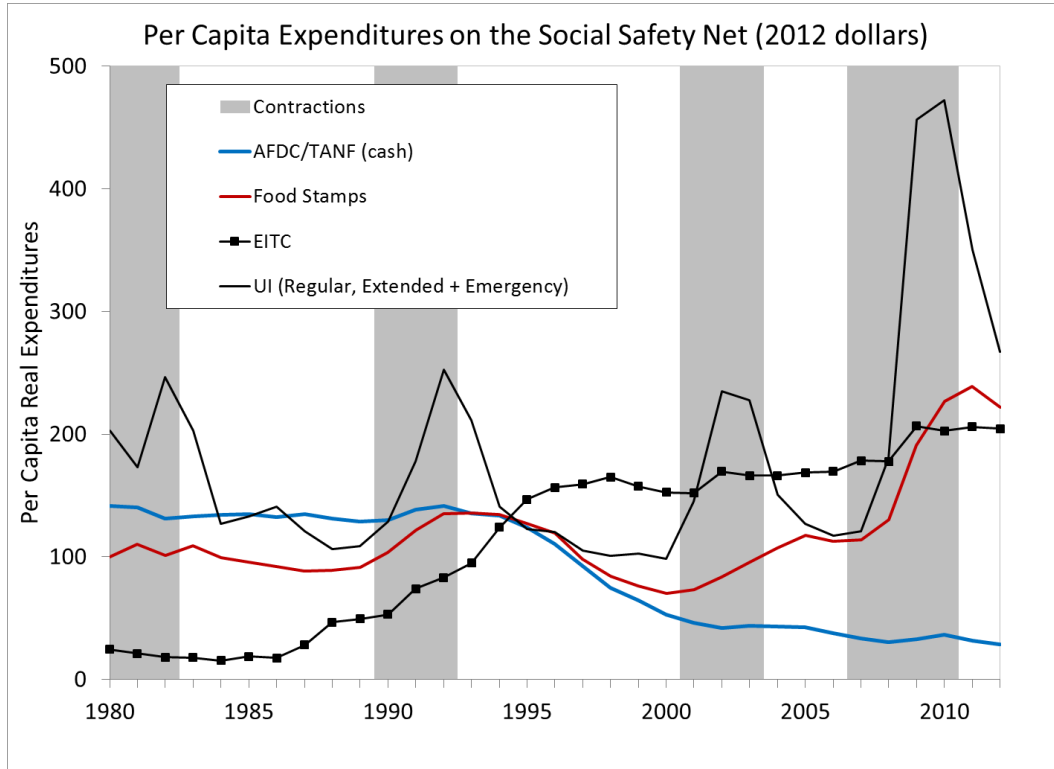
Notes: Data are from the 1981-2013 Annual Demographic File (March) of the Current Population Survey (CPS). Changes in sources of income for children are computed as the difference between the 2005-2007 weighted average of state household income and the 2010-2012 weighted average of state household income.

Figure 4: Change in Private Income Child Poverty Measure and After-Tax and Transfer Income Child Poverty Measure during the Great Recession



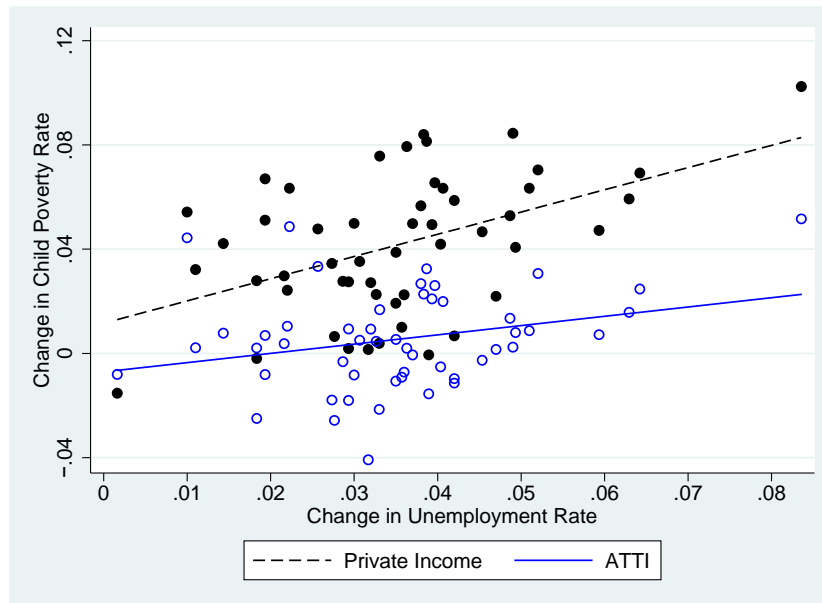
Notes: Data are from the 1981-2013 Annual Demographic File (March) of the Current Populations Survey (CPS). Poverty refers to change in the share of children living in households with income below the poverty line. Changes in poverty are computed as the difference between the 2005-2007 weighted average state poverty rate and the 2010-2012 weighted average state poverty rate.

Figure 5: Per Capita Real Expenditures on Cash and Near Cash Safety Net Programs, 1980-2012



Notes: Contractions are annual periods of labor market contraction that closely follow NBER official recessions. Official recessions are dated monthly; we assigned our contraction periods to encompass the periods of rising unemployment rates. Figure shows average per capita spending on the various programs. See data appendix for data sources.

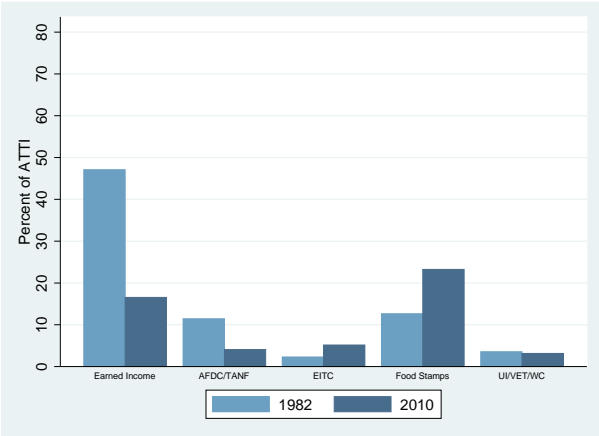
Figure 6: Change in Unemployment Rate and Child Poverty in the Great Recession, by State



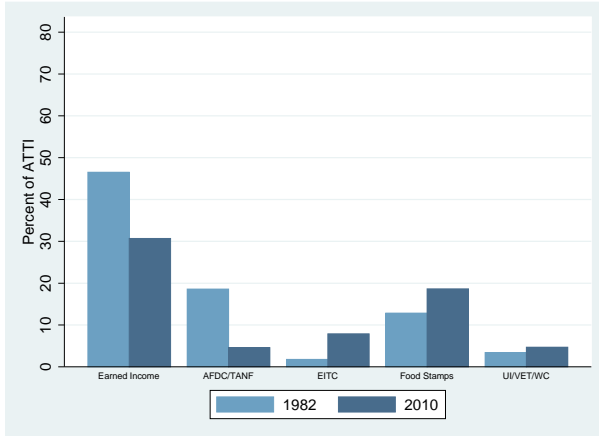
Notes: Data are from the 1981-2013 Annual Demographic File (March) of the Current Populations Survey (CPS) and the Bureau of Labor Statistics (BLS). Poverty refers to percent of children living in families with income below the poverty line. Changes in poverty and unemployment rates are computed as the differences between the weighted state average child poverty and unemployment rate (as a share) for 2005-2007 and the weighted state average child poverty and unemployment rate (as a share) for 2010-2012.

Figure 7: Composition of After-Tax and Transfer Income by Source for Children

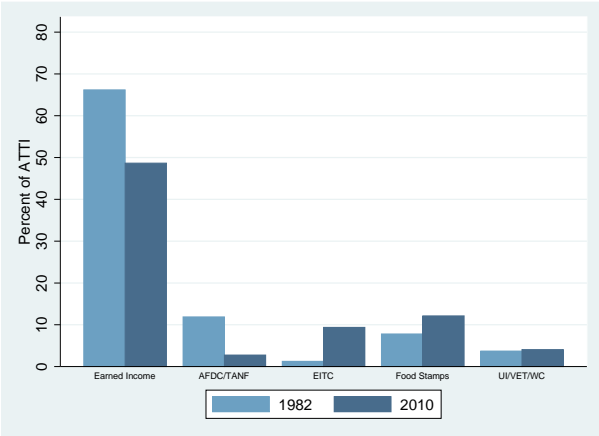
(a) Below 50% Poverty



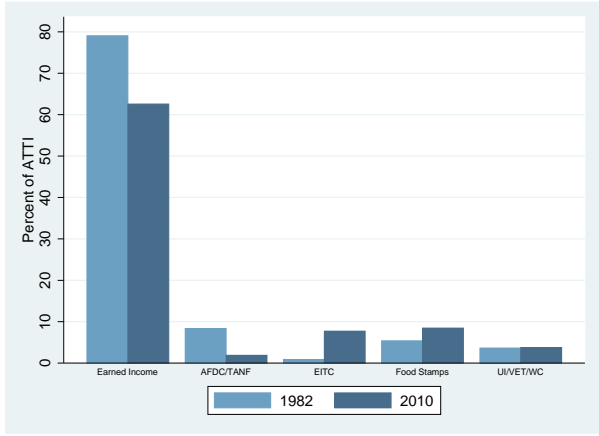
(b) Below 100% Poverty



(c) Below 150% Poverty

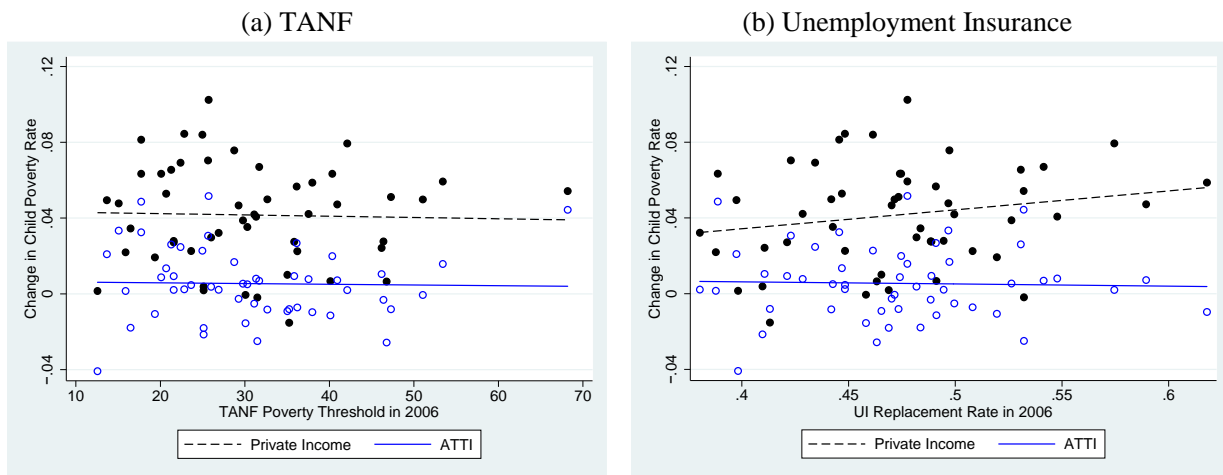


(d) Below 200% Poverty



Notes: Data are from the 1983 and 2011 Annual Demographic File (March) of the Current Populations Survey (CPS). Poverty refers to percent of persons living in households with income below the poverty line. For more details, see data appendix.

Figure 8: Changes in Child Poverty in the Great Recession versus Program Generosity, by State



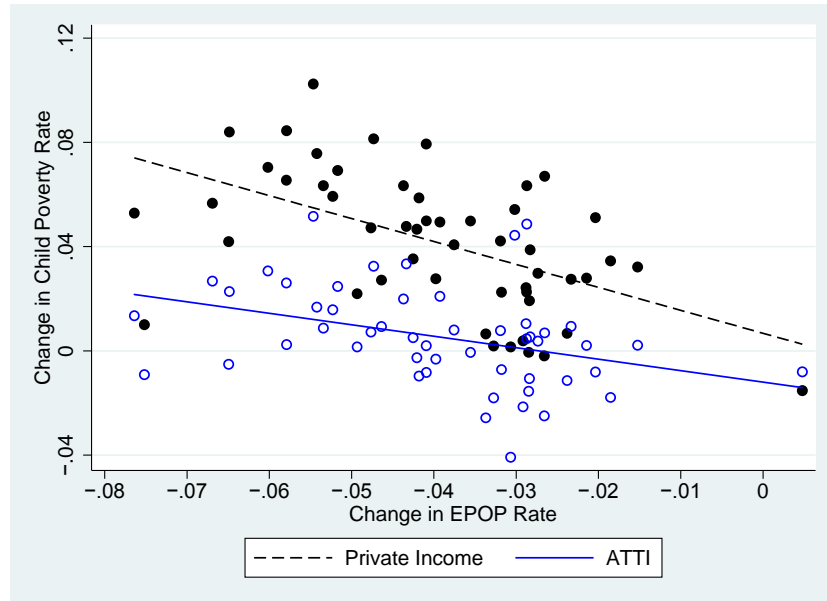
Notes: Data are from the 1981-2013 Annual Demographic File (March) of the Current Populations Survey (CPS). Poverty refers to percent of children living in households with income below the poverty line. For more details, see data appendix.

Table 1: Effects of Unemployment Rate on Private Income and After-Tax and Transfer Income Child Poverty

	Private Income Poverty				After Tax and Transfer Income Poverty			
	<50%	<100%	<150%	<200%	<50%	<100%	<150%	<200%
<u>A. Pooled Estimates 1980-2012</u>								
UR	0.772*** (0.086)	1.077*** (0.091)	1.129*** (0.128)	1.141*** (0.130)	0.179*** (0.035)	0.808*** (0.091)	1.019*** (0.148)	1.054*** (0.167)
<i>% Impact</i>	6.4	5.0	3.5	2.7	5.5	5.5	3.3	2.3
Mean y, full period	0.121	0.213	0.319	0.425	0.033	0.147	0.305	0.463
<u>B. By Period (1980s, GR, Rest of Period)</u>								
UR x 1980s	0.841*** (0.111)	0.993*** (0.123)	0.939*** (0.163)	0.899*** (0.166)	0.131** (0.052)	0.838*** (0.133)	0.824*** (0.188)	0.720*** (0.182)
UR x rest of period	1.158*** (0.156)	1.768*** (0.193)	1.831*** (0.241)	1.753*** (0.225)	0.302*** (0.067)	1.186*** (0.200)	1.628*** (0.243)	1.706*** (0.281)
UR x GR	0.329** (0.138)	0.702*** (0.163)	0.959*** (0.181)	1.147*** (0.195)	0.180*** (0.044)	0.449*** (0.089)	0.931*** (0.156)	1.217*** (0.247)
<i>% Impact, 1980s</i>	6.9	4.7	2.9	2.1	4.0	5.7	2.7	1.6
<i>% Impact, rest of period</i>	9.5	8.3	5.7	4.1	9.2	8.1	5.3	3.7
<i>% impact, GR</i>	2.7	3.3	3.0	2.7	5.5	3.1	3.1	2.6
p-value, GR = 1980s	0.003	0.173	0.940	0.388	0.531	0.021	0.650	0.154
N	1581	1581	1581	1581	1581	1581	1581	1581

Notes: Table shows the relationship between having household private income (columns 1-4) or after tax and transfer income (columns 5-8) below various multiples of the poverty threshold and the state unemployment rate. Data are from the CPS ASEC calendar years 1980-2012 and are collapsed to the state by year level (weighted). All regressions include controls for state and year fixed effects. The results are weighted by the sum of the CPS weights in the cell. Standard errors are clustered by state and shown in parentheses. * p<0.10, ** p<0.05, *** p<0.01.

Figure A.1: Change in Employment to Population Ratio and Child Poverty in the Great Recession, by State



Notes: Data are from the 1981-2013 Annual Demographic File (March) of the Current Populations Survey (CPS) and the Bureau of Labor Statistics (BLS). Poverty refers to percent of children living in families with income below the poverty line. Changes in poverty and EPOP rates are computed as the differences between 2005-2007 and 2010-2012 state (weighted) average poverty and EPOP rates.

Table A.1: Resource Measures used in Alternative Poverty Measures

	Poverty		
	Official	Private Income	ATTI Income
<i>Private Income</i>			
Wages and Salaries	X	X	X
Self-Employment Income	X	X	X
Farm Income	X	X	X
Returns from Assets	X	X	X
Child Support and Alimony	X	X	X
Private Disability and Retirement	X	X	X
<i>Transfers</i>			
Food Stamps			X
Free/Reduced Lunch			X
Housing Subsidies			X
LIHEAP			X
AFDC/TANF	X		X
Social Security	X		X
SSI/SSDI	X		X
EITC			X
UI/VET/WC	X		X
Stimulus Tax Credits			X
<i>Taxes</i>			
Federal			X
State			X
FICA Contributions			X

Table A.2: Effects of Employment to Population Ratio on Private Income and After-Tax and Transfer Income Poverty

	Private Income Poverty				After Tax and Transfer Income Poverty			
	<50%	<100%	<150%	<200%	<50%	<100%	<150%	<200%
A. Pooled Estimates 1980-2012								
UR	-0.701*** (0.079)	-0.884*** (0.102)	-1.033*** (0.141)	-1.082*** (0.157)	-0.104*** (0.033)	-0.562*** (0.103)	-0.951*** (0.157)	-1.172*** (0.193)
<i>% Impact</i>	-5.8	-4.1	-3.2	-2.5	-3.2	-3.8	-3.1	-2.5
Mean y, full period	0.121	0.213	0.319	0.425	0.033	0.147	0.305	0.463
B. By Period (1980s, GR, Rest of Period)								
UR x 1980s	-0.763*** (0.085)	-1.010*** (0.121)	-1.169*** (0.173)	-1.181*** (0.185)	-0.057 (0.049)	-0.738*** (0.130)	-1.108*** (0.178)	-1.186*** (0.214)
UR x rest of period	-0.739*** (0.087)	-0.909*** (0.112)	-1.050*** (0.149)	-1.111*** (0.162)	-0.126*** (0.032)	-0.566*** (0.116)	-0.978*** (0.167)	-1.221*** (0.205)
UR x GR	-0.556*** (0.081)	-0.692*** (0.098)	-0.848*** (0.136)	-0.913*** (0.164)	-0.113*** (0.037)	-0.357*** (0.096)	-0.721*** (0.159)	-1.060*** (0.211)
<i>% Impact, 1980s</i>	-6.3	-4.7	-3.7	-2.8	-1.7	-5.0	-3.6	-2.6
<i>% Impact, rest of period</i>	-6.1	-4.3	-3.3	-2.6	-3.8	-3.9	-3.2	-2.6
<i>% impact, GR</i>	-4.6	-3.2	-2.7	-2.2	-3.4	-2.4	-2.4	-2.3
p-value, GR = 1980s	0.013	0.004	0.026	0.087	0.297	0.001	0.009	0.499
N	1581	1581	1581	1581	1581	1581	1581	1581

Notes: Table shows the relationship between having household private income (columns 1-4) or after tax and transfer income (columns 5-8) below various multiples of the poverty threshold and the state employment to population ratio. Data are from the CPS ASEC calendar years 1980-2012 and are collapsed to the state by year level (weighted). All regressions include controls for state and year fixed effects. The results are weighted by the sum of the CPS weights in the cell. Standard errors are clustered by state and shown in parentheses. * p<0.10, ** p<0.05, *** p<0.01.