

**The More Things Change, the More They Stay the Same?  
The Safety Net and Poverty in the Great Recession**

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**ABSTRACT**

Much attention has been given to the large increases in safety net spending during the Great Recession. We examine the relationship between poverty, the social safety net, and business cycles historically and test whether there has been a significant change in this relationship during the Great Recession. We find that post-welfare reform, TANF did not respond during the Great Recession and extreme poverty is more cyclical than in prior recessions. Food Stamps and UI are providing more protection--or at least providing no less protection in the Great Recession--and there is some evidence of less cyclical for 100% poverty.

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## 1. Introduction

The Great Recession led to large increases in unemployment, rising to a peak of 15.6 million persons (seasonally adjusted) in October 2009. Employment declined by more than 8 million between January 2008 and December 2009.<sup>1</sup> While the recession officially ended in July 2009, the unemployment rate remained high, at 7.5 percent in April 2013, several percentage points above the low point prior to entering the Great Recession.

In the wake of this sharp downturn, the share of persons living in poverty increased substantially. Official poverty increased from 12.5 percent in 2007 to 15.1 percent in 2010, for a 21 percent increase during this three year period. The increases were much larger in parts of the country where the Great Recession was felt more acutely—for example in California, Florida and Nevada where the housing crisis was severe, poverty rates increased by nearly 30 percent or more.<sup>2</sup> This tight connection between labor market opportunities, economic growth and poverty reflects patterns experienced over prior business cycles.<sup>3</sup>

At the same time, the social safety net provided significant support to households affected by the Great Recession. Fueled in part by benefit increases as part of the economic stimulus, in 2011 SNAP (or food stamp) expenditures amounted to 72.8 billion dollars and more than one in seven people received benefits from SNAP. The maximum duration of Unemployment Insurance (UI) benefits was extended to up to 99 weeks, far beyond the normal maximum of 26 weeks or even the Extended Benefit maximum of 52 weeks in most states. The stimulus contained many provisions, such as the Making Work Pay tax credit and increases in SNAP, Unemployment Insurance, and the Earned Income Tax Credit (EITC), targeting lower-income families. Importantly, though, much of the potential assistance provided by the social safety net is not captured in official poverty statistics.

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<sup>1</sup> All employment outcomes in this first paragraph are seasonally adjusted.

<sup>2</sup> Between 2007 and 2010, poverty increased from 12.7 to 16.3 in California, from 12.5 to 16.0 in Florida and from 9.7 to 16.6 in Nevada.

<sup>3</sup> Bitler and Hoynes 2010; Blank 1989, 1993; Blank and Blinder 1987; Blank and Card 1993; Cutler and Katz 1991; Freeman 2001; Gunderson and Ziliak 2004; Hoynes, Page, and Stevens, 2006; Meyer and Sullivan 2011

Official U.S. poverty is based on cash, pre-tax income and thus in-kind and tax-based income sources (such as SNAP, the EITC, and tax credits more generally) are not reflected in official poverty. The substantial increase in official poverty may not fully reflect the change in resources experienced over the Great Recession.

Given this background, in this paper we comprehensively examine the performance of the social safety net in protecting the disadvantaged population in the Great Recession. In particular, we empirically estimate the relationship between poverty and business cycles historically and test whether there has been a significant change in this relationship during the Great Recession. We analyze traditional “cash” poverty as well as an alternative poverty measure that incorporates taxes and the value of in-kind transfers (Bitler and Hoynes 2010, Citro and Michael, 1995). Additionally, we examine the mediating role of four core safety net programs—Food Stamps, cash welfare (AFDC/TANF), the EITC, and UI—in buffering families from negative income shocks. Our concept of the social safety net is broader than one looking only at social assistance programs, which provide means tested transfers for low-income individuals (e.g., welfare, Food Stamps). It also includes both social insurance programs relevant in economic cycles (e.g., UI) and tax credits such as the EITC that are designed to provide income support to the working poor but are in practice a substantial source of redistribution.

Throughout the paper, we identify the impact of the business cycle using variation across states in the timing and severity of cycles. We estimate state panel data models and measure the economic cycle using the state unemployment rate. This approach allows us to estimate the cyclicity of poverty and of key elements of the social safety net. With these models, we test whether the cyclicity (of poverty and the safety net) experienced in the Great Recession represents a significant break from historical patterns. We present two such tests: in one we compare the Great Recession to the early-1980s cycle and in the other we allow for asymmetric responses during national contractions and expansions and test whether the Great Recession period is different from earlier contraction and recession periods. In robustness tests, we also measure the cycle using the

employment to population ratio, finding results that are largely consistent with those using the unemployment rate.

We use data covering the period from 1980 through 2012, a period capturing the severe downturns in the early 1980s and the Great Recession as well as the less severe recessions in the early 1990s and early 2000s. To analyze the cyclicity of the social safety net, we use high quality administrative data—allowing us to examine both caseloads and program expenditures. For our analysis of poverty, we use annual data from the Current Population Survey, the primary data source used by the Census for annual poverty statistics. We look at both official poverty and an alternative poverty measure which compares net of tax and transfer income to the same thresholds as the official poverty measure. We choose to limit our analysis to poverty rates among the nonelderly, given the greater connection for this group to fluctuations in the labor market.

This analysis yields several important findings. First, in the wake of welfare reform, the cash safety net (TANF) was not responsive in the Great Recession. Reflecting this loss in protection from a program that mostly pays benefits to those at the very bottom of the income distribution, extreme poverty (income less than 50 percent of the poverty threshold) became more cyclical. This finding of less protection at the bottom and more cyclicity of extreme post tax and transfer poverty is highly robust, across various specifications and measures of the business cycle. Second, the safety net programs receiving the most attention through the Great Recession (Food Stamps and UI) have effects that vary depending on how we measure the cycle, but either show more protection or are consistent with their behavior during previous historical cycles. These programs are more likely to affect households somewhat higher up the income distribution and we find some evidence of a reduction in cyclicity at 100% alternative poverty during the Great Recession period, suggesting more buffering there. At a broader level, we find that official poverty masks substantial insurance against loss of income provided by tax and transfer programs—overall the bulk of our post-tax and transfer poverty measures are significantly less cyclical than cash poverty throughout the period, including during the Great Recession.

## 2. The Social Safety Net in the Great Recession

We begin by examining the Great Recession and cycles in our historical setting. Here and throughout the paper, we focus on the period from 1980 through the most recent data available (typically 2012). This allows for the comparison across two severe contractions (that of the early 1980s<sup>4</sup> and the Great Recession) and two smaller contractions (that of 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. The current recession officially began in December 2007, and since that time the unemployment rate rose from 5 percent in December 2007 to a peak of 10.1 percent in October 2009. While the recession officially ended in July 2009, the unemployment rate remained high for longer after the end of the recession than it had in many other cycles (CBO, 2014). For example, it was 7.3 percent in July 2013 (seasonally adjusted), several percentage points above the low point prior to entering the Great Recession, a full four years after the end of the Great Recession. Based on the annual averages, shown in Figure 1, unemployment in the current recession increased from 4.6 percent in 2007 to 9.6 percent in 2010. Figure 1 also shows the employment to population ratio (EPOP). For the vast bulk of our sample period, these two measures track one another very well. However, as has been noted by many, in the recovery from the Great Recession the unemployment rate decline has not been accompanied by a correspondingly large increase in the EPOP.

In this paper, we explore how poverty has fluctuated over this 35-year period of varying labor market conditions. In this setting, we are particularly interested in understanding the mediating role of the social safety net. We start here by summarizing the main elements of the social safety net and how they have changed over this period, and in particular, during the Great Recession. Our analysis

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<sup>4</sup> 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.

is focused on four central elements of the social safety net: 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 welfare reform), the Earned Income Tax Credit (EITC), and Unemployment Insurance (UI). We examine these programs because they represent the key cash and near-cash elements of the safety net for the non-elderly. We remind the reader that our concept of the social safety net is not limited to social assistance programs (means tested transfers for low-income individuals, such as Food Stamps) but it also includes social insurance programs relevant in economic cycles (UI) and tax credits (the EITC) that are designed to provide income support to the working poor but are in practice a substantial source of redistribution.<sup>5</sup>

Cash Welfare (AFDC/TANF): Since its creation as part of the 1935 Social Security Act, AFDC has provided cash welfare for single-parent families with children eligible based on low income and assets. AFDC is a joint state-federal program whose benefit generosity varies substantially across states although few states ever provided benefits beyond extreme poverty levels (less than 50% of poverty).<sup>6</sup> Historically, AFDC had a very high benefit reduction rate (67% to 100%), leading to a high implicit tax rate on earned income (Moffitt 1983). Concerns about work disincentives (as well as disincentives to form two-parent families) led to federal welfare reform in 1996. Under the new program, Temporary Assistance for Needy Families or TANF, participation is limited to a maximum of five years of *lifetime* use; recipients are faced with work requirements (with financial sanctions for noncompliance); and in some states, recipients experience 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

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<sup>5</sup> The largest cash or near-cash safety net program is Social Security Old Age and Retirement benefits. Given our focus on the non-elderly, we do not analyze this program. SSI and SSDI are two other large programs which we discuss below. Other programs which are part of the safety net, but are smaller in magnitude or cover a smaller segment of the population include public housing, WIC, the National School Lunch and Breakfast programs, and state programs such as General Assistance (CBO 2013, Spar 2011).

<sup>6</sup> In 1996, on the eve of welfare reform, maximum benefits averaged about 39% of the poverty guideline. In 2011, the average state provided maximum benefits at about 37% of the poverty guideline (U.S. Department of Health and Human Services, 2014).

potentially eligible in the wake of this important reform, and a non-trivial share of spending was diverted to non-cash benefits.

Food Stamps:<sup>7</sup> Like AFDC/TANF, Food Stamps is a means tested program (whereby eligible families and individuals must satisfy income and asset tests). Unlike AFDC/TANF, Food Stamps is a federal program with little variation across states (although more state experimentation has happened recently). Additionally, Food Stamp eligibility is universal and not limited to certain targeted groups such as families with children, the aged, and the disabled. The benefit reduction rate is relatively low (30%), the income eligibility threshold is higher (130% of the poverty guideline for gross and 100% for net income) compared to AFDC/TANF. Thus, the program reaches higher than AFDC/TANF into the income distribution and serves the working and nonworking poor. Food Stamps is a voucher program (and thus not treated as cash income by Census for the purposes of official poverty) but benefits can be used to buy a wide array of food items (not prepared foods or alcohol) and the behavioral response to food stamps is 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 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 and later regulatory decisions, the USDA has encouraged states to make changes in how they implement program rules to ease access to benefits. This has led to relaxing of asset requirements and expanding eligibility in some cases beyond the gross federal income eligibility limit, in what has been called broad-based categorical eligibility (U.S. GAO 2007, Ganong and Liebman 2013, Ziliak 2013).

EITC: The federal EITC is a refundable tax credit primarily targeted to families with children. The EITC functions as an earnings subsidy and as such is only extended to working

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<sup>7</sup> The program originally known as the Food Stamp Program is now known as the Supplemental Nutrition Assistance Program or SNAP. For ease, we refer to it as the Food Stamp Program throughout.

families. The goal of the EITC is to increase after-tax income of lower earning taxpayers, primarily those with children, while incentivizing work. The expansion of the EITC, legislated by 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 2012 for a single taxpayer with two children, the maximum credit is \$5,236 (annually) and the phase-out range extends to those with earned income of up to \$41,952.

UI Benefits: Unemployment insurance is a social insurance program which provides temporary and partial earnings replacement for involuntarily unemployed individuals with recent employment. As a social insurance program, UI is not means tested, and eligibility and benefit levels are a function of earnings history. Recipients receive benefits for a fixed duration, typically up to 26 weeks, through *regular state benefits*, funded by payroll taxes while working. Under the *extended benefit* 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 UI; these programs tend to be relatively short lived and are explicitly countercyclical and fully federally funded.<sup>8</sup>

Although not our focus, it is worth mentioning SSI and SSDI, which provide cash benefits to the disabled. Supplemental Security Income (SSI) is a federal cash welfare program where eligibility is limited to disabled adults, disabled children, and aged (age 65 or older) low-income persons. The Social Security Disability Income (SSDI) program is a social insurance program, funded by payroll taxes while working, and benefits depend on employment and earnings history. Eligibility for SSI and SSDI requires establishing a documented work-limiting condition, the inability to engage in

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<sup>8</sup> States administer their programs and set payroll taxes and benefit levels. Funding for regular state benefits are paid by the state trust fund while fiscal responsibility for the extended program is shared by the states and the federal government. Recently, the emergency extensions have been fully federally funded. During some downturns, the federal government has also helped fund the extended program and states can borrow from the federal government to fund expenditures from their UI trust funds.



“substantial gainful activity.”<sup>9</sup> We point ahead to Figure 3, which plots (among other things) SSI and SSDI spending per capita. It is clear from this figure that the disability programs do not exhibit clear cyclical variation in aggregate spending. The graph does show the dramatic (for SSDI) and steady (for both) increase in expenditures in the disability programs throughout the period, which to some extent has been linked to structural changes in the labor market (Black, Daniel, and Sanders 2002, Autor and Duggan 2003). We do not devote sustained attention to SSI/SSDI from here on.<sup>10</sup>

How did these tax and transfer programs change in the Great Recession? Initially, many states qualified for and received Extended Benefit programs for UI.<sup>11</sup> In 2009 the federal stimulus (American Recovery and Reinvestment Act or ARRA) was passed. The ARRA contained many provisions, some providing temporary expansions to the social safety net. First, the stimulus shifted the full cost of UI extended benefit programs to the federal government (causing more states to opt in). Additionally, in June 2008 Congress enacted the Emergency Unemployment Compensation program, which (eventually) raised maximum UI benefit durations to as long as 99 weeks. The ARRA also included a 13.6 percent increase in monthly maximum food stamp benefits (e.g., \$80 per month for a family of 4), a \$25 increase in weekly UI benefits, and a suspension of the three-month time limit for food stamp receipt for able bodied childless adults. Finally, the 2009 ARRA included a new tax credit – the Making Work Pay Tax Credit – providing a credit up to \$400 per worker and expanded the EITC (adding a more generous schedule for families with three or more children).

These four core programs – Food Stamps, AFDC/TANF, EITC, and UI – together create a patchwork of assistance, affecting different groups and providing differing levels of assistance.

Figure 2 illustrates a central dimension of these differences by plotting participation in the four

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<sup>9</sup> Under SSI, children are determined to be disabled if they have impairments that cause “marked and severe functional limitations.”

<sup>10</sup> While not a focus in the literature, there is some evidence on the cyclicity for these programs (Cutler, Meara, and Richards-Shubik 2012; Bound, Burkhauser, and Nichols 2013). More recently, Mueller, Rothstein, and von Wachter (2013) find no evidence that SSDI applications are caused by UI benefit expiration during the Great Recession. Schmidt (2013) finds a somewhat increased level of cyclicity for SSI post welfare reform.

<sup>11</sup> As noted above, these costs are typically split between the states and the federal government. Some states chose not to participate. See Rothstein (2011) for a comprehensive documentation of UI over the Great Recession.

programs as a function of the ratio of private income relative to poverty thresholds, using the Current Population Survey.<sup>12</sup> While we fully discuss the CPS below, the figure is created using a sample of nonelderly persons and is based on income and program participation at the household level. Private income includes all earned and unearned cash income excluding all government taxes and transfers; and the figure truncates the sample at 8 times the poverty threshold (around the 90<sup>th</sup> percentile of the 2010 and 2012 distributions). Figure 2a provides the tabulation for calendar year 2010, in the depth of the Great Recession (the period of highest annual unemployment rates). The figure shows that only the lowest income-to-poverty ratio families are receiving TANF (and even at the lowest income-to-poverty threshold levels, the participation rate is relatively low). Food Stamps and the EITC receipt are both much more common and extend further up the income-to-poverty distribution compared to TANF (reflecting their higher limits on income eligibility). The lack of means testing in UI is reflected in the much more uniform distribution of UI participation across income-to-poverty. The differences across the programs are also illustrated in the characteristics of persons receiving benefits. Appendix Table 1 shows that TANF and Food Stamps (compared to UI) are more likely to be received by those with lower education levels, by nonwhites, and by the never married.

As in much of the rest of the paper, we find it useful to compare the experience in the Great Recession to another recessionary period. We use the early 1980s recessions, which, prior to the GR, represented the largest labor market shock of the post-war period, as our comparison. Figure 2b provides household program participation by income-to-poverty for 1982 at the height (highest annual unemployment rate) of the early 1980s recession. Comparing 2010 to 1982, the figures show the dramatic decline in the importance of AFDC/TANF; which is an important result that holds throughout our analysis. Additionally, compared to the early 1980s recession, in 2010 Food Stamp

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<sup>12</sup> Meyer, Mok and Sullivan (2009) document that household surveys underreport government program participation and transfer payments and find that the rate of underreporting is increasing over time. Wherever possible, in this paper, we make use of administrative data on program participation and expenditures. However, these administrative data do not allow tabulations by household income nor do they allow for calculations of poverty or multiple program participation. Thus we use the CPS to complete our analysis.

participation is higher (particularly in the 100% to 200% of poverty range) and the EITC is a much more important program. On the other hand, a somewhat smaller share are receiving UI.<sup>13</sup> Appendix Figure 1, which plots household program benefits in 2010 (Appendix Figure 1a) and 1982 (Appendix Figure 1b), highlights the differences even more strongly. The figures show that AFDC was a much more important source of income for those at the lowest income-to-poverty levels during the 1980s recession than TANF was during the GR. The growth of the EITC is quite prominent as well.

Given the many changes in the safety net over the intervening period, it is also of interest to understand the extent to which households are participating in more than one of these programs, especially given concerns about cumulative work disincentives (Mulligan 2012). While total per capita spending can be obtained by simply adding up the administrative totals, to understand multiple program participation we need data on simultaneous participation in these programs and here we again use the March CPS. Among nonelderly persons living in households where someone obtained UI, in 1982 14% also had someone receiving Food Stamp benefits; this number rose to 20% in 2010, reflecting the increase in Food Stamp participation overall. However, for these nonelderly individuals in households with some UI, very few participate in other programs—in 2010, only 3.1% received TANF and 4.3% received SSI.<sup>14</sup> To analyze multiple program participation for Food Stamp recipients, we also use administrative data (Food Stamp Quality Control data) and while these data do not go back as far, we compare participation for 2001 and 2010. We find a large and important decline in participation in TANF among Food Stamp participants; only 8% of Food Stamp units have TANF income in 2010, while fully 23% did in 2001. Receipt of UI among Food Stamp units is quite low but increasing over this period (from 2% in 2001 to 6% in 2010).

To illustrate the broader trends and highlight some of the above-mentioned changes in the

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<sup>13</sup> Given the possible increase in underreporting of some of these programs over time (Meyer, Mok and Sullivan 2009), the increase in SNAP is even more striking. The reduction in UI participation could in part be explained by these trends in reporting.

<sup>14</sup> Moffitt (2014) uses the SIPP to look at multiple participation among SNAP recipients, finding that multiple program use has fallen over time.

safety net programs over the longer term, in Figure 3, we plot real per capita expenditures from 1980 to 2012 for the four social safety net programs (using administrative data). Here TANF is limited to the portion of TANF expenditures that goes to cash benefits. The figure also indicates contractionary periods, which we construct based on annual unemployment rates.<sup>15</sup> As is clear on this figure, UI is a central income replacement program in recessions and the increase in UI expenditures in the Great Recession is striking. Somewhat less dramatically but also notable, Food Stamp spending increased substantially in the Great Recession, while the EITC and TANF remained relatively unchanged (and potentially less connected to the cycle). Table 1 reports the program totals for 2010, in the depth of the Great Recession. In 2010, UI expenditures totaled \$144.3 billion, followed by Food Stamps at \$70.1 billion and the EITC at \$59.6 billion, with TANF amounting to \$11.3 billion (2012 dollars). Of the total UI spending, the emergency program is very large—emergency benefits were about \$74 billion compared to a *combined* \$71 billion for regular and extended benefits.

Figure 3 also illustrates features of the safety net over this time period that motivate our work. First, in the wake of the 1996 federal welfare reform, cash TANF (and, not shown here, all TANF) is a very small program and its reach and protection in cycles appears to be limited. Second, with the decline of AFDC/TANF (as a result of welfare reform) and the expansion of the EITC, the safety net for low-income families with children has transformed from one subsidizing *out-of-work* families into one subsidizing *in-work* families. This may have implications for the extent of government protection in recessions for disadvantaged persons. Third, repeated federally-funded expansions to UI have led to longer maximum benefit durations and more income protection. Importantly, note the vastly larger spending on total UI in the time series in the GR compared with previous recessions, even the early 1980s ones. Finally, benefits disbursed through the Food Stamp program have dramatically expanded in the Great Recession.

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<sup>15</sup> The official NBER recession dating is monthly. 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) or Appendix Table 2 or the data appendix for more information on the annual dating.

Given these changes to the safety net, we are interested in exploring how and to what extent these programs are providing protection to at-risk families in the Great Recession. In particular, we explore how the reductions in labor market opportunities in the Great Recession translate into changes in poverty and family well-being. Has the growth in the social safety net buffered families against the adverse impacts of the Great Recession? How does this compare to prior recessions?

### **3. The Cyclicity of the Safety Net, Historically and in the Great Recession**

Here we document the empirical relationship between economic cycles and safety net programs historically and test for a change in that relationship in the Great Recession. We do so using administrative data at the state-year (or in some cases, state-month) level from Food Stamps, AFDC/TANF, UI and the EITC. In particular, we present two measures of the safety net – the number of recipient units (which we refer to as the “caseload”) and program expenditures (in 2012 dollars). For AFDC/TANF, Food Stamps, and the EITC, the administrative unit is the family, household, or tax unit and our caseload measure is a count of those units. For UI, the administrative unit is the person and the data are reported as weeks of UI receipt per year; we convert this to the total population probability of being on UI for 52 weeks, constructed by dividing total weeks within the year by 52. Our UI measure is comprehensive and includes its three elements: regular state benefits, state extended benefits and emergency benefits. We divide each of the caseload and expenditure measures by the total state population (available annually), generating per capita caseloads and real expenditures.<sup>16</sup>

Our empirical strategy exploits variation in the timing and severity of cycles across states and we measure the business cycle using the state unemployment rate. We estimate a basic state panel fixed effects model:

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<sup>16</sup> The sources for the administrative data are US Department of Health and Human Services (2013), US Department of Agriculture (2013), US Department of Labor (2013), and US Internal Revenue Service (2012). With the exception of the EITC, which covers 1980-2010, the other safety net programs cover 1980–2012. The state population data comes from SEER. See the data appendix for more details.

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

where subscripts refer to state  $s$  and year (or year by month)  $t$ .  $UR_{st}$  is the state unemployment rate (divided by 100) and equation (1) also controls for state and year (or year by month) fixed effects,  $\alpha_s$  and  $\delta_t$  respectively. In all results in the paper, we cluster the standard errors at the state level, and the regressions are weighted using the relevant denominator (here total population in the state-year cell). This analysis extends existing estimates on the cyclicity of safety-net programs (e.g., Bitler and Hoynes 2010; Blank 2001; Corsetto 2012; Hardy, Smeeding, and Ziliak, 2014; Ziliak et al., 2000; Ziliak, Gundersen, and Figlio, 2003).

Table 2 presents estimates of our state panel data model where the dependent variable is the caseload per capita for each safety net program. With the exception of the EITC (which covers 1980-2010) these models apply to data covering 1980-2012. AFDC/TANF and Food Stamps are measured monthly and we measure  $UR_{st}$  using the monthly seasonally adjusted unemployment rate. UI and EITC are measured annually and there we use the annual state unemployment rate. Given the evidence on the trending down 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 as has the unemployment rate, we explore the sensitivity of our results to using the EPOP as an alternative measure of the state economic cycle, and discuss the EPOP results (presented in appendix tables) as we proceed.<sup>17</sup>

The results in Panel A show that AFDC/TANF, Food Stamps and UI are all countercyclical. For example, the results in column 3 show that a one percentage point increase in the unemployment rate (an increase of 0.01) leads to a 0.17 percentage point increase in the number of UI recipients per

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<sup>17</sup> There is some dispute about whether the unemployment rate or the EPOP is a better measure of the strength of the labor market. There has also been some discussion about the extent to which the failure of the EPOP and the labor force participation rate to recover to the pre-GR period baselines is a result of secular changes (e.g., aging of the population) and how much it reflects cyclical and structural factors (e.g., Erceg and Levin (2013), CBO (2014), Kudlyak (2013) and Fallick and Pingle (2007)). The EPOP and labor force participation rate incorporate labor supply decisions as well as labor demand shocks (e.g., Hotchkiss (2014)). We focus primary attention on the unemployment rate, but also examine the EPOP and note where they differ. Other measures such as state GDP are thought to be less well measured than are the unemployment rate or EPOP.

capita. We also calculate and present percent impacts which are defined as the estimated coefficients divided by the mean of the dependent variables over the entire time period. The results show that UI is the most responsive of the programs--a one percentage point increase leads to a 14.4 percent increase per capita UI beneficiaries, compared to a 5.4 percent increase in the per capita AFDC/TANF caseload and a 3.4 percent increase in the per capita Food Stamps caseload. The final column shows that the EITC is not significantly related to the economic cycle. In other work, we show that this masks a modest countercyclical effect for married couples and an insignificant *pro*-cyclical effect for single parents on the EITC (Bitler, Hoynes and Kuka 2013). We argue there that this is consistent with the “in work” requirement of the EITC and the expected effects of job loss on incomes (and hence EITC receipt and spending) for one- versus two-parent families. This finding of more responsiveness of UI than the other programs to labor market shocks is mirrored in Appendix Table 3, which use EPOP as the measure of the labor market.<sup>18</sup>

As a companion to the analysis of caseloads, in Table 3 we estimate similar models for per capita real expenditures on AFDC/TANF, Food Stamps, and UI (measured annually). Our TANF expenditures include the total going to cash benefits (although the results are similar if we use total TANF expenditures). As above, UI is the most responsive—a one percentage point increase in the unemployment rate leading to a 16.6 percent increase in real per capita benefits. Food stamps shows a 5.1 percent increase and AFDC/TANF shows no response (a statistically insignificant 4.2 percent). We next modify the regression model to explore whether the cyclicity of the social safety net in the Great Recession represents a significant change from historical patterns. We perform two comparisons. In the first, we compare the Great Recession to the early-1980s recession by estimating the following model:

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

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<sup>18</sup> An increase in the EPOP reflects an improvement in labor market conditions and the opposite holds for the UR. The coefficients on the EPOP, presented in the appendix tables, then, have the opposite sign from the UR.

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  $\beta_k$  measure the cyclicity over a given period  $k$  (there is no main effect, so comparisons across the periods can be done by comparing the coefficients). For the annual data, the periods are 1980–1989, 1990–2006 (spanning two recessions), and 2007–2012.<sup>19</sup> In this specification, we focus on  $\beta_{80}$  and  $\beta_{GR}$ , and test whether the cyclical responsiveness during the Great Recession is different than the 1980s cycle (the  $p$ -value for this test is included in the table of estimates).

In the second comparison, we break 1980–2012 into periods of contraction ( $D_{CON}$ ) and expansion ( $D_{EXP}$ ), and test if the Great Recession period contractions and expansions are different from earlier contraction and expansion periods. We estimate the following model:

$$(3) \quad y_{st} = \beta_{CON} D_{CON} UR_{st} + \beta_{EXP} D_{EXP} UR_{st} + \beta_{GR}^{CON} D_{GR} D_{CON} UR_{st} + \beta_{GR}^{EXP} D_{GR} D_{EXP} UR_{st} + \alpha_s + \delta_t + \varepsilon_{st}$$

The coefficients of interest are  $\beta_{GR}^{CON}$  which captures the difference between the cyclicity in the GR and the cyclicity in previous recessions and  $\beta_{GR}^{EXP}$  which captures the difference between the cyclicity in the expansion out of the Great Recession (compared to previous expansions). Thus, a statistically significant coefficient estimate for the Great Recession contraction or expansion denotes a difference during this most recent period compared to the rest of the period. For each cycle, we assign the contraction as the period from the year after the trough of the national unemployment rate to the year of the subsequent peak of the national unemployment rate, and expansions go from the year after the peak to the year of the trough. We should note that we only have two years of post-GR expansion (2011 and 2012); these results could change as we continue to move through the expansion.

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<sup>19</sup> 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.



These results are provided in panels B and C of Tables 2 and 3. Three important findings are apparent from these results. First, in the post-welfare reform era the cyclical protection provided by TANF has all but disappeared. Panel B of Table 2 shows that in the 1980s cycle, a one percentage point increase in the unemployment rate led to a significant 7.2 percent increase in AFDC caseloads per capita. During the Great Recession period, this has fallen to a statistically insignificant 0.3 percent increase and, as shown by the  $p$ -value reported below the parameter estimates in Panel B, we can reject the equality of these coefficients at the 5 percent level. The findings for Panel C are similar: the GR period percent effects (the percent effects from summing the coefficient for contraction (expansion) and GR \* contraction (expansion)) are insignificant and very close to zero. The analyses of per capita AFDC/TANF expenditures echo this finding—Panels B and C in Table 3 show a statistically significant reduction in the protection provided by TANF in the Great Recession. In fact the results show that, during the Great Recession, an increase in unemployment was associated with a (marginally significant) *reduction* in TANF cash benefits per capita. We also ran similar models with a more comprehensive measure of TANF spending, which includes noncash benefits (e.g., child care assistance) as well as cash benefits—and the results are similar to those presented here. The results using EPOP (presented in Appendix Table 3) are quite similar.

Second, despite the dramatic overall increase in Food Stamps in the Great Recession (Figure 3) we find that while point estimates suggest more protection in the GR, the GR period is only statistically different when using the EPOP measure. For example, Panel C of Table 2 shows that the responsiveness of per capita Food Stamp caseloads during the Great Recession is double that for the full period (the coefficient on “UR x Contraction x GR” is 0.066 compared to the main effect of 0.064). Table 3 shows a similar doubling on the effect on Food Stamp expenditures per capita for the Great Recession compared to the full period. This finding is echoed by Ganong and Liebman (2013) who examine the determinants of food stamp caseloads and find that almost all of the increase after

2007 can be explained by state and county level labor market conditions.<sup>20</sup> Ziliak (2013) also finds an important role for the weak labor market in explaining Food Stamp changes from 2007 to 2011, while additionally finding a role for policy.

Third, our main results show the response of UI appears to be larger in the GR. Results for per capita UI participation in Table 2 indicate that an increase in the unemployment rate leads to a statistically significantly larger effect in the GR (0.216 for UR X GR compared to 0.153 for UR X 1980s in Panel B; we can reject equality at the 3 percent level) and this seems to be driven primarily by the expansion out of the GR (the coefficient on UR x Contraction x GR is an insignificant but positive 0.02 and the coefficient on UR x Expansion x GR is a statistically significant 0.07 in Panel C). These results are largely echoed in Table 3, although the differences in per capita UI spending in the GR compared to earlier recessions are smaller and less likely to be statistically different. For example, Table 3 shows that in panel C, UI spending per capita is a marginally significant \$911 higher per capita in the GR expansion, while Panel B shows no statistically significant differences between the GR and the early 1980s period. However, when we use the EPOP as the measure of the cycle, we find very small and statistically insignificant differences between UI in the GR and the earlier recessions (Appendix Table 3). From this, we conclude that the historic expansion in the duration of UI in the GR provided an increase, or at least no decline, in protection relative to that provided in previous experience.

This analysis suggests important differences in how the safety net responded in the Great Recession and how this response compares to historical experience. We have a clear finding that protection through TANF has all but disappeared and the program no longer appears to be responding to need. The experience for Food Stamps and UI is more or less the opposite – there we find evidence of more protection or the same amount of protection in the GR compared to historical experience. For both Food Stamps and UI the coefficients consistently suggest more protection but

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<sup>20</sup> When examining the earlier period, especially the Bush expansions in the early 2000s, Ganong and Liebman find more of a role for policy changes in explaining the growth of food stamp caseloads.

significance depends on how the cycle is measured (significant for UI with the UR and for Food Stamps with EPOP). As a summary measure, our final result is illustrated in the column 4 of Table 3, where we construct “total safety net expenditures per capita,” which is the sum of TANF, Food Stamps, and UI. Interestingly, the net effect seems to lean toward less protection in Great Recession, although not all of the differences are statistically significant. This finding of less protection in the GR also hold for the more comprehensive definition of TANF (including noncash expenditures).

#### **4. Cycles, the Great Recession and Poverty**

The analysis of the social safety net provides important findings about how government programs responded to shocks during the Great Recession. Here we extend that analysis by looking more broadly at family well-being, in particular by examining the cyclicity of poverty and whether the changes in the GR are consistent with historical experience. Given our findings above—a reduction in protection through TANF and increases (or at least no decline) in protection through UI and Food Stamps—we explore what is happening for the most disadvantaged as measured by the ratio of income to poverty thresholds being very low (extreme poverty, less than 50% of the poverty threshold) as well as higher income-to-poverty levels. We begin here by presenting the time series evidence on poverty and then move on to our state panel data models in Section 5.

For this analysis we use the Annual Social and Economic Supplement (ASEC) of the Current Population Survey (CPS), the main Census data for reporting annual poverty rates (and administered to most households in March). The ASEC collects labor market, income, and program participation information for the previous calendar year and demographics from the time of the survey. Our sample uses the 1981-2013 CPS surveys, corresponding to 1980-2012 calendar year outcomes.

We begin, in Figure 4, by looking at the poverty rate for the non-elderly persons. We use a measure of cash pre-tax income based on that in the official poverty measure. Official poverty in the U.S. is determined by comparing total pre-tax family cash income to poverty thresholds, which vary by family size, number of children, and presence of elderly persons. For example, in 2012, the

poverty threshold for a family of four (two adults, two children) was \$23,283 and a family of two (one adult, one child) was \$15,825. All persons in the same family have the same poverty status. The only change we make is to use *household* income and composition rather than the Census practice of using family income and family size. We do this because some key non-cash transfer benefits (e.g., Food Stamps) are reported only for the entire household. For more information on the ASEC and our construction of poverty see the data appendix.

Figure 4 shows that official (cash) poverty closely follows changes in the unemployment rate, rising in contractions and declining in expansions. Notable is the dramatic decline in cash poverty rates in the long economic expansion of the 1990s. Also evident is a general trend upward in poverty since 2000 until it flattens out during the slow recovery from the GR.

Official poverty (and our measure of it here) has numerous drawbacks. Particularly relevant for our work, the measure of cash income is not a complete measure of resources. It excludes non-cash government transfers (such as food stamps or housing benefits); subtractions from income (such as income or payroll taxes); and additions to income (such as the EITC) made through the tax system. Additionally, there is no geographic variation in the thresholds, despite wide variation in costs and wages across regions.<sup>21</sup> These limitations and others have been noted by many, and a National Academy of Sciences (NAS) panel made recommendations for revisions (Citro and Michael, 1995). Following the NAS report, Census released experimental poverty measures beginning with data for 1999. This led to the eventual release, in fall 2011, of the Census Supplemental Poverty Measure (SPM), which addresses many limitations in the official poverty rate and is now released annually (Short, 2011).

We construct an alternative poverty measure that is informed by the NAS report and the new SPM measure (Bitler and Hoynes 2010). Our main alternative income measure adds to cash money

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<sup>21</sup> 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 capture measures of needs. The thresholds are also updated annually by the CPI-U, which may not well capture changes in needs.

income the cash value of non-cash transfers (food stamps, school lunch, housing subsidies), and subtracts taxes (FICA payroll taxes, property taxes, net federal and state taxes [including the EITC, child and child care tax credits, and stimulus payments]). We then compare this enhanced resource measure to the standard poverty thresholds.<sup>22</sup> As with cash poverty, we use *household* post-tax and transfer income and *household* composition to assign the poverty threshold to calculate alternative poverty status for each person. This approach allows us to define alternative poverty on a consistent basis back to 1980 using the public-use CPS data while remaining as close as possible to the SPM (see data appendix for details). (The exceptions are calendar years 1987 and 1990 where, due to missing data, we are unable to construct our alternative poverty measure.)<sup>23</sup>

Along with the cash poverty measure for the non-elderly, Figure 4 also plots alternative poverty for the non-elderly for 1980-2012. Alternative poverty rates are generally lower compared to cash poverty, which is to be expected given that lower income households are net recipients of government support (rather than being net taxpayers) and we have kept the poverty thresholds constant. However, alternative poverty, like cash poverty, also covaries positively with the business cycle, although perhaps less so in the GR. To examine more closely the recent period, Figure 5 presents cash and alternative poverty (left scale) and the unemployment rate (right scale) for 2007–2012. Notably, cash poverty increased by 24.6 percent between 2007 and 2010 (from 11.0 in 2007 to 13.7 in 2010). During the same period, alternative poverty increased by 7.7 percent (from 9.1 in 2007 to 9.8 in 2010). This suggests that the safety net provided important mediation of the effects

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<sup>22</sup> Many of the components needed to construct the SPM (such as child care expenses and medical out of pocket spending) are not available for our entire sample period, thus we stick with the official poverty thresholds. We also note that our results are extremely similar if we use a measure of alternative poverty incorporating LIHEAP and the imputed value of Medicare and Medicaid.

<sup>23</sup>We are not the first to construct post-tax and transfer poverty measures. Meyer and Sullivan (2012), Wimer et al. (2013), and Fox et al. (2013) create measures of either income (Wimer et al., 2013; Fox et al., 2013) or consumption (Meyer and Sullivan) poverty that aim to improve on official poverty. Wimer et al. (2013) take the SPM thresholds and carry them back in time by adjusting for inflation. This “anchored SPM” approach may be problematic if the basket of goods that contribute to the SPM thresholds change over time (that is, food, clothing, shelter and utilities might have accounted for a different share of spending back in time). Further, there are potential issues associated with the appropriate measure of the CPI used to backward anchor thresholds. Fox et al. use available CEX data to create similar thresholds to those in the SPM but further back in time, but they themselves worry about the precision of these measures (leading to their companion work, Wimer et al., 2013).

of the GR.

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

Using this information on cash and alternative poverty covering 1980-2012, we now move on to estimate state panel data models similar to those presented above in our analysis of the safety net (section 2). We use the sample of nonelderly persons and collapse the CPS data to state by year cells, using March CPS weights. The models are estimated using state-year population weights (constructed as the sum of the CPS weights in each state-year cell) and the standard errors are clustered by state. As above, we begin by estimating the full-period relationship between economic cycles and poverty and test for a change in that relationship in the Great Recession. These models are annual and use the state annual unemployment rate and the estimates are identified by variation in the timing and severity of cycles across states. As above, we also present findings using the EPOP as our measure of the cycle.<sup>24</sup>

Panel A of Table 4 presents the results of this model for 1980–2012. The table presents results for cash (official) poverty and alternative post-tax post-transfer poverty. To explore the impacts of the cycle at different points of the income distribution, and in light of the varying results we find for AFDC/TANF and UI, we present models for the share of nonelderly persons with household incomes below 50 percent, 100 percent, and 200 percent of the poverty level.

Columns 1-3 of Table 4 show that cash poverty (“official poverty”) is highly cyclical. The results show that a one percentage point increase in the unemployment rate leads to a 0.72 percentage point increase in the share below 100 percent of poverty. This result is well in line with the many prior studies that have examined this relationship (Bitler and Hoynes 2010, 2013; Blank 1989, 1993; Blank and Blinder 1986; Blank and Card 1993; Cutler and Katz 1991; Freeman 2001; Gunderson and

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<sup>24</sup> We should note that we think of our analysis here, relying on poverty rates of the nonelderly, as corresponding to the same population as we captured in our analysis of administrative data above. This is largely correct, with the potential exception of Food Stamps, which serves the elderly and nonelderly alike. The other programs disproportionately accrue to the non-elderly.

Ziliak 2004; Hoynes et al., 2006; Meyer and Sullivan 2011).<sup>25</sup> Our estimates here update that work using data through 2012 and the GR. Panel A shows that the point estimates increase as we move up the income-to-poverty distribution (across columns 1-3). However, given the differences in the baseline rates of the various multiples of poverty (e.g., 0.047 for extreme poverty compared to 0.297 for income less than 200% poverty), we also calculate and present percent impacts which are defined as the estimated coefficients divided by the mean of the dependent variables (over the entire time period). These normalized coefficients (labeled “% impact” in the table) show that the impact of a one percentage point increase in unemployment leads to larger percent impacts at the bottom of the distribution (i.e., an 8.4 percent increase for less than 50% of poverty) than higher up the distribution (i.e., increases of 5.9 percent and 3.5 percent at 100% and 200% of poverty, respectively).

Columns 4 through 6 present similar models for alternative poverty. Mean poverty rates (for the full period shown at the bottom of Panel A) incorporating the comprehensive tax and transfer programs are lower than are cash poverty rates, and this is particularly so at the lowest income to poverty levels. For example, 4.7% of the nonelderly are below 50% of cash poverty but only 2.8% are under 50% of alternative poverty, while the corresponding numbers for being under 200% of poverty are 29.7% (for cash poverty) versus 34.7% (for alternative poverty). This “tilting” of the income-to-poverty gradient reflects the high levels of eligibility for and participation in various safety net programs and tax credits at the lowest income levels and the potentially offsetting effects of taxes and non-cash benefits for the higher income levels.<sup>26</sup>

The results for post-tax and transfer poverty also show substantial and statistically significant cyclicity of poverty. For example, the results in column 5 shows that a one percentage point increase in the unemployment rate leads to a 0.63 percentage point or 6.2 percent increase in 100% of

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<sup>25</sup> For example, Hines, Hoynes, and Krueger (2006) find a one percentage point increase in UR leads to a 0.6 percentage point increase in cash poverty and Gunderson and Ziliak (2004) find that, controlling for lagged poverty rates, a one percentage point increase in UR leads to a 0.45 percentage point increase in cash poverty.

<sup>26</sup> To be clear, the poverty thresholds are identical between the cash and alternative poverty measures. However the adjustments to income will be positive for some (reflecting the value of non-cash benefits, value of tax credits such as the EITC) and negative for others (reflecting the effect of taxes).

alternative poverty. By comparing the cash and post-tax and transfer poverty, we are able to explore the impact of omission of these important features of the tax and transfer safety net. The biggest change is for extreme poverty (below 50 percent poverty) whereby post-tax and transfer extreme poverty is substantially less cyclical than is cash income extreme poverty: A one percentage point increase in the unemployment rate leads to a 0.40 percentage point (8.4 percent) increase in extreme cash poverty compared to a 0.17 percentage point (6.3 percent) increase in extreme alternative poverty. The responsiveness of 100% poverty is also lower for alternative compared to cash poverty (although the percent impacts are very similar). Cash and alternative measures of 200% poverty look very similar, reflecting the lower influence of the social safety net at higher income levels. These qualitative findings are similar using EPOP instead of the unemployment rate (Appendix Table 4).

We next modify the regression model to explore whether the cyclicity of poverty in the Great Recession represents a significant change from historical patterns. We do so using the same two models we used above in our analysis of the safety net (equations 2 and 3 above). In particular, in Panel B, we compare the three periods allowing for a test of whether the responsiveness to changes in the unemployment rate differs between GR and the early-1980s recession. In the second comparison, we test whether the contraction and expansion components of the GR differ from earlier contraction and recession periods, respectively.

These results are presented in panels B and C of Table 4. Focusing on post-tax and transfer alternative poverty, the results show that extreme alternative poverty (less than 50% poverty) is more cyclical in the GR. Panel B shows a larger point estimate for the period beginning in 2007 (0.208 for “UR x GR”) compared to the early 1980s cycle (0.124 for “UR x 1980s”) and the difference is statistically significant at the 9-percent level. The results in Panel C indicate that this increase in cyclicity of extreme alternative poverty is being driven by a much greater cyclicity in the GR contraction period (the coefficient on “UR x Contraction x GR” is a statistically significant 0.130 compared to the full contractionary period effect of 0.079). The results for alternative 100% poverty show the opposite findings—less cyclicity (more protection) during the GR compared to the earlier



period—but are never statistically significant. For alternative 200% poverty, we have a return to the extreme poverty results—the results in Panel B show a statistically significant increase in cyclicity in the GR compared to the 1980s and Panel C shows that this is being driven by a statistically larger response to the GR contractionary period.

The results using EPOP mirror these qualitatively, although as above with the analysis of the safety net, the statistical significance varies across the two labor market measures. Appendix Table 4 shows extreme alternative poverty in the GR is still more cyclical (but the difference loses statistical significance) and 100% alternative poverty in the GR is still less cyclical (and now the difference gains statistical significance). The differences for 200% alternative poverty become very small and statistically insignificant.

The analyses in this and the prior section show the safety net played an important mediating role for households in the GR. However, much of the response to the safety net was in line with historical experience or somewhat more protective and was a direct result of a response to a very large shock to the labor market. One very important exception and one of our most robust findings is that extreme poverty increased by more in the GR than we would have expected based on prior experience. This increased cyclicity for the most disadvantaged is closely tied to the decline in basic cash assistance post-welfare reform. On the other hand, although less robust, we find some evidence that UI and to a lesser extent Food Stamps responded more in the GR than we would expect from prior experience. This is then reflected, although also less robustly so, in the reduction in cyclicity for 100% alternative poverty. It is somewhat surprising, especially in light of the evidence on UI and Food Stamps participation in Figure 2, that we don't see a reduction in the cyclicity of income-to-poverty at higher income levels (e.g., 200% poverty).

## **6. The Role of the Safety Net in Providing Protection across Cycles**

Here we bring together our analysis of poverty and our analysis of the safety net to explore how the safety net programs affect the cyclicity of poverty. To do so, we continue with the CPS

nonelderly sample and our alternative poverty measures. For each of the four safety net programs, we (one at a time) “zero out” the income from that safety net program, recalculate alternative household income, and recalculate alternative poverty. This is a static calculation and assumes nothing else changes in the household. In particular, the counterfactual does not incorporate the behavioral changes that would likely happen if the particular program did not exist.<sup>27</sup> Nonetheless, comparing the cyclicity of the poverty with and without income from the safety net provides a useful description of the extent of protection provided by these programs. Given data limitations in the earlier years in the CPS, here our analysis labeled “UI” captures not only UI but also veteran’s payments and worker’s compensation.<sup>28</sup>

Figure 6 presents some results of that exercise; there are three graphs one each for alternative income below 50%, 100%, and 200% poverty. For each safety-net program, we plot the change (in percentage points) in the alternative poverty rates that is obtained by zeroing out the safety net program (we plot the zeroed out poverty measure minus the base poverty measure). The blue bars on the left of each pair provide these statistics for 2010, the year with the peak unemployment rate in the Great Recession. The red bars on the right of each pair provide the same calculations for 1982, at the peak of the 1980s recession. On the right end of each graph we plot the base alternative poverty rates for the two years. For example, the top left graph shows that zeroing out food stamp benefits leads to a little more than a 1 percentage point increase in extreme poverty, relative to a base rate of 3.2 percentage points in 2010.

These results illustrate several important findings. First, the decline in importance of cash welfare is evident: TANF has very small impacts on poverty in 2010 while in 1982 TANF provided important protection at 50% and 100% of poverty. Second, the growth of the EITC is also evident: in

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<sup>27</sup> In the case of programs where they encompass negative work incentives, then the net effects incorporating the behavioral component could be smaller. Ben-Shalom, Moffitt, and Scholz (2012) review existing literature on the evidence about labor supply effects of these programs, suggesting effects are not large.

<sup>28</sup> Beginning in 1989, we can identify separately income from UI, veteran’s payments and worker’s compensation. About 60 percent of the combined income comes from UI in non-recessionary periods, with larger shares (up to 70 percent or more) in the Great Recession.

2010 the EITC has sizable poverty reduction impacts at 100% and 200% of poverty. Third, Food Stamps contributes more to declines in poverty at 100% and 200% of the FPL in 2010 (relative to 1982). Fourth, the effect of UI is evident at all poverty levels and rises in importance with poverty level but its antipoverty impact in 2010 is not dramatically different from 1982.

We then use these “zeroed-out” poverty rates and estimate the state panel data models as we did for “base” alternative poverty above (in Table 4). We present these results for the full 1980-2012 period in Table 5. There are three panels in the table, one for each of the poverty levels (50%, 100%, and 200%). For example, in Panel A, we estimate models for extreme alternative poverty. The base estimates, in column 1, show that a one percentage point increase in unemployment leads to a 0.17 percentage point or 6.3 percent increase in extreme poverty. This is identical to the result in Table 4 (panel A, column 4). The estimate in column 2 for Food Stamps shows that the point estimate increases to 0.316—this shows that zeroing out the income from Food Stamps increases the cyclicity of extreme poverty from 6.3 to 8.5 percent (for a one percentage point increase in unemployment). We find similar results for AFDC/TANF and UI; for both, the results in Panel A show that static zeroing out of the safety net program leads to an increase in the cyclicity of poverty. The exception is the EITC, which affects overall poverty rates (as we showed above in Figure 6) but does little to affect the cyclicity of poverty. The effects of the safety net on the cyclicity of poverty are largest at the lowest poverty levels, with more modest changes at 100 and 200% of poverty. This illustrates the protection (against economic shocks) that the programs are providing. The exception to this is UI, which is still (in this static sense) providing considerable protection at 100% of poverty.

Table 6 extends this analysis and presents estimates for the model that allows for different effects of the unemployment rate during the 1980s recession and the GR (as in Panel B of Table 4). Because of our particular interest in the GR period, we focus on the estimates for that period (“UR x GR”). Figure 7 provides a summary of those results. On the x-axis are the four safety-net programs, one for each regression corresponding to zeroing out income from each program. For each safety net

program, there are three data points (bars), one for each of the poverty rates (50%, 100%, and 200%). Each of the data points provides the difference between  $\beta_{GR}$  estimated with “base” case poverty and  $\beta_{GR}$  estimated with the safety net program zeroed out. A negative number here indicates that zeroing out this program leads to an increase in cyclicity. For example, for Food Stamps and 50% poverty, we see in Table 7, base alternative poverty cyclicity in the GR is 0.208, and poverty cyclicity after zeroing out food stamps income the coefficient rises to 0.303 (showing that poverty is more cyclical in the absence of Food Stamps). The difference is -0.095 and that is plotted as the far left bar on Figure 7. The Figure shows that, in the GR period, UI benefits are providing the most protection, in terms of reducing the cyclicity of poverty. Food Stamps is important, but only at the lowest poverty levels (50%, 100%). TANF, on the other hand, is providing little to no protection. An important caveat here is that these changes happen in the absence of any counterfactual.

## **8. Conclusion**

After several decades of mild business cycles, 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 protecting well-being during the Great Recession. Cash welfare for families with children was transformed in the late 1990s from an entitlement program which functioned as an automatic stabilizer to a time limited program funded by block grants. Over the 2000s, eligibility rules for the food stamp program were made more generous, and participation rates rose even before the start of the downturn. This is also the first severe recession since the EITC was made much more generous in the mid-1990s. The Federal Government responded to this Great Recession through generous expansions in the maximum duration of unemployment benefits to an unprecedented 99 weeks and a stimulus bill that raised temporarily Food Stamp, UI, and EITC benefits.

In this paper, we explore the role of the safety net in buffering families against economic shocks, and test whether this relationship has changed significantly during this most recent downturn. We look at the relationship between our main measure of the cycle—the state unemployment rate—and both official poverty and alternative poverty (which incorporates taxes and transfers) in a state-year panel model where we identify the effects of the cycle using variation in the timing and severity of shocks across states over time. We also explore an alternative measure of the cycle, EPOP. We then test whether there is evidence that this relationship is different in the current recession. We take the same approach and use high quality administrative data to examine the role of Food Stamps, cash welfare, the EITC, and Unemployment Compensation in responding to the business cycle.

We find strong and robust evidence that the most disadvantaged were more affected in the Great Recession than we would have expected from prior cycles. Post welfare reform, the cash safety net (TANF) was not responsive in the Great Recession. Reflecting this loss in protection from a program that mostly pays benefits to those at the very bottom of the income distribution, extreme poverty became more cyclical. On the other hand, the safety net programs receiving the most attention through the Great Recession (Food Stamps and UI) show either more protection or behave consistently with their performance during previous historical cycles (depending on the measure of the labor market). These programs are more likely to affect households somewhat higher up the income distribution and we find some evidence of a reduction in cyclical poverty at 100% of alternative poverty during the Great Recession period, suggesting more protection.

We conclude that the social safety net plays a critical role in protecting families from the negative effects of recessions. When these programs are cut back, as in the case of TANF, the effects of recessions are more severe. When these programs are expanded, as in Food Stamps and UI, the effects of recessions are moderated.

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## Data Appendix (Intended to be published appendix)

### A. Details of March CPS Data Construction

We use the March Current Population Survey (or ASEC) for years 1981 through 2013 (covering calendar years 1980 through 2012). The main sample used in the paper measures income and poverty at the *household level*, after dropping unrelated children (as does the Census bureau). Thus, total (cash or alternative) income is summed across household members, and then the household income is compared to various multiples of the poverty threshold, and this value is attached to all household members. Our analysis is limited to the sample of nonelderly persons. State by year aggregate poverty rates are the average of poverty rates, for the non-elderly sample, weighted by the supplement person weight.

Our cash poverty measure follows the Census approach and includes cash pre-tax income sources (earned income; asset income; private transfers including child support, disability and pensions; and public cash transfers including social security, disability, unemployment and welfare). The only change we make, relative to Census definitions, is to use household income and household composition rather than the Census practice of using family income and family size. We do this because some key non-cash benefits (e.g., Food Stamps) are reported only for the entire household.

Our alternative poverty uses data provided in the public-use CPS data and available on a consistent basis back to 1980 (Bitler and Hoynes 2010, 2013). We developed this measure based on the recommendations in the National Academy of Sciences report (Citro and Michael, 1995); it is also closely related to the resource measures in the Supplemental Poverty Rate first released in 2011 (Short 2011). In particular, we assign poverty using an expanded “alternative income” measure which we then apply to the standard poverty thresholds. Our alternative income measure adds to cash money income the cash value of major non-cash programs (food stamps, school lunch, housing subsidies) and subtracts taxes (FICA payroll taxes, property taxes, net federal and state taxes [including the EITC, child and child care tax credits, and stimulus payments]). We are able to construct a consistent alternative poverty measure for calendar years 1980-1986, 1988-1990, and 1991-2011. We are using the “old” version of the 1988 data which does not correspond to the 1988 data on these measures so data are missing on alternative poverty for 1988. None of the components of alternative poverty were created in 1991, so this year also is missing alternative poverty. All variables are consistently reported for the other years. We are omitting total dollars of LIHEAP as it was not reported until 1982.

### B. Measuring Periods of Contraction and Expansion

We identified annual periods of contractions as the range of years from the year after the lowest to the year with the highest annual unemployment and the expansions as the range of years from the year after the highest to the year with the 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 1980-1982 (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 2007-2010 (NBER recession 12/2007-6/2009). For more information see Appendix Table 2.

### C. Sources for Administrative and Labor Market Data

*AFDC/TANF administrative data:* Caseloads are monthly counts of number of households receiving aid. Caseloads for the AFDC period (1980-1996) are available at [http://www.acf.hhs.gov/programs/ofa/data-reports/caseload/caseload\\_archive.html](http://www.acf.hhs.gov/programs/ofa/data-reports/caseload/caseload_archive.html) and caseloads for the TANF period (1997+) caseloads are from <http://www.acf.hhs.gov/programs/ofa/resource/caseload/caseload-recent>. During the TANF period, beginning in 2000, our measure includes Separate State Program/Maintenance of Effort program data. 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.” The average monthly TANF benefit (used in Table 1) is the average family benefit for 2006, inflated to be in 2010 real \$ from [http://www.acf.hhs.gov/programs/ofa/data-reports/annualreport8/TANF\\_8th\\_Report\\_111908.pdf](http://www.acf.hhs.gov/programs/ofa/data-reports/annualreport8/TANF_8th_Report_111908.pdf), DHHS (2009). All AFDC and TANF data are for the month or the Fiscal Year (year ending Sept 30).

*Food Stamp administrative data:* Caseloads are monthly counts of number of households receiving food stamps. Expenditures are annual total food stamp expenditures. Caseload and expenditures come from unpublished USDA data generously provided by Katie Fitzpatrick and John Kirlin, of the Economic Research Service, USDA.

Data for Table 1 come from: <http://www.fns.usda.gov/pd/SNAPsummary.htm>, <http://www.fns.usda.gov/pd/16SNAPpartHH.htm>, and <http://www.fns.usda.gov/pd/34SNAPmonthly.htm>

*Unemployment Insurance administrative data:* 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). Average caseload analog is the number of calendar years of UI benefits paid out, or the number of weeks paid out divided by 52.

*EITC:* EITC caseloads are counts of the number of tax units receiving the credit and expenditures are the total tax cost of the credit (including the reduction in taxes paid and the amount refunded).

Data on recipients and the total tax cost of the EITC for Table 1 and Figure 3 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.

The state-year data for the state panel regressions come from our tabulations of the U.S. IRS Statistics of Income file microdata, accessed through the NBER.

*SSDI administrative data:* SSDI data comes from the Annual Statistical Report on the SSDI Program.

Average monthly benefits are for workers. Source:

[http://www.socialsecurity.gov/policy/docs/statcomps/di\\_asr/2011/sect01b.html#table3](http://www.socialsecurity.gov/policy/docs/statcomps/di_asr/2011/sect01b.html#table3)

*SSI administrative data:* SSI data comes from the Annual Statistical Supplement to the Social Security Bulletin. Caseloads and expenditures include the federal and state programs and exclude the aged recipients. Average monthly benefits are for disabled workers. Source:

[http://www.ssa.gov/policy/docs/statcomps/ssi\\_asr/#editions](http://www.ssa.gov/policy/docs/statcomps/ssi_asr/#editions)

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

*Population:* 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.

*Employment to Population Ratio:* Employment for U.S. and states, annually and by month, come from the Bureau of Labor Statistics, accessed from: <http://www.bls.gov/lau/>. The monthly numbers used in the paper are seasonally adjusted. The employment to population ratio is equal to employment divided by the population age 16 plus.

*Deflator:* The CPI-U is from the Economic Report of the President,

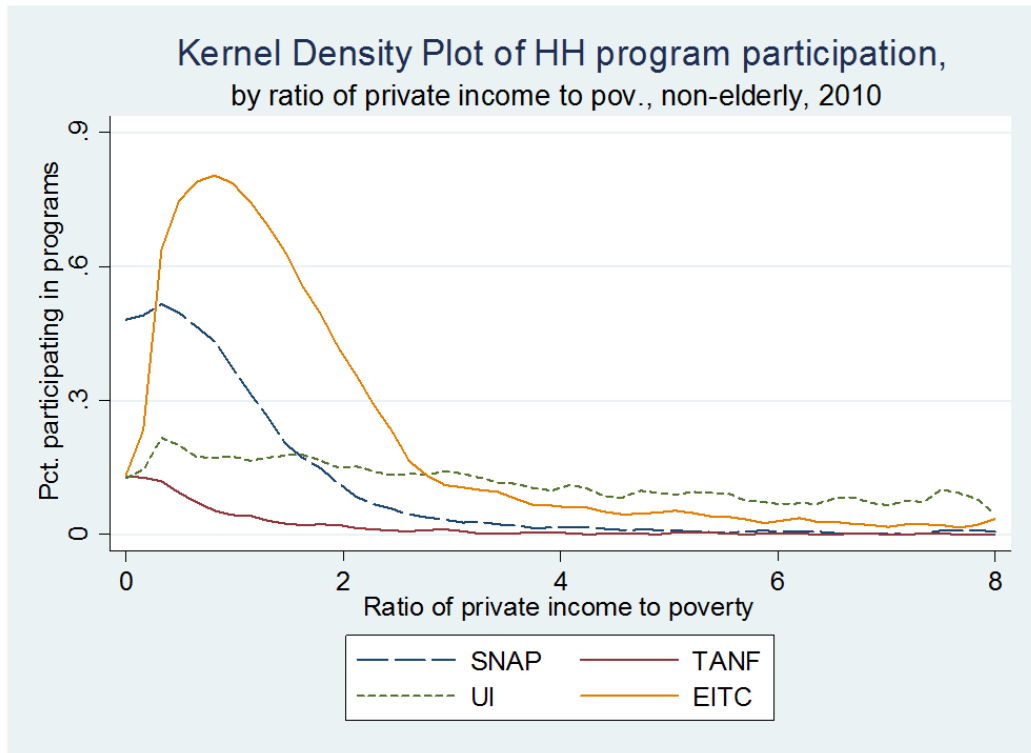
<http://www.gpoaccess.gov/eop/2012/B34.xls>

Figure 1: Trends in Annual Unemployment and Employment to Population (16+) Ratio

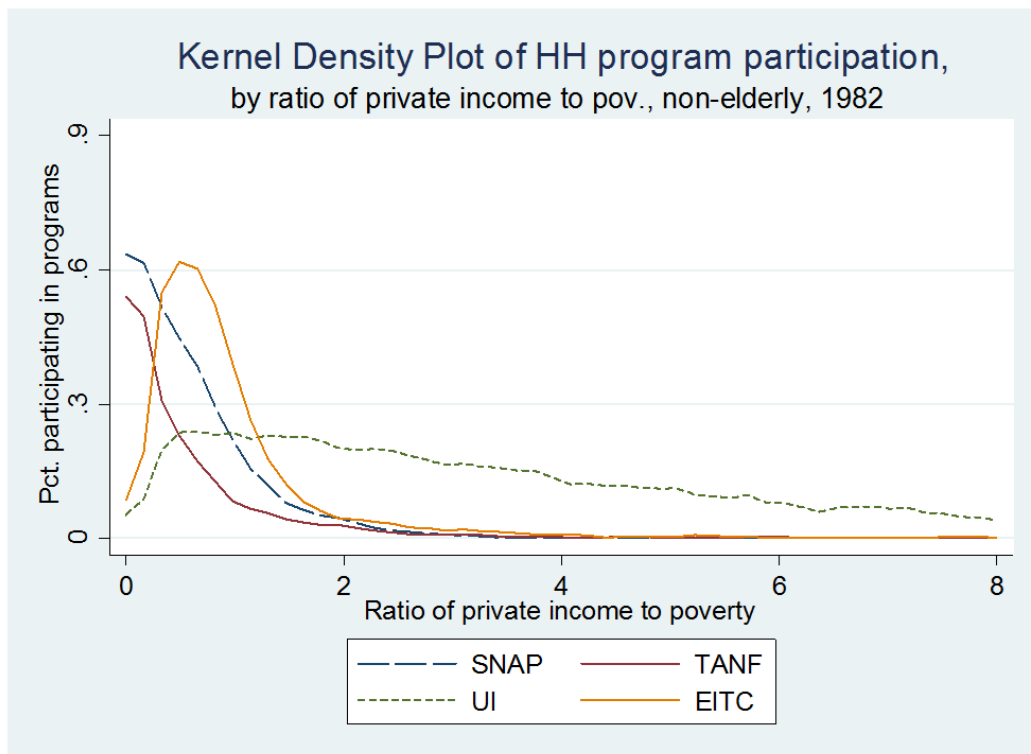


Notes: Measures directly available from published sources; see data appendix.

Figure 2: Participation in Safety Net Programs by Ratio of Private Income to Poverty  
 (a) Program participation in 2010

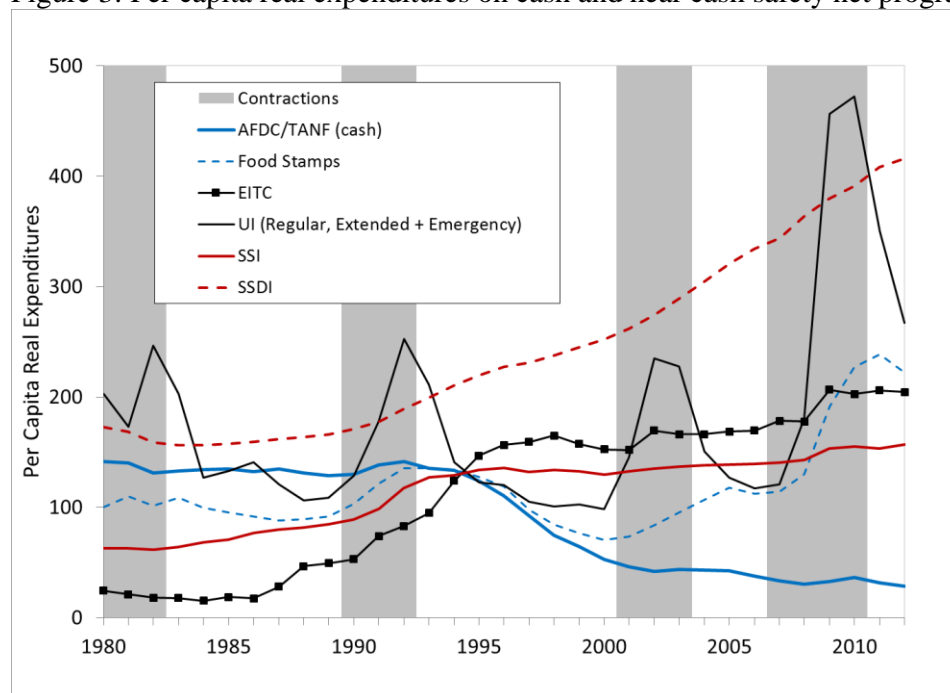


(b) Program participation in 1982



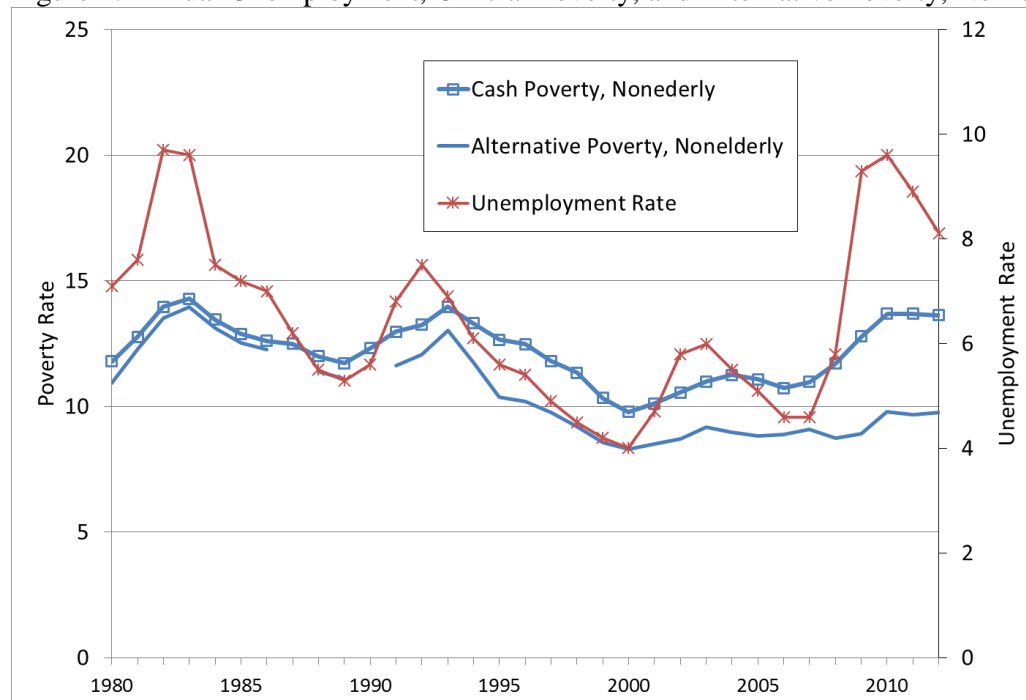
Notes: Figure presents local linear regressions of participation in various safety net programs as a function of the ratio of private income to the HH-level poverty threshold. The bandwidth is 1/20 of the range of private income to poverty threshold for those between 0% of poverty and 800% of poverty (as measured with private income). The sample is the non-elderly, using the ASEC for each year.

Figure 3: Per capita real expenditures on cash and near cash safety net programs, 1980-2012



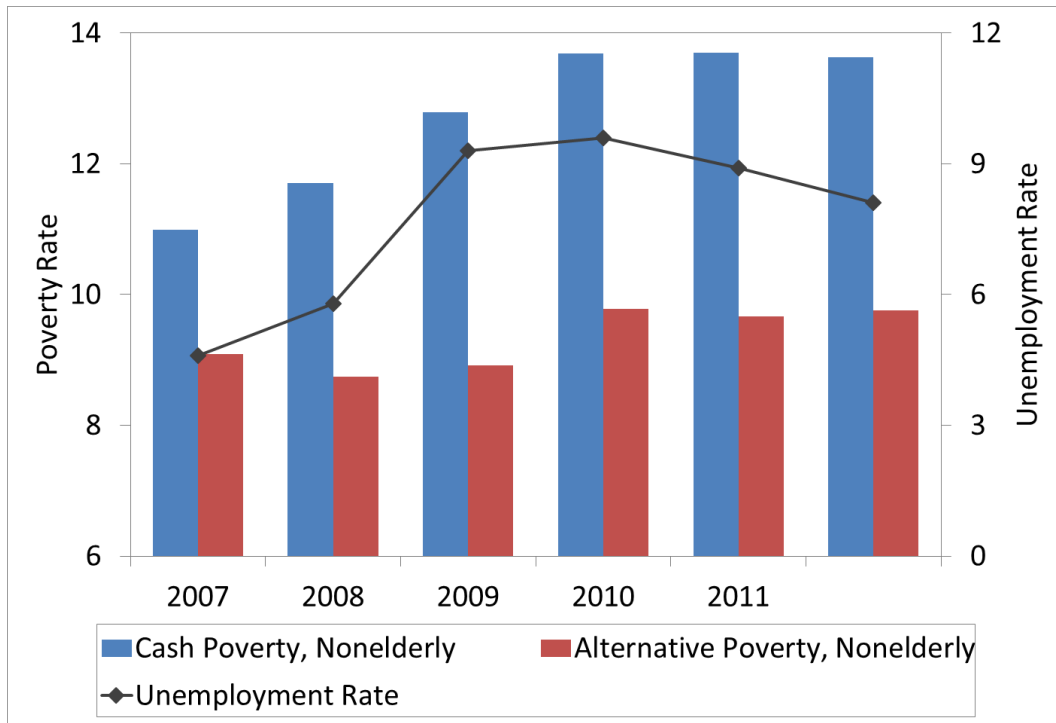
Notes: Contractions are annual periods of labor market contraction that closely follow NBER official recessions. Official recessions are dated monthly; we assigned our contraction periods to encompass the periods of rising unemployment rates. See data appendix for details and data sources.

Figure 4: Annual Unemployment, Official Poverty, and Alternative Poverty, Non-elderly



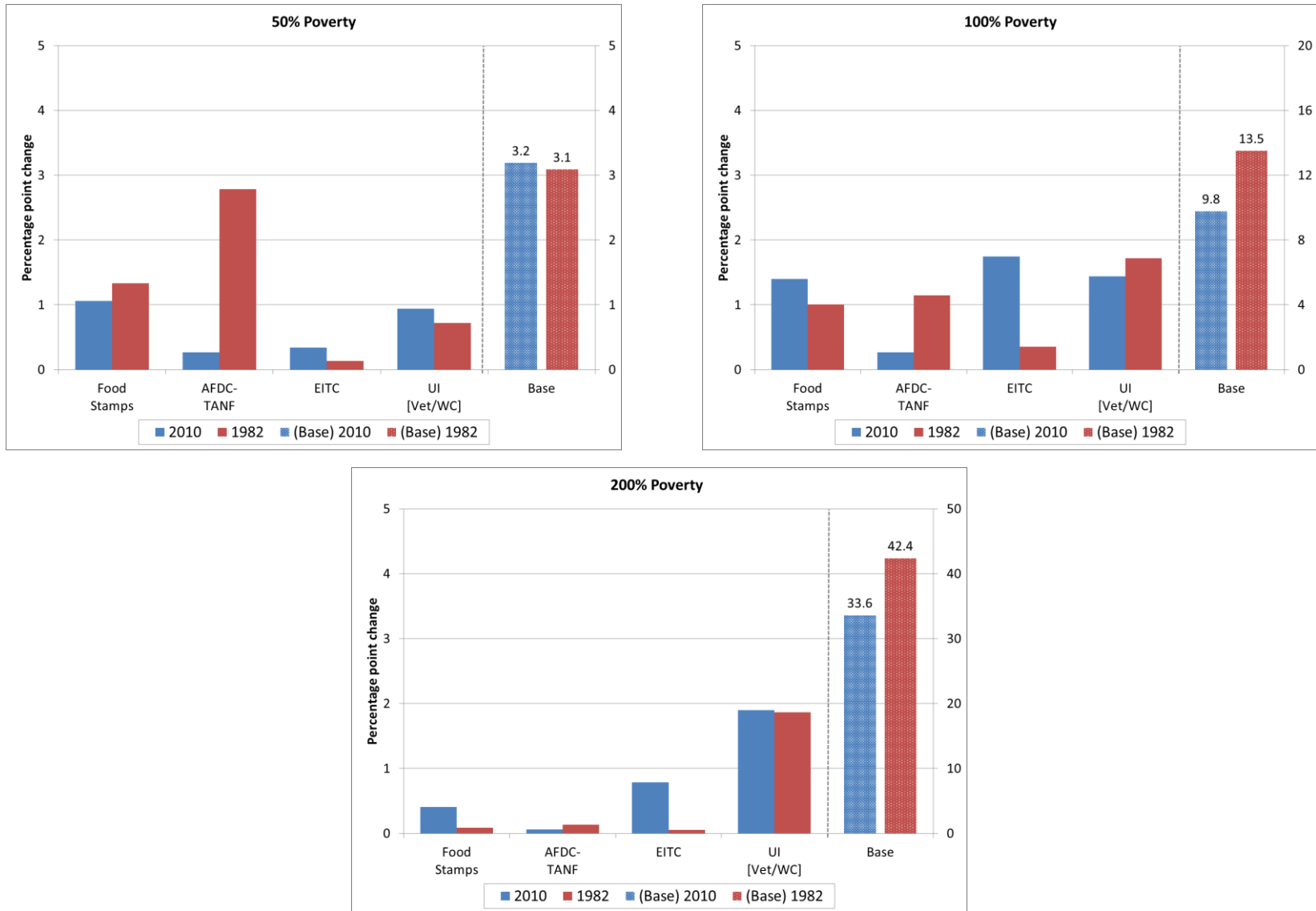
Notes: Measures computed by authors using official poverty thresholds and household cash income (official poverty) and net of tax and transfer income (alternative poverty). Poverty refers to percent of non-elderly persons living in households with income below the poverty line for their household size and structure. Our alternative poverty measure uses net of tax and transfer income compared to the same threshold as official poverty. For more details, see data appendix.

Figure 5: Annual Unemployment, Official Poverty, and Alternative Poverty in the Great Recession, Non-elderly



Notes: Measures computed by authors using official poverty thresholds and household cash income (official poverty) and net of tax and transfer income (alternative poverty). Poverty refers to percent of persons living in households with income below the poverty line for their household size and structure. Our alternative poverty measure uses net of tax and transfer income compared to the same threshold as official poverty. For more details, see data appendix.

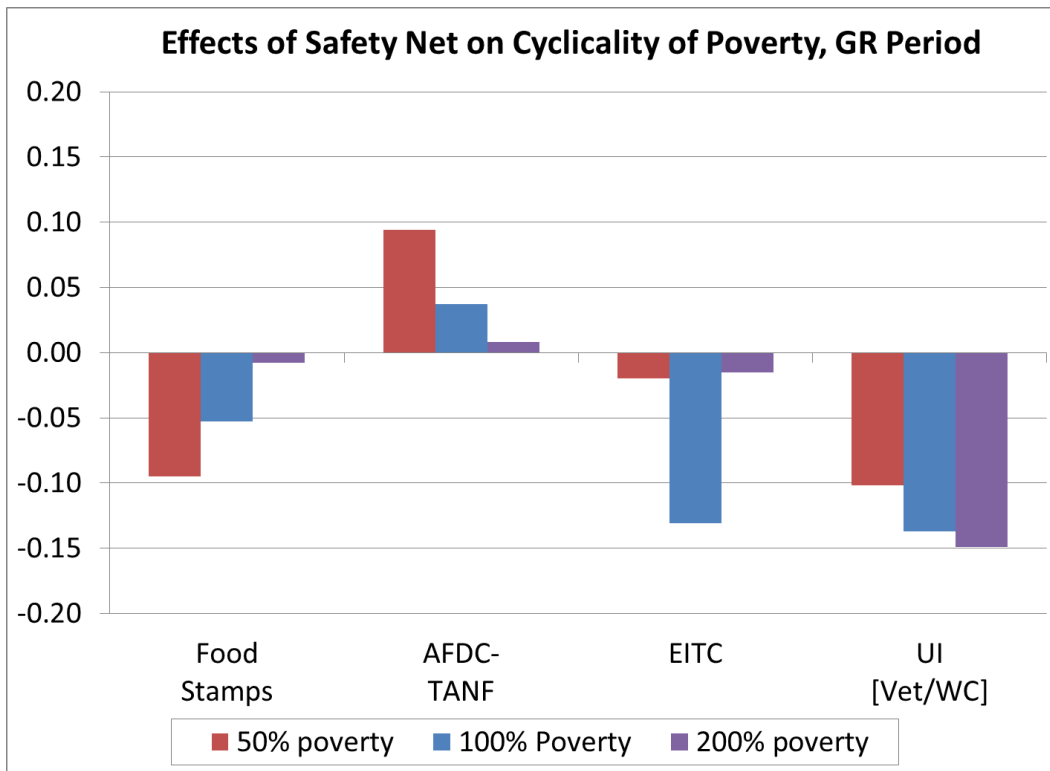
Figure 6: Percentage Point Increase in Alternative Income Poverty, from Zeroing out Safety Net Incomes, 2010 and 1982



Notes: Authors' calculations from 1983 and 2011 March Current Population Survey. Sample includes nonelderly and alternative poverty is assigned using household income. Each data point is the difference between alternative poverty with safety net zeroed out from income minus "base" alternative poverty. On the right end of each figure are the "base" alternative poverty rates for the two years.



Figure 7: Effect of Safety Net Programs on Cyclicity of Alternative Poverty



Notes: Author's comparison of effect of unemployment rate on alternative poverty during the GR using the main alternative poverty measure and one dropping the various safety net programs one at a time. Thus, these represent static calculations and not ones which account for the counterfactual behavioral responses in the absence of the programs. See text for details.

Table 1: Expenditures and Participation in Cash or Near-Cash Safety Net Programs, 2010

	Number of recipient units (thousands)	Total benefit payments (millions of 2012\$)	Average monthly benefit (2012\$)
Temporary Assistance for Needy Families, Cash Benefits	1,893	\$11,265	\$413
Food Stamps	19,315	\$70,142	\$300
Federal Earned Income Tax Credit	27,368	\$59,562	\$191
Unemployment Compensation, Total	8,962	\$144,253	\$1,279
Regular State Benefits		\$61,264	
Extended Benefits		\$9,415	
Emergency Benefits		\$73,573	

Notes: Data for all programs refers to 2010 and are in real \$2012. See data appendix for sources.

Table 2: Effect of Unemployment Rate on Safety Net Caseloads

	Caseload / Population, Monthly		Caseload / Population, Annual	
	AFDC/TANF	Food Stamps	UI [Reg.+Ext.+Em.]	EITC
<u>A. Pooled Estimates</u>				
UR	0.062*** (0.016)	0.131*** (0.045)	0.171*** (0.010)	0.036 (0.044)
<i>% impact</i>	5.4%	3.4%	14.4%	0.6%
<i>Full Period Mean</i>	0.012	0.038	0.012	0.059
<u>B. By Period (1980s, GR, Rest of Period)</u>				
UR x 1980s	0.086*** (0.024)	0.084*** (0.030)	0.153*** (0.011)	-0.024 (0.061)
UR x Rest of period	0.075*** (0.019)	0.212*** (0.041)	0.161*** (0.013)	0.155** (0.069)
UR x GR	0.003 (0.031)	0.147 (0.174)	0.216*** (0.028)	0.072 (0.082)
<i>% Impact, 1980s</i>	7.2%	2.2%	12.8%	-0.4%
<i>% Impact, rest of period</i>	6.3%	5.6%	13.4%	2.6%
<i>% impact, GR</i>	0.3%	3.9%	18.0%	1.2%
p-value, GR = 1980s	0.05	0.70	0.03	0.32
<u>C. By Expansion/Contraction and GR</u>				
UR x Contraction	0.080*** (0.024)	0.064* (0.034)	0.210*** (0.011)	0.036 (0.068)
UR x Expansion	0.082*** (0.017)	0.153*** (0.033)	0.129*** (0.013)	0.028 (0.053)
UR x Contraction x GR	-0.082** (0.036)	0.066 (0.139)	0.020 (0.034)	0.020 (0.122)
UR x Expansion x GR	-0.084** (0.034)	-0.019 (0.245)	0.070*** (0.021)	
<i>% Impact, UR x Con.</i>	6.7%	1.7%	17.5%	0.6%
<i>% Impact, UR x Exp.</i>	6.8%	4.0%	10.8%	0.5%
<i>% Impact, URxCon + URxConxGR</i>	-0.2%	3.4%	19.2%	0.9%
<i>% Impact, URxExp + URxExpGR</i>	-0.2%	3.5%	16.6%	
N	20191	20100	1683	1581

Notes: Data cover 1980-2012 (or 2010 for the EITC). The dependent variables are safety net caseloads divided by the state population. Sources for caseloads are in the appendix. The EITC and UI data are annual, the other programs are monthly. All regressions include state and year (or year-by-month) fixed effects. The results are weighted by the state population. Standard errors are clustered by state and shown in parentheses. \* p<0.10, \*\* p<0.05,\*\*\* p<0.01.

Table 3: Effect of Unemployment Rate on Safety Net Expenditures

	Expenditures / Population, Annual (Real 2012\$)			
	AFDC/TANF	Food Stamps	UI [Reg.+Ext.+Em.]	Programs [TANF+SNAP+UI ]
<u>A. Pooled Estimates</u>				
UR	366 (276)	620*** (104)	3045*** (244)	4031*** (386)
<i>% impact</i>	4.2%	5.1%	16.6%	10.3%
<i>Full period Mean</i>	86	121	184	391
<u>B. By Period (1980s, GR, Rest of Period)</u>				
UR x 1980s	769* (449)	447*** (109)	3037*** (273)	4253*** (469)
UR x Rest of period	808*** (232)	903*** (161)	2475*** (380)	4186*** (345)
UR x GR	-770* (402)	750* (422)	3493*** (511)	3473*** (747)
<i>% Impact, 1980s</i>	8.9%	3.7%	16.5%	10.9%
<i>% Impact, rest of period</i>	9.4%	7.5%	13.5%	10.7%
<i>% impact, GR</i>	-8.9%	6.2%	19.0%	8.9%
p-value, GR = 1980s	0.016	0.489	0.438	0.344
<u>C. By Expansion/Contraction and GR</u>				
UR x Contraction	892** (375)	346** (135)	3737** (333)	4974*** (475)
UR x Expansion	725** (303)	705*** (129)	2448*** (294)	3878*** (301)
UR x Contraction x GR	-1613*** (542)	305 (413)	16 (678)	-1292* (673)
UR x Expansion x GR	-1566*** (572)	63 (638)	911* (499)	-591 (931)
<i>% Impact, UR x Con.</i>	10.3%	2.9%	20.3%	12.7%
<i>% Impact, UR x Exp.</i>	8.4%	5.8%	13.3%	9.9%
<i>% Impact, URxCon + URxConxGR</i>	-8.4%	5.4%	20.4%	9.4%
<i>% Impact, URxExp + URxExpGR</i>	-9.7%	6.4%	18.3%	8.4%
N	1683	1683	1683	1683

Notes: Data are annual and cover 1980-2012. The dependent variables are safety net expenditures divided by the state population. Sources for expenditures are in the appendix. All regressions include state and year fixed effects. The results are weighted by the state population. Standard errors are clustered by state and shown in parentheses. \* p<0.10, \*\* p<0.05, \*\*\* p<0.01.

Table 4: Effects of Unemployment Rate on Official Cash Poverty and Alternative Poverty

	Official poverty (cash pre-tax)			Alternative poverty (post-tax, all transfers)		
	<50%	<100%	<200%	<50%	<100%	<200%
<u>A. Pooled Estimates</u>						
UR	0.397*** (0.052)	0.719*** (0.067)	1.035*** (0.130)	0.173*** (0.028)	0.634*** (0.069)	1.070*** (0.155)
% impact	8.4%	5.9%	3.5%	6.2%	6.2%	3.1%
Full sample mean	0.047	0.122	0.297	0.028	0.103	0.347
<u>B. By Period (1980s, GR, Rest of Period)</u>						
UR x 1980s	0.380*** (0.061)	0.654*** (0.076)	0.814*** (0.156)	0.124*** (0.037)	0.624*** (0.094)	0.826*** (0.189)
UR x Rest of period	0.503*** (0.074)	1.046*** (0.152)	1.471*** (0.241)	0.249*** (0.053)	0.856*** (0.166)	1.410*** (0.278)
UR x GR	0.348*** (0.070)	0.600*** (0.077)	1.147*** (0.144)	0.208*** (0.027)	0.486*** (0.057)	1.275*** (0.159)
% Impact, 1980s	8.1%	5.4%	2.7%	4.4%	6.1%	2.4%
% Impact, rest of period	10.7%	8.6%	5.0%	8.9%	8.3%	4.1%
% impact, GR	7.4%	4.9%	3.9%	7.4%	4.7%	3.7%
p-value, GR = 1980s	0.68	0.62	0.15	0.09	0.19	0.09
<u>C. By Expansion/Contraction and GR</u>						
UR x Contraction	0.256*** (0.057)	0.530*** (0.094)	0.697*** (0.202)	0.079** (0.036)	0.400*** (0.095)	0.624** (0.241)
UR x Expansion	0.498*** (0.052)	0.897*** (0.102)	1.176*** (0.177)	0.210*** (0.039)	0.858*** (0.097)	1.219*** (0.192)
UR x Contraction x GR	0.087 (0.060)	0.047 (0.128)	0.358 (0.297)	0.130*** (0.043)	0.116 (0.096)	0.546* (0.316)
UR x Expansion x GR	-0.193*** (0.067)	-0.390** (0.147)	-0.089 (0.267)	-0.042 (0.051)	-0.500*** (0.129)	0.042 (0.267)
% Impact, UR x Con.	5.4%	4.3%	2.3%	2.8%	3.9%	1.8%
% Impact, UR x Exp.	10.6%	7.4%	4.0%	7.5%	8.3%	3.5%
% Impact, URxCon + URxConxGR	7.3%	4.7%	3.6%	7.5%	5.0%	3.4%
% Impact, URxExp + URxExpGR	6.5%	4.2%	3.7%	6.0%	3.5%	3.6%
N	1683	1683	1683	1581	1581	1581

Notes: 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.

Table 5: Effect of Unemployment Rate on Alternative Poverty, With and Without Safety Net

	Zero out safety net, recalculate poverty					
	Base	Food Stamps	AFDC-TANF	EITC	UI [Vet, WC]	All
A. 50% Poverty						
UR	0.173 (0.028)	0.316 (0.041)	0.321 (0.046)	0.189 (0.029)	0.259 (0.030)	0.549 (0.039)
Mean Y	0.028	0.037	0.039	0.030	0.032	0.059
% impact	6.3%	8.5%	8.1%	6.2%	8.2%	9.3%
B. 100% Poverty						
UR	0.634 (0.069)	0.678 (0.068)	0.674 (0.064)	0.689 (0.074)	0.795 (0.074)	0.898 (0.073)
Mean Y	0.103	0.113	0.111	0.116	0.112	0.140
% impact	6.1%	6.0%	6.1%	5.9%	7.1%	6.4%
C. 200% Poverty						
UR	1.070 (0.155)	1.076 (0.154)	1.074 (0.154)	1.074 (0.154)	1.211 (0.148)	1.213 (0.145)
Mean Y	0.347	0.349	0.349	0.351	0.359	0.365
% impact	3.1%	3.1%	3.1%	3.1%	3.4%	3.3%
N	1581	1581	1581	1581	1581	1581

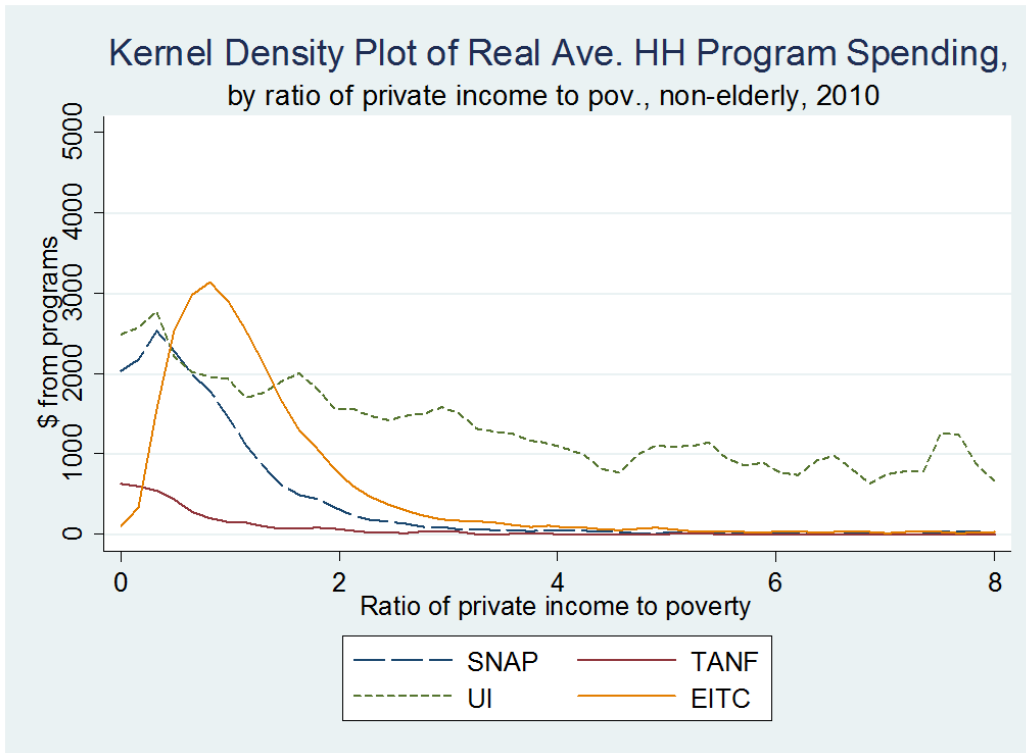
Notes: Data are from the CPS ASEC calendar years 1980-2012 and are collapsed to the state by year level (weighted). All regressions include controls for state and year fixed effects. The results are weighted by the number of sum of the CPS weights for the individuals in each cell. Standard errors are clustered by state and shown in parentheses. \* p<0.10, \*\* p<0.05, \*\*\*p<0.01.

Table 6: Effect of Unemployment Rate on Alternative Poverty, With and Without Safety Net

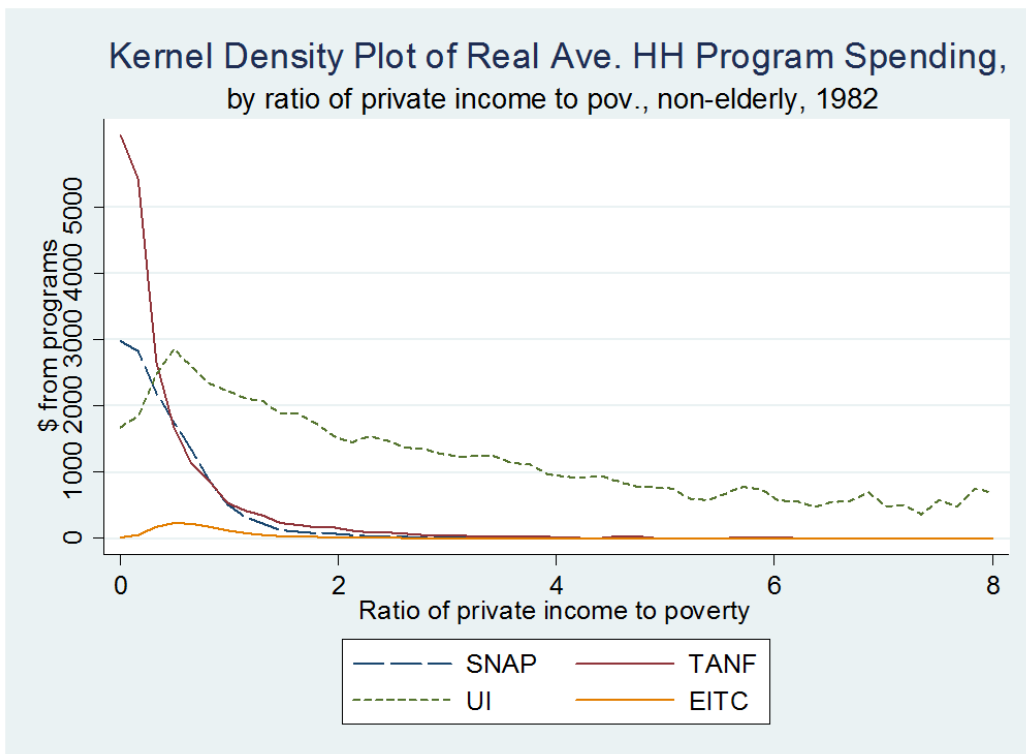
	Zero out safety net, recalculate poverty					
	Base	Food Stamps	AFDC-TANF	EITC	UI [Vet, WC]	All
A. 50% Poverty						
UR x 1980s	0.124 (0.037)	0.294 (0.052)	0.391 (0.089)	0.130 (0.038)	0.215 (0.044)	0.602 (0.062)
UR x Rest of period	0.249 (0.053)	0.391 (0.069)	0.422 (0.097)	0.286 (0.061)	0.302 (0.060)	0.692 (0.114)
UR x GR	0.208 (0.027)	0.303 (0.038)	0.114 (0.054)	0.228 (0.028)	0.310 (0.029)	0.345 (0.048)
p-value, GR = 1980s	0.09	0.87	0.03	0.06	0.09	0.003
B. 100% Poverty						
UR x 1980s	0.624 (0.094)	0.631 (0.097)	0.669 (0.088)	0.626 (0.088)	0.797 (0.107)	0.820 (0.096)
UR x Rest of period	0.857 (0.166)	0.982 (0.160)	0.989 (0.195)	0.946 (0.167)	1.021 (0.178)	1.293 (0.201)
UR x GR	0.486 (0.057)	0.539 (0.072)	0.449 (0.065)	0.617 (0.060)	0.623 (0.061)	0.749 (0.091)
p-value, GR = 1980s	0.19	0.44	0.05	0.92	0.15	0.60
D. 200% Poverty						
UR x 1980s	0.826 (0.189)	0.828 (0.191)	0.832 (0.187)	0.822 (0.188)	0.974 (0.186)	0.970 (0.185)
UR x Rest of period	1.410 (0.278)	1.422 (0.279)	1.424 (0.282)	1.415 (0.280)	1.523 (0.265)	1.542 (0.267)
UR x GR	1.275 (0.159)	1.283 (0.157)	1.267 (0.160)	1.290 (0.157)	1.424 (0.163)	1.424 (0.158)
p-value, GR = 1980s	0.09	0.09	0.10	0.08	0.10	0.09
N	1581	1581	1581	1581	1581	1581

Notes: 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 number of sum of the CPS weights for the individuals in each cell. Standard errors are clustered by state and shown in parentheses. \* p<0.10, \*\* p<0.05, \*\*\*p<0.01.

Web Appendix Figure 1: Safety Net Program Benefits by Ratio of Private Income to Poverty  
 (a) Program benefits in 2010



(b) Program benefits in 1982



Notes: Figure presents local linear regressions of participation in various safety net programs as a function of the ratio of private income to the HH-level poverty threshold. The bandwidth is 1/20 of the range of private income to poverty threshold for those between 0% of poverty and 800% of poverty (as measured with private income). The sample is the non-elderly, using the ASEC for each year.



Web Appendix Table 1: Descriptive Statistics by Income and Program Participation Status, 2013 CPS

	Full Sample	Household Participating in				
		<=200% FPL	TANF	SNAP	EITC (Imputed)	UI
Cash Poverty	0.161	0.438	0.582	0.563	0.290	0.153
Post-tax and transfer poverty	0.098	0.267	0.351	0.298	0.134	0.086
Any HH earnings	0.916	0.799	0.669	0.754	0.999	0.929
HH # of persons	3.854	4.117	4.680	4.234	4.380	4.059
HH # of kids	1.576	1.997	2.480	2.145	2.017	1.588
Householder is black	0.138	0.196	0.318	0.253	0.164	0.152
Householder is white	0.586	0.426	0.323	0.398	0.448	0.585
Householder is Hispanic	0.198	0.302	0.280	0.275	0.315	0.190
Householder is other race	0.078	0.076	0.080	0.074	0.073	0.074
Householder's age	42.266	40.130	38.917	39.625	39.895	42.705
Householder never married	0.258	0.344	0.444	0.398	0.313	0.269
Householder sep./wid./div.	0.218	0.269	0.316	0.310	0.273	0.235
Householder married	0.524	0.388	0.240	0.292	0.413	0.496
Householder male	0.479	0.378	0.257	0.297	0.398	0.473
Householder HS dropout	0.130	0.254	0.275	0.282	0.223	0.138
Household HS grad.	0.265	0.345	0.352	0.358	0.339	0.311
Householder some college	0.303	0.294	0.311	0.293	0.315	0.346
HH receiving LIHEAP	0.045	0.117	0.207	0.198	0.083	0.079
HH receiving SSI	0.047	0.091	0.171	0.150	0.050	0.051
HH receiving SSDI/SS	0.118	0.145	0.172	0.177	0.112	0.128
HH receiving WIC	0.073	0.165	0.326	0.246	0.160	0.102
HH receiving housing benefits	0.054	0.134	0.287	0.209	0.085	0.056
N	178823	56445	4398	25480	49283	14925

Notes: Table presents summary statistics for 2013 CPS for the full sample of non-elderly (column 1), those under 200% of poverty (column 2), those reporting TANF receipt in the HH (column 3), those reporting Food Stamp receipt in the HH (column 4), those imputed to have EITC receipt in the HH (column 5), and those reporting UI (column 6). Statistics are weighted, and the sample is the non-elderly.

Web Appendix Table 2: Dating of Contractions and Expansions

	Annual Data		Monthly Data	
	Contraction	Expansion	Contraction	Expansion
1980s Cycle	1980 – 1982	1983 – 1989	– 11/1982	12/1982 – 3/1989
	1980 – 1989		– 3/1989	
Rest of Period	1990 – 1992	1993 – 2000	4/1989 – 6/1992	7/1992 – 4/2000
	2001 – 2003	2004 – 2006	5/2000 – 6/2003	7/2003 – 10/2006
	1990-2006		4/1989 – 10/2006	
Great Recession	2007 – 2010	2011+	11/2006 – 10/2009	11/2009 +
	2007+		11/2006 +	

Notes: See text and data appendix.

Web Appendix Table 3: Effects of EPOP Rate on Safety Net Caseloads

	<u>Caseload / Population, Monthly</u>		<u>Caseload / Population, Annual</u>	
	AFDC/TANF	Food Stamps	UI [Reg.+Ext.+Em.]	EITC
<u>A. Pooled Estimates</u>				
EPOP	-0.049*** (0.015)	-0.106*** (0.037)	-0.069*** (0.014)	-0.043 (0.041)
<i>% impact</i>	-4.2%	-2.8%	-5.8%	-0.7%
<i>Full Period Mean</i>	0.012	0.038	0.012	0.059
<u>B. By Period (1980s, GR, Rest of Period)</u>				
EPOP x 1980s	-0.060*** (0.020)	-0.081* (0.037)	-0.074*** (0.019)	0.034 (0.060)
EPOP x Rest of period	-0.051*** (0.014)	-0.092*** (0.032)	-0.064*** (0.013)	-0.072* (0.043)
EPOP x GR	-0.032* (0.016)	-0.164* (0.060)	-0.073*** (0.017)	-0.091** (0.042)
<i>% Impact, 1980s</i>	-5.0%	-2.1%	-6.2%	0.6%
<i>% Impact, rest of period</i>	-4.3%	-2.4%	-5.3%	-1.2%
<i>% impact, GR</i>	-2.7%	-4.3%	-6.1%	-1.5%
p-value, GR = 1980s	0.14	0.07	0.97	0.01
<u>C. By Expansion/Contraction and GR</u>				
EPOP x Contraction	-0.045*** (0.015)	-0.040 (0.028)	-0.072*** (0.017)	-0.029 (0.046)
EPOP x Expansion	-0.050*** (0.014)	-0.061** (0.027)	-0.066*** (0.014)	-0.035 (0.043)
EPOP x Contraction x GR	0.017 (0.013)	-0.060** (0.028)	-0.001 (0.016)	-0.057* (0.034)
EPOP x Expansion x GR	0.031** (0.012)	-0.125* (0.068)	-0.007 (0.016)	
<i>% Impact, UR x Con.</i>	-3.8%	-1.1%	-6.0%	-0.5%
<i>% Impact, UR x Exp.</i>	-4.2%	-1.6%	-5.5%	-2.9%
<i>% Impact, URxCon + URxConxGR</i>	-2.3%	-2.6%	-6.1%	-1.5%
<i>% Impact, URxExp + URxExpGR</i>	-1.6%	-4.9%	-6.1%	
N	20191	20100	1683	1581

Notes: Data cover 1980-2012 (or 2010 for the EITC). The dependent variables are safety net caseloads divided by the state population. Sources for caseloads are in the appendix. The EITC and EPOP data are annual, the other programs are monthly. All regressions include state and year (or year-by-month) fixed effects. The results are weighted by the state population. Standard errors are clustered by state and shown in parentheses. \* p<0.10, \*\* p<0.05, \*\*\* p<0.01.

Web Appendix Table 4: Effects of EPOP Rate on Official Cash Poverty and Alternative Poverty

	Official poverty (cash pre-tax)			Alternative poverty (post-tax, all transfers)		
	<50%	<100%	<200%	<50%	<100%	<200%
<u>A. Pooled Estimates</u>						
EPOP	-0.273*** (0.052)	-0.570*** (0.073)	-0.922*** (0.148)	-0.116*** (0.027)	-0.443*** (0.073)	-0.991*** (0.174)
% impact	-5.8%	-4.7%	-3.1%	-4.1%	-4.3%	-2.9%
Full sample mean	0.047	0.122	0.297	0.028	0.103	0.347
<u>B. By Period (1980s, GR, Rest of Period)</u>						
EPOP x 1980s	-0.291*** (0.070)	-0.634*** (0.089)	-0.994*** (0.172)	-0.083** (0.037)	-0.528*** (0.095)	-1.040*** (0.193)
EPOP x Rest of period	-0.285*** (0.053)	-0.573*** (0.081)	-0.929*** (0.152)	-0.127*** (0.026)	-0.429*** (0.081)	-0.994*** (0.182)
EPOP x GR	-0.229*** (0.056)	-0.492*** (0.073)	-0.828*** (0.157)	-0.132*** (0.029)	-0.360*** (0.071)	-0.928*** (0.189)
% Impact, 1980s	-6.2%	-5.2%	-3.3%	-3.0%	-5.2%	-3.0%
% Impact, rest of period	-6.1%	-4.7%	-3.1%	-4.5%	-4.2%	-2.9%
% impact, GR	-4.9%	-4.0%	-2.8%	-4.7%	-3.5%	-2.7%
p-value, GR = 1980s	0.31	0.08	0.25	0.17	0.04	0.50
<u>C. By Expansion/Contraction and GR</u>						
EPOP x Contraction	-0.271*** (0.057)	-0.598*** (0.087)	-0.964*** (0.162)	-0.094*** (0.030)	-0.475*** (0.083)	-1.003** (0.186)
EPOP x Expansion	-0.293*** (0.052)	-0.593*** (0.078)	-0.947*** (0.151)	-0.118*** (0.026)	-0.466*** (0.079)	-1.013*** (0.176)
EPOP x Contraction x GR	0.050 (0.040)	0.132** (0.052)	0.148 (0.097)	-0.024 (0.025)	0.125** (0.054)	0.087 (0.101)
EPOP x Expansion x GR	0.050* (0.026)	0.040 (0.058)	0.088 (0.097)	-0.036 (0.022)	0.072 (0.057)	0.057 (0.109)
% Impact, UR x Con.	-5.8%	-4.9%	-3.2%	-3.4%	-4.6%	-2.9%
% Impact, UR x Exp.	-6.2%	-4.9%	-3.2%	-4.2%	-4.5%	-2.9%
% Impact, URxCon + URxConxGR	-4.7%	-3.8%	-2.7%	-4.2%	-3.4%	-2.6%
% Impact, URxExp + URxExpGR	-5.2%	-4.5%	-2.9%	-5.5%	-3.8%	-2.8%
N	1683	1683	1683	1581	1581	1581

Notes: 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.