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The Dynamics of SNAP Participation and the Increase in SNAP Caseloads during the Recovery of 2003–2007

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Abstract

The recent Great Recession has seen an increase in Supplemental Nutrition Assistance Program (SNAP) participation of over 30%. The period following the 2001 recession also saw an increase in SNAP participation, the first time in program history that participation rose during a period of economic recovery. This study seeks the reason for this unexpected increase by examining the dynamics of SNAP participation. Descriptive results using the Survey of Income and Program Participation show that a dramatic fall in the exit rate is the primary reason why SNAP caseloads increased during the recovery period. Results from hazard regressions are inconclusive as to whether or not SNAP policy changes that occurred during the period are responsible for the decrease in the SNAP exit rate.

1 Introduction

The recent sharp rise in Supplemental Nutrition Assistance Program (SNAP)[1] participants has received much attention in the press and from policy makers. Since the start of the Great Recession in December 2007, SNAP participation[2] has increased to its highest level ever, serving 40.3 million Americans each month in fiscal year 2010, more than 13% of the population. Less attention has been given to the fact that SNAP participation also increased during the preceding economic expansion. Between fiscal years 2003 and 2007, total SNAP participation increased from 21 million to 27 million, an increase of almost 30%. This rise marked the first time in the program's history that participation increased during a period of economic recovery and growth.

Many studies have documented the relationship between macroeconomic conditions and SNAP participation levels. The majority of these studies find using aggregate data that the unemployment rate and other macroeconomic conditions have accounted for a large share of the changes in SNAP participation[3]. For example, Ziliak et al. (2003) report that a 1 percentage point increase in the unemployment rate leads to a 2.3 percent increase in participation after one year. This historical relationship between the unemployment rate and SNAP participation suggests that instead of increasing by over 20 percent, SNAP participation should have fallen by about 6 percent during the economic expansion of 2003-2007.

The fact that participation in SNAP behaved contrary to expectations based on the economic conditions during this time period has prompted others to seek alternative explanations for the surprising increase. A recent report prepared for the USDA found using

[1]The Food Stamp Program was renamed SNAP in October 2008 as part of the Food, Conservation, and Energy Act of 2008. The program is referred to as SNAP throughout this paper, although part of the time period addressed occurs prior to the name change.

[2]Throughout this paper "SNAP participation" refers to the overall population participation rate, not the participation rate among the eligible, unless otherwise specified.

[3]Examples of studies documenting the effects of policy changes and the economy on SNAP participation include Wilde et al. (2000), Kornfeld (2002), Danielson and Klerman (2006), Ratcliffe et al. (2007), and Ribar et al. (2008).

state-level data that the increase in participation in the early 2000s (when the economy was in recession) can be accounted for by an increase in the number eligible for the program, while the increase during the recovery period was due to an increase in the participation rate among those eligible (Mabli et al., 2009). They attribute the increase in eligibles to changes in state unemployment, labor force participation rates, and minimum wages, and the increase in the participation rate among the eligible to changes in the unemployment rate and changes in SNAP policy. Another study found similar results, that the increase in participation between 2000 and 2008 can be explained by both economic factors and policy changes (Mabli and Ferrerosa, 2010).

This study looks for the cause of the increase in SNAP participation at its underlying source: the determinants of the participation decision at the individual level, including the dynamics of SNAP entry and exit, using panel data from the Survey of Income and Program Participation (SIPP). While others have studied the dynamics of program entry and exit, this paper is the first to my knowledge to analyze them during the economic recovery of 2003-2007[4], as well as the more recent Great Recession.

Most of the previous work on SNAP participation dynamics has appeared in the form of USDA-commissioned reports by the policy research firm Mathematica. The earliest study using the SIPP used data from 1984-1986 to analyze the levels and determinants of program entry and exit, as well as participation spell length (Burstein, 1993). The author pays particular attention to so-called "trigger events", changes in circumstances that tend to immediately precede program entry and exit. She finds changes in income to be the most common of these events to cause both entry and exit. She also finds that household structure and economic circumstances are the most important determinants of how long individuals

[4]Although the National Bureau of Economic Research (NBER) defines the 2001 Recession as being over in November 2001 and the Great Recession as beginning in December 2007, I define the recovery period as starting in July 2003, as the national unemployment rate peaked in June 2003. The NBER also declared the Great Recession over in June 2009, but unemployment has not yet fallen significantly, so for my purposes, we are still in the Great Recession.

participate in SNAP, and that reentry into the program after exit is not uncommon. Later studies base their analysis on Burstein's work and use later panels of the SIPP to compare the dynamics of entry and exit over time. Gleason et al. (1998) find similar results on trigger events and determinants of participation length using SIPP data from the early 1990s, and also point out by comparing their work to Burstein's that the increase in the SNAP caseload between the mid-1980s and early 1990s was primarily caused by an increase in participation spell length. The next study, by Cody et al. (2005), used SIPP data from the 1990s to conclude that the caseload growth of the early 1990s was caused mostly by increased entry rates, and the decline of the late 1990s was due to increased exit rates and shorter participation spells. The most recent study covers the period 2001-2003 and finds the entry rate over this period to have remained similar to that in the early 1990s, but that the rate of re-entry rose (Cody et al., 2007).

This paper overlaps slightly with the most recent Mathematica study in terms of time period covered, but in contrast to it and the other related studies, I analyze the dynamics of SNAP participation over a longer period of time, rather than just a snapshot of a few years. In this instance, this paper is related to that of Grogger (2004), in which he uses SIPP data from 1986-1999 to analyze the effects of the economy and policies on transitions into and out of the AFDC/TANF program. He finds that the decline in the welfare caseload over this period resulted from an increase in the exit rate and a decrease in the entry rate. The increase in the exit rate was associated with economic conditions, the decline in the real value of welfare benefits, and the expansion of the EITC, while the entry rate decreased with economic conditions and federal welfare reform.

The remainder of this paper is divided into two sections. The first conducts a descriptive analysis of the dynamics of SNAP participation during the 2000s to find the cause for the increase in SNAP participation during the recovery of 2003-2007, which turns out to be a decrease in the rate at which participants exit the program. The second section is an

empirical hazard analysis of the determinants of the SNAP exit rate. Results do not provide conclusive evidence that policy changes occurring during the period were responsible for the decrease in the exit rate.

2 The Dynamics of SNAP Participation 2001-2010

2.1 Potential Mechanisms for a Caseload Increase

At the individual level, there are three mechanisms by which SNAP participation can increase: an increase in the number of individuals eligible for the program, an increase in the rate at which individuals enter the program, and a decrease in the rate at which participants exit the program.

When considering which of these three mechanisms to be the most likely cause of the increase in SNAP participation during the 2003-2007 recovery, it is important to keep in mind that this recovery was not a typical one. Economic growth, while positive, was quite low, and the unemployment rate did not fall very much as a result. The historical relationship between the unemployment rate and the percentage of the population participating in SNAP since 1980 can be seen in Figure 1. NBER official recessions are outlined in gray. Here it is quite apparent that prior to the 2000s the unemployment rate and SNAP participation moved in tandem[5]. Note that the recovery of 2003-2007 was also unique in that the poverty rate did not fall, something that can be seen more easily in Figure 2, which is the same as Figure 1 but zoomed in on the period of interest in this paper.

During a typical economic recovery period, we would expect the number of individuals eligible for SNAP to fall, since overall incomes tend to rise with economic growth. We would also expect the rate at which individuals enter the program to fall, and the exit rate from

[5]Also note in Figure 1 the comparative non-response of SNAP participation to the recession of the early 1980s. However, legislation enacted in 1981 and 1982, coinciding with the so-called "Reagan recession", implemented large cutbacks in the program, making it much harder to qualify for and receive food stamps.

SNAP to rise. However, the economic recovery period of 2003-2007 was not typical, and most interestingly did not see a fall in the poverty rate. To find out which of these three mechanisms behaved differently than expected and therefore was the cause of the increase in participation between 2003-2007, I turn to the data.

2.2 Data

The data used is the Survey of Income and Program Participation (SIPP), a nationally-representative panel survey containing detailed information on households and individuals in the US at a monthly level. I use the 2001, 2004, and 2008 panels, covering January 2001-March 2010. Ideally the unit of analysis would be defined as the household or family since SNAP eligibility is determined at this level, but unfortunately the longitudinal structure of the SIPP makes it nearly impossible to follow households or families over time. Due to this reason, and to follow previous research, I define the unit of analysis to be the individual[6]. I also chose to use the restricted-use version of the SIPP, available at a Census Research Data Center (RDC) to those with appropriate security clearance. I use this version since the public use version of the SIPP restricts the amount of geographic information due to privacy concerns. In the 2001 panel of the SIPP, some states are not even identified, and during my time period of interest state-level SNAP policies underwent many changes. Previous research has shown local economic conditions to be important determinants of SNAP participation[7], and to control for them in my analysis I need county of residence, something that is available in the restricted-use SIPP but not the public use version. For my main analyses I restrict my sample to individuals age 15 and over, as it is the adults in a household that decide whether or not to participate in SNAP.

[6]Gleason et al. (1998) repeat their analysis using the SIPP longitudinal definition of a household, and find their results to be very similar to those when using the individual as their unit of analysis

[7]See Mabli et al. (2009)

2.3 Results

Figure 3 shows the monthly participation rate in SNAP calculated using all individuals in the SIPP data. It follows the official participation rate very closely, starting at around 7% of the population in early 2001, and rising throughout the period to over 13% in early 2010. The two shaded areas mark the 2001 and Great Recessions. During the recovery period of 2003-2007 the participation rate rose from around 8% to near 10%, although the SIPP data shows some evidence that it may have declined somewhat in 2007.

The first potential mechanism by which SNAP participation could rise is an increase in the number of those eligible for the program. Eligibility for SNAP is primarily income-based, but assets, participation in other programs like TANF and SSI, and expenses for things like medical and child care are also taken into account. Even with the detailed data of the SIPP, it is extremely difficult to determine an individual's SNAP eligibility status in a given month. Therefore, I proxy the number of people eligible for SNAP using the fraction of the population below 200% of the poverty line, shown in Figure 4. Although the SIPP data is noisy, it appears that the number of people with household incomes less than 200% of the poverty line remained relatively constant between 2003-2007, around 32% of the population. Recall from Figure 2 that the poverty rate remained constant over this period. It therefore appears unlikely that an increase in the number of SNAP eligible individuals was the cause for the increase in participation during the recovery period before the Great Recession.

An increase in the entry rate is another way the SNAP caseload can increase. As seen in Figure 5, there is little evidence that this mechanism caused the increase in SNAP caseloads in the mid-2000s. Again, the data is somewhat noisy, but overall the entry rate into the program remained constant among individuals 15 and over through the period leading up to the Great Recession, when it increased sharply. On average, around 1.25% of all individuals over age 15 entered the program each month before the end of 2007.

The final mechanism that could cause an increase in SNAP participation is a fall in the

exit rate, meaning that once individuals enter the program, they leave at a decreased rate and therefore experience on average longer participation spells. The exit rate from SNAP among those over age 15, shown in Figure 6, decreased dramatically during the recovery period, from around 18% in early 2003 to close to 12% in 2007, a decrease of over 30%. The decline appears to have been steady over the entire period. The exit rate remained around 12% through the Great Recession.

From this descriptive analysis, I conclude that the decrease in the exit rate is the main reason behind the increase in SNAP participation between 2003-2007. The next section explores the possible reasons for this decrease.

3 Explaining the Fall in the Exit Rate

3.1 Potential Causes

The increase in SNAP caseloads in the recovery period prior to the Great Recession was caused by a decrease in the exit rate, as shown in the previous section. The next step is to explain why the rate at which SNAP participants left the program decreased during a time when the economy was improving. Two potential reasons come to mind: the decrease could be a result of the many SNAP policy changes that were implemented during the period, or it could be due to SNAP participants retaining their eligibility longer by experiencing a longer spell of poverty or near-poverty. It could also be attributable to a different cause, but the two mentioned are discussed below.

3.1.1 Policy Changes

The 2002 Farm Bill gave states much more flexibility over the eligibility requirements for their SNAP programs. Following the passage of this bill, many states began to align the eligibility requirements for SNAP with those for other programs such as TANF and SSI. Most of these

changes were aimed at making it easier to apply and qualify for the SNAP program, such as combined applications, decreased asset requirements, and simplified definitions of income and deductions. However, many changes also impacted those already receiving SNAP benefits, and could have affected how long an individual remained a program participant. These policies include:

- **Reporting requirements:** States have the option of requiring SNAP recipients to report on their income and finances at various intervals and in various ways. They can institute a type of periodic reporting system or they can rely on households to report changes within 10 days of occurrence - known as "incident reporting." Under the periodic system, participants report either quarterly or monthly, or under a "simplified" system with reduced reporting requirements. Under the simplified reporting option, households are required to report changes in income between certification and scheduled reporting periods only when total countable income rises above 130 percent of the poverty level. States implementing simplified reporting can set reporting intervals at four, five, or six months. Prior to passage of the 2002 Farm Bill, the FSP contained the option to use a reporting system with reduced reporting requirements for earned income households on a semi-annual schedule. With passage of the Farm Bill's Simplified Reporting option, States can expand their reporting systems for earned income households to any and all households that can be asked to report periodically[8].

  More and more states switched to simplified reporting, and longer reporting intervals and fewer reporting requirements, between 2003 and 2007. Moving to simplified reporting from incident reporting or shorter reporting intervals would be expected to decrease the exit rate and increase SNAP participation spell length since a household could keep receiving benefits longer even after an income increase as they do not have to report their income to the SNAP agency as often. It also decreases the cost associated

[8]Description taken from USDA Food and Nutrition Service (2004)

with participating in food stamps, as submitting a report takes time.

- **Certification periods:** With simplified reporting, states have the option of choosing how long a household is certified to receive SNAP. At the end of the period, a household must recertify their eligibility for the program to keep receiving benefits. Certification periods are assigned by caseworkers and are usually based on household characteristics and income.

  Certification periods became longer between 2003 and 2007, especially at the beginning of the period. By the end of the period, most states were assigning certification periods of 12 months or longer. Increasing the certification period length could decrease the exit rate for the same reasons lowering reporting requirements could: it would allow no-longer-eligible households to keep receiving their benefits longer and also decrease participation cost.

- **Expanded Categorical Eligibility:** Regular participation-based categorical eligibility makes anyone who is currently certified to receive TANF or SSI benefits automatically eligible to receive SNAP. States can choose to offer optional expanded categorical eligibility, which additionally makes households who receive benefits or services through programs that are at least 50% funded by TANF or maintenance of effort (MOE) sources eligible for SNAP. Note that for many of these services the only requirement for eligibility is to have income less than 200% of the poverty line, higher than the 130% requirement for SNAP eligibility.

  Expanded categorical eligibility is more likely to increase the entry rate into SNAP, as more of the population would be eligible for the program. However, it could also decrease the exit rate if it allows higher-income households to keep their eligibility longer than they would under regular categorical eligibility. It has also been shown in

numerous previous studies to have a strong positive effect on SNAP participation[9]. The number of states offering expanded categorical eligibility remained relatively constant through the 2003-2007 period.

Note that other policy changes occurred during this period, such as the loosening of the asset test with regard to vehicles, the implementation of special SNAP policies for non-citizens, and the introduction of online electronic applications, but these changes would either not be expected to affect the exit rate or would not be expected to affect a large enough share of the population to impact the overall exit and participation rate.

3.1.2 Increase in Poverty Spell Length

Even though the poverty rate did not fall between 2003-2007, the exit rate from SNAP could have fallen if those who were in poverty (or near-poverty) were remaining there longer than previously. Remaining in poverty for a longer period of time means SNAP recipients would remain eligible longer, and potentially have a greater need for SNAP benefits than those in shorter poverty spells.

While the poverty rate at a given period of time has received extensive study, less has been done on poverty durations, most likely due to the need for longitudinal data. However, a recent report using SIPP data reports that the median poverty spell duration for all individuals remained fairly constant across the 2001 and 2004 SIPP panels, with values of 4.3 and 4.5 months, respectively (Anderson, 2011). The 2001 panel data covers the years 2001-2003, and the 2004 data 2004-2006. This indicates that the length of time in poverty did not change very much over this time period, although unfortunately the report does not cover the entire period of interest.

With little evidence to go on, I do not think it likely that an increase in poverty duration was primarily responsible for the decrease in the SNAP exit rate over 2003-2007. To

[9]See, for example, Mabli et al. (2009)

determine whether policy changes or some other reason caused the change, I turn back to the SIPP data.

3.2 Data

For my empirical analysis of the determinants of the SNAP exit rate I use once again the restricted-use 2001, 2004, and 2008 panels of the SIPP. As in the previous section, I define the unit of analysis to be the individual and the sample of interest to include all individuals age 15 and over. I include only the fourth month of each interview wave for each individual. The three SIPP panels cover the time periods January 2001-April 2007 and April 2008-March 2010[10]. To the SIPP data I add county-level monthly unemployment rate data from the Bureau of Labor Statistics' Local Area Unemployment Statistics (BLS LAUS). I include annual state SNAP error rates, a measure reported by the USDA of how well a state is administering its SNAP program. I also add state-level SNAP policy information from two sources: the Food Stamp Program State Rules (FSPSR) database, developed by the Urban Institute, and from nine different Food Stamp/SNAP State Options Reports (SORs), published by the USDA at various intervals from 2002-2010. The FSPSR database has monthly data on state policies through 2004. The database is unfortunately not very compatible with the later SORs, but using my best judgement I combined the information from the database with the reports to create a policy dataset I call "FSPSR/SOR".[11] I use information on reporting requirements, certification lengths, and expanded categorical eligibility in my analysis.

After completion of the policy database using the FSPSR and the SORs, another source of state SNAP policy data was generously provided to me (Danielson et al., 2011). Con-

[10]The time-period gap in my data is 4 months longer than the gap between the public use 2004 and 2008 panels due to missing information for the last wave of the 2004 panel in the restricted-use files

[11]This involved combining variables from the FSPSR and the SORs when possible. For policy changes that occurred between the SORs, a good faith effort was made using the Internet to find the exact date the policy change was implemented. When this was not possible, I imputed the implementation date as the beginning of the state's fiscal year. When the time between the SORs did not include the first month of a fiscal year or included multiple years, the midpoint between the SORs was used as the date of implementation.

structed using information from the USDA, this dataset contains monthly information on reporting requirements, expanded categorical eligibility, vehicle policies, and electronic application implementation. A comparison of the two policy datasets is shown in Table 1. The table shows the number of states with each policy implemented as of January of each year. The datasets measure the policies slightly differently, with the Danielson et al. dataset breaking simplified reporting, vehicles, and electronic application policies into different and/or finer categories than the FSPSR/SOR dataset. The few directly comparable variables, such as quarterly reporting, do not line up exactly, but do display the same pattern in terms of the number of states adopting them over time.

From the combined SIPP and policy data I create a dataset of SNAP participation spells. An individual is defined to be in a participation spell if they reported receiving SNAP sometime during the interview wave. Due to keeping only the fourth month of each SIPP wave, I can only measure spell lengths in units of four months. I divide this sample of participation spells into two types: fresh and left-censored spells. Fresh spells are those spells for which I observe the beginning of the spell - meaning that the individual was already in the SIPP panel before his or her participation spell began. Left-censored spells are those spells for which we do not observe the beginning date - meaning that the individual entered the SIPP panel reporting SNAP receipt. In hazard analysis it is important to keep these two types of spells separate as left-censored spells have a higher probability of being very long spells, which tend to have different characteristics than short spells. The SIPP also records some pre-panel participation information for those who are currently receiving SNAP and those who report ever participating in the program. Unfortunately pre-panel spell length information is missing for many individuals, and so I make create a subsample that contains those left-censored spells that have nonmissing pre-panel information.[12]

[12]Here I would like to display descriptive statistics for the three spell samples, but unfortunately Census would not release that information due to confidentiality concerns.

3.3 Results

3.3.1 Kaplan-Meier Hazards

Using these three samples of participation spells, I first estimate Kaplan-Meier empirical hazard rates for SNAP exit for the three different economic periods in my data: the 2001 Recession, 2003-2007 Recovery, and the Great Recession. Results for fresh spells are presented in Figure 7. As expected, the hazard of exit decreases with spell length. The exit hazard in the 2003-2007 recovery period is lower than during the 2001 recession, and that during the Great Recession is much lower then the other two. The greatest difference between the hazard rates of the 2001 recession and following recovery is for short spells of 8 months or less, while the hazard rates of longer spells do not differ by a large amount. In contrast, spells of all (observable) lengths during the Great Recession have much lower exit hazard rates compared to the previous two periods.

Hazard rates for left-censored spells are displayed in Figure 8. Note that here I show hazard rates for *observed* spell length. Spells of 4 month observed duration could be of any length between 5 months and many years. Given this fact, hazard rates for left-censored spells are highest during the 2001 recession and lowest during the Great Recession. The empirical hazard function shifts successively downward a similar amount for all observed spell lengths across the three periods.

In Figure 9, I show the empirical hazard rates for left-censored spells conditional on reported pre-panel spell length. As reported spell lengths vary enormously, I divide the spells into six quantiles of reported length. Here a different pattern emerges than that in Figure 8. The Kaplan-Meier hazard function does decrease as time goes on, but the major difference between the 2001 recession and the 2003-2007 recovery seems to be among spells lasting longer than 28 months. In contrast, the major decrease in exit hazard between the 2003-2007 recovery and the Great Recession is for spells 28 months and shorter.

3.3.2 Exit Hazard Regressions

I estimate simple logit hazard regressions for SNAP exit. Note that all of the results of these regressions do not have a causal interpretation due to the nature of hazard analysis. I can only draw conclusions about the association between the implementation of SNAP policies and changes in the exit rate, not that the policy changes caused the fall in the exit rate. Table 2 shows the results for the entire time period using a sample of all individuals age 15 and older. The table is divided into three panels: fresh spells, left-censored spells, and left-censored spells with nonmissing pre-panel length. Within each panel, each specification adds progressively more control variables. I report coefficients for my main variables of interest: the county unemployment rate and state SNAP policy variables. I use a step function in duration to control for duration dependence, and demographic controls include those for age, children in household, household type, education, race, marital status, and MSA status. I also add dummy variables for the nine Census divisions in the third specification in each panel. In the last specification I add participation controls for WIC, TANF, rent subsidy, Medicaid, and pre-panel SNAP participation. Unfortunately, these variables are missing for many individuals, especially that for pre-panel SNAP participation, and therefore my sample size decreases when I include these variables. I cannot conclude that these variables are missing at random, and therefore I am cautious about the results for this specification. However, the policy variable coefficients do not change much with the addition of these variables.

Coefficient estimates for the variables of interest are remarkably similar across the different specifications and the different spell types. As expected, the unemployment rate has a negative relationship with SNAP exit. A higher state SNAP error rate increases the probability of exit. The coefficients on the other policy variables, predicted to decrease the probability of exit, are all negative as expected, although significance varies slightly across the different specifications. As I do not have much confidence in the accuracy of my FSPSR/SOR policy

data, I will not interpret anything other than the size and significance of the policy variable coefficients.

Table 3 shows results for each of the three spell types for the three main economic time periods: the 2001 Recession, the 2003-2007 Recovery, and the Great Recession. I show one specification per spell type as results do not differ much across the different specifications. During the 2001 Recession, the state food stamp error rate was positively associated with program exit, and simplified reporting (both for earners and expanded) was negatively associated with exit. Note that simplified reporting had the largest expansion in terms of the number of states adopting the policy during this time period.

During the 2003-2007 Recovery, my main time period of interest, few of the policy variables are significantly associated with SNAP exit across all three of the spell types. Expanded categorical eligibility is the only policy variable that is significantly associated with exit for two types of spells, fresh and left-censored. A similar pattern emerges during the Great Recession: very few of the policy variables show up significant in the exit rate regressions. Interestingly, the county unemployment rate is *positively* associated with exit for fresh spells.

The previous two tables used policy variables from the FSPSR/SOR dataset, and not from the Danielson et al. dataset. Due to time constraints, the only results I was able to disclose from the Census RDC using the Danielson et al. data are the signs and significances of the policy variable coefficients. Table 4 shows these for a specification using the FSPSR/SOR dataset and one using the Danielson et al. data for each spell type for the entire sample period. The policy variables are not directly comparable, but one can compare the coefficients on the "simplified reporting for earners" and "expanded simplified reporting" in the FSPSR/SOR to the "simplified reporting – some" and "simplified reporting – most" in the Danielson et al. data, as well as the expanded categorical eligibility variables. In the specifications using the Danielson et al. data I also include variables for vehicle and electronic application policies.

Recall that I hypothesized these policies to not have much of an effect on SNAP exit, as they primarily affect those initially qualifying and applying for the program, not current recipients. Including them in the specification tests this hypothesis.

For the entire time period, the simplified reporting and expanded categorical eligibility coefficients across the two specifications are comparable — all are negative and significant at at least the 5% level. However, many of the vehicle and electronic application variables are also negative and significant for all three of the spell types. This could be due to correlation with other policies or state characteristics that are associated with SNAP exit, or they could be having an unforeseen causal effect on SNAP exit. Regardless of the cause, the significant association between these seemingly unrelated policies and SNAP exit leads me to call the other policy results into question.

Breaking the results down by economic time period, as in Tables 5A-C, does not help allay these worries. Many of the vehicle and electronic application variables are significantly associated with SNAP exit in all three periods. Even more alarming, the coefficients on the expanded categorical eligibility and simplified reporting variables change sign between the two policy datasets for fresh and left-censored spells during the 2003-2007 Recovery, respectively.

4 Discussion and Conclusions

Based on descriptive analysis of SNAP participation spells using SIPP data, my results indicate that a fall in the rate at which participants left the program was likely the primary cause of the increase in SNAP participation during the economic recovery period of 2003-2007. Over this period, the entry rate into SNAP as well as the proportion of the population eligible for the program did not significantly change. The Great Recession, in contrast, saw increases in the entry rate and eligibility rate but no further change in the SNAP exit rate.

Comparing Kaplan-Meier hazard functions across the 2001 Recession, the 2003-2007

Recovery, and the Great Recession shows that the fall in the exit rate during the recovery period occurred primarily among short fresh spells (less than 12 months in length) and long left-censored spells (those lasting longer than 29 months). The hazard functions, which control for spell duration in contrast to calculating the overall exit rate, also show that exit rates continued to decline among all spell lengths and types during the Great Recession.

A basic hazard regression investigation into the causes of the exit rate decline provided inconclusive results. While many SNAP policy changes predicted to have a negative impact on the exit rate such as expanded simplified reporting, looser reporting requirements, and expanded categorical eligibility had a negative and statistically significant relationship with the exit rate for the entire time period (2001-2010), once the three economic time periods were examined separately the relationships were not as strong nor always of the expected sign. Results using improved policy data from Danielson et al. were largely consistent, although not always, with those using the author-constructed FSPSR/SOR dataset, but variables indicating the adoption of different vehicle and electronic application policies also had significant coefficients. These policies were not expected to have an impact on the exit rate, and therefore these results do not bode well for the results for the other policies. The estimated correlations could be appearing because they are in fact true causal impacts of the policies on the exit rate, or due to some other unobserved mechanism affecting the exit rate at the same time these policies were introduced. Therefore, my hazard regression results do not provide evidence one way or another that the SNAP policy changes that occurred during the 2003-2007 Recovery were responsible for the decline in the exit rate. The explanation must lie elsewhere, or the policy variables I currently use are not accurately measuring true policy implementation. Future research is required to provide a definitive answer to this question.

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5 Tables and Figures

Table 1: Number of states implementing SNAP policies

A. FSPSR/SOR

	Year									
Policy	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Reporting Requirements										
Quarterly reporting	6	8	4	2	1	1	1	1	1	1
Simplified reporting earners	0	13	24	35	42	43	43	46	45	43
Expanded simplified reporting	0	0	0	31	34	40	40	43	43	43
Certification Periods										
Quarterly	24	17	9	4	2	2	1	1	1	1
Six month	7	15	24	26	28	29	28	27	21	20
Twelve month	18	18	18	21	20	19	12	13	9	10
Various	2	1	0	0	1	1	8	8	19	19
Expanded Categorical Eligibility	0	0	33	36	35	37	35	36	36	34
Vehicles										
Asset limit raised	0	0	0	8	8	8	7	5	3	2
1+ excluded	0	1	4	14	14	15	15	16	11	11
All excluded	0	16	20	20	24	24	26	29	31	35
Electronic application	0	2	2	3	7	8	12	20	22	24

B. Danielson et al.

	Year										
Policy	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Quarterly reporting	10	5	5	1	1	1	1	1	1	1	1
Simplified reporting											
No non-earned-income HHs	0	11	18	15	13	10	11	11	7	3	2
Some non-earned-income HHs	0	0	4	24	30	33	34	34	29	28	27
Most or all non-earned-income HHs	0	0	0	0	0	1	2	2	11	18	20
	0	11	22	39	43	44	47	47	47	49	49
Expanded categorical eligibility											
Participatory	13	16	18	18	18	19	19	19	19	19	19
Informational - HHs with dependents	0	4	4	4	4	4	4	4	4	6	6
Informational - all HHs	4	5	6	6	8	8	9	11	16	22	30
Vehicles											
Asset limit raised	1	2	4	5	5	5	4	3	3	3	3
Some excluded	1	11	13	14	15	15	15	14	13	12	12
Most excluded	0	3	3	3	3	3	3	3	3	3	3
All excluded	0	8	12	16	17	18	20	23	24	25	26
Electronic application											
Part of state	1	0	0	0	0	1	1	4	5	5	4
Full state	0	1	2	4	5	8	9	12	16	20	22
E-signature	1	1	1	1	2	5	8	13	18	23	24

Source: Author-constructed FSPSR/SOR dataset and Danielson et al. (2011).
Notes: The number of states adopting each policy as of January of each year is displayed. For more on each dataset see text.

Table 2: SNAP Exit Rate Regressions, 2001, 2004, 2008 SIPP

	Fresh Spells			Left-Censored Spells			Left-Censored Spells, PPL		
Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
County unemployment rate	-0.033***	-0.027***	-0.032***	-0.044***	-0.044***	-0.042***	-0.038***	-0.037***	-0.039***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.008)	(0.007)	(0.008)	(0.011)
Food Stamp error rate	0.030***	0.035***	0.043***	0.029***	0.031***	0.040***	0.033***	0.037***	0.044***
	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.009)	(0.008)	(0.008)	(0.012)
Simplified reporting for earners	-0.243***	-0.187***	-0.197***	-0.195***	-0.129***	-0.144**	-0.189***	-0.137**	-0.251***
	(0.039)	(0.041)	(0.048)	(0.045)	(0.049)	(0.074)	(0.061)	(0.065)	(0.095)
Expanded simplified reporting	-0.103***	-0.152***	-0.237***	-0.156***	-0.188***	-0.126**	-0.155***	-0.180***	-0.068
	(0.033)	(0.035)	(0.040)	(0.040)	(0.042)	(0.063)	(0.053)	(0.057)	(0.083)
Twelve month certification periods	-0.014	-0.054*	-0.093***	-0.086***	-0.116***	-0.085*	-0.096**	-0.126***	-0.152**
	(0.030)	(0.031)	(0.036)	(0.033)	(0.035)	(0.051)	(0.045)	(0.047)	(0.068)
Various certification periods	-0.219***	-0.277***	-0.312***	-0.041	-0.089	-0.189**	-0.024	-0.073	-0.166
	(0.053)	(0.055)	(0.061)	(0.054)	(0.057)	(0.082)	(0.074)	(0.077)	(0.110)
Expanded categorical eligibility	-0.033	-0.091***	-0.081**	-0.101***	-0.127***	-0.110**	-0.162***	-0.185***	-0.140**
	(0.030)	(0.031)	(0.036)	(0.036)	(0.037)	(0.054)	(0.048)	(0.049)	(0.071)
Duration dependence controls	X	X	X	X	X	X	X	X	X
Demographic controls	X	X	X	X	X	X	X	X	X
Census division dummies		X	X		X	X		X	X
Other program participation controls			X			X			X
Observations	44,192	44,192	33,675	63,687	63,687	27,611	42,526	42,526	18,414

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors in parentheses. "PPL" denotes "Pre-panel Length". Samples include all individuals age 15 and above. Demographic controls include those for age, children in household, household type, education, race, marital status, and MSA status. Duration dependence is controlled for using a step function in spell duration. Dummies are for the nine Census divisions. Other program participation controls include those for WIC, TANF, rent subsidy, Medicaid, and pre-panel SNAP participation.

Table 3: SNAP Exit Rate Regressions by Economic Time Period, 2001, 2004, 2008 SIPP

	2001 Recession			2003-2007 Recovery			Great Recession		
	Fresh	Left-Censored	Left-Censored PPL	Fresh	Left-Censored	Left-Censored PPL	Fresh	Left-Censored	Left-Censored PPL
Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
County unemployment rate	-0.025**	-0.034***	-0.028*	-0.024***	-0.030***	0.006	0.066***	-0.008	-0.054***
	(0.010)	(0.011)	(0.015)	(0.008)	(0.010)	(0.014)	(0.011)	(0.013)	(0.014)
Food Stamp error rate	0.020*	0.034***	0.037**	-0.017	-0.021	-0.012	-0.021	0.005	0.010
	(0.010)	(0.012)	(0.016)	(0.011)	(0.016)	(0.020)	(0.018)	(0.017)	(0.023)
Simplified reporting for earners	-0.277***	-0.197**	-0.110	0.033	-0.146*	-0.102	-0.220	-0.032	0.086
	(0.064)	(0.089)	(0.112)	(0.079)	(0.088)	(0.120)	(0.134)	(0.145)	(0.193)
Expanded simplified reporting	-0.119	-0.571**	#	0.133**	0.043	0.082	0.040	-0.007	-0.152
	(0.101)	(0.267)	#	(0.055)	(0.064)	(0.087)	(0.102)	(0.102)	(0.134)
Twelve month certification periods	-0.023	-0.114*	-0.152*	0.086*	0.015	0.067	-0.038	-0.055	-0.104
	(0.060)	(0.069)	(0.092)	(0.045)	(0.059)	(0.079)	(0.101)	(0.084)	(0.114)
Various certification periods	#	0.495*	0.501	-0.425***	0.158	0.032	0.206**	0.074	-0.004
	#	(0.296)	(0.355)	(0.129)	(0.200)	(0.245)	(0.084)	(0.080)	(0.108)
Expanded categorical eligibility	0.091	0.150	-0.112	-0.109**	-0.101*	-0.065	-0.173*	-0.165**	-0.195*
	(0.056)	(0.124)	(0.112)	(0.047)	(0.058)	(0.079)	(0.094)	(0.080)	(0.107)
Duration dependence controls	X	X	X	X	X	X	X	X	X
Demographic controls	X	X	X	X	X	X	X	X	X
Census division dummies	X	X	X	X	X	X	X	X	X
Other program participation controls									
Observations	10,316	13,138	8,810	23,775	29,429	19,488	10,101	19,679	14,228

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors in parentheses. "PPL" denotes "Pre-panel Length". Samples include all individuals age 15 and above. 2001 recession defined as January 2001-June 2003, recovery defined as July 2003-April 2007, and Great Recession defined as May 2007-March 2010. Demographic controls include those for age, children in household, household type, education, race, marital status, and MSA status. Duration dependence is controlled for using a step function in spell duration. Dummies are for the nine Census divisions. Other program participation controls include those for WIC, TANF, rent subsidy, Medicaid, and pre-panel SNAP participation.
Coefficient removed due to confidentiality concerns.

Table 4: SNAP Exit Rate Regressions using both policy datasets, 2001, 2004, 2008 SIPP

	Fresh Spells		Left-Censored Spells		Left-Censored Spells, PPL	
Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)
FSPSR/SOR Data						
County unemployment rate	-***	-***	-***	-***	-***	-***
Food stamp error rate	+***		+***		+***	
Simplified reporting for earners	-***		-***		-**	
Expanded simplified reporting	-***		-***		-***	
Twelve month certification periods	-*		-***		-***	
Various certification periods	-***		-		-	
Expanded categorical eligibility (ECE)	-***		-***		-***	
Danielson et al. Data						
Quarterly reporting		-		+**		+*
Simplified reporting – some		-***		-**		-**
Simplified reporting – most		-***		-***		-***
ECE – participation		+		-**		-
ECE – informational dependents		-		-***		-***
ECE – informational all		-***		-***		-***
Vehicles – asset raised		-		-*		-
Vehicles – some		-***		-***		-***
Vehicles – most		+		-*		-
Vehicles – all		-***		-***		-***
Electronic app – part		-*		-***		-**
Electronic app – full		-*		-***		-***
Electronic app – e-sig		+		+		+

*** p<0.01, ** p<0.05, * p<0.1

Notes: "PPL" denotes "Pre-panel Length". Signs and significance levels of coefficients displayed. Observation totals not displayed due to confidentiality concerns. Samples include all individuals age 15 and above. All specifications include controls for demographics, duration dependence, and Census divisions.

Table 5A: SNAP Exit Rate Regressions using both policy datasets, 2001 Recession, 2001, 2004, 2008 SIPP

	Fresh		Left-Censored		Left-Censored PPL	
Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)
FSPSR/SOR data						
County unemployment rate	-***	-**	-***	-***	-*	-**
Food stamp error rate	+*		+***		+**	
Simplified reporting for earners	-***		-**		-	
Expanded simplified reporting	-		-**		-**	
Twelve month certification periods	-		-*		-*	
Various certification periods	-		+*		+	
Expanded categorical eligibility	+		+		-	
Danielson et al. data						
Quarterly reporting		-		+		+
Simplified reporting – some		-*		-		-**
Simplified reporting – most		-		-		
ECE – participation		+		-**		-
ECE – informational dependents		+***		-		+
ECE – informational all		-**		-		-
Vehicles – asset raised		-		-**		-
Vehicles – some		+		-		-
Vehicles – most		-		-***		-**
Vehicles – all		-**		-**		-
Electronic app – part		-		+		+
Electronic app – full		-		-**		-*
Electronic app – e-sig		-		+		+

*** p<0.01, ** p<0.05, * p<0.1

Notes: "PPL" denotes "Pre-panel Length". Signs and significance levels of coefficients displayed. Observation totals not displayed due to confidentiality concerns. Samples include all individuals age 15 and above. 2001 recession defined as January 2001-June 2003, recovery defined as July 2003-April 2007, and Great Recession defined as May 2007-March 2010. All specifications include controls for demographics, duration dependence, and Census divisions.

Table 5B: SNAP Exit Rate Regressions using both policy datasets, 2003-2007 Recovery, 2001, 2004, 2008 SIPP

	Fresh		Left-Censored		Left-Censored PPL	
Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)
FSPSR/SOR data						
County unemployment rate	-***	-*	-***	-***	+	-
Food stamp error rate	-		-		-	
Simplified reporting for earners	+		-*		-	
Expanded simplified reporting	+**		+		+	
Twelve month certification periods	+*		+		+	
Various certification periods	-***		+		+	
Expanded categorical eligibility	-**		-*		-	
Danielson et al. data						
Quarterly reporting		+		+**		+
Simplified reporting – some		+		+**		+**
Simplified reporting – most		-		+		-*
ECE – participation		-		-**		-**
ECE – informational dependents		+***		-		-
ECE – informational all		+		-**		-*
Vehicles – asset raised		+***		+		+*
Vehicles – some		+***		-**		-
Vehicles – most		+***		-		-
Vehicles – all		+***		-		+
Electronic app – part		+		+		+
Electronic app – full		+		-		-
Electronic app – e-sig		+**		-		-

*** p<0.01, ** p<0.05, * p<0.1

Notes: "PPL" denotes "Pre-panel Length". Signs and significance levels of coefficients displayed. Observation totals not displayed due to confidentiality concerns. Samples include all individuals age 15 and above. 2001 recession defined as January 2001-June 2003, recovery defined as July 2003-April 2007, and Great Recession defined as May 2007-March 2010. All specifications include controls for demographics, duration dependence, and Census divisions.

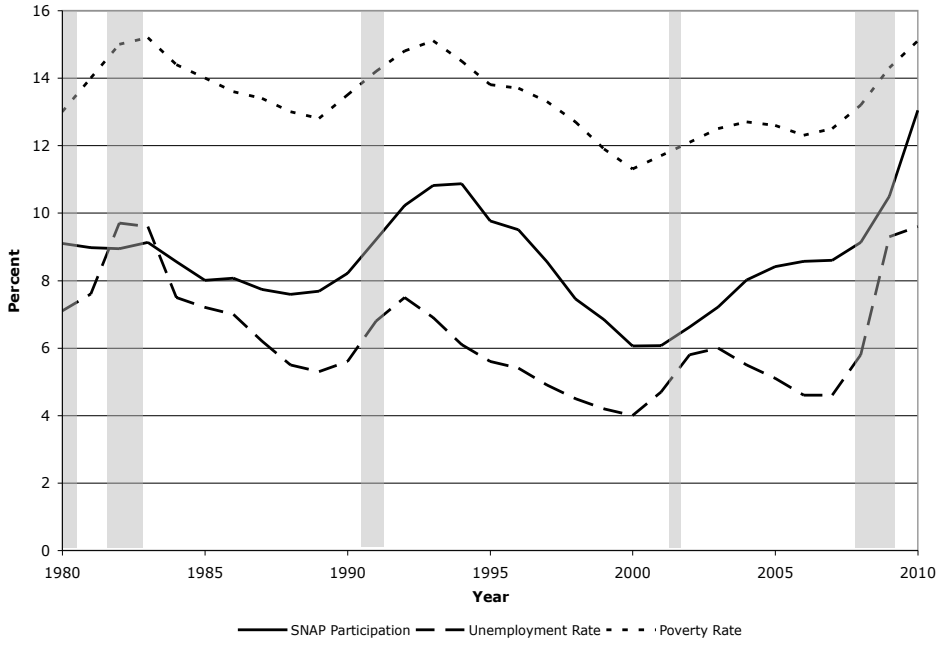
Table 5C: SNAP Exit Rate Regressions using both policy datasets, Great Recession, 2001, 2004, 2008 SIPP

	Fresh		Left-Censored		Left-Censored PPL	
Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)
FSPSR/SOR data						
County unemployment rate	+***	+***	-	-	-***	-***
Food stamp error rate	-		+		+	
Simplified reporting for earners	-		-		+	
Expanded simplified reporting	+		-		-	
Twelve month certification periods	-		-		-	
Various certification periods	+**		+		-	
Expanded categorical eligibility	-*		-**		-*	
Danielson et al. data						
Quarterly reporting		-		+		+
Simplified reporting – some		-		+		-
Simplified reporting – most		+		-**		-**
ECE – participation		-**		-		-
ECE – informational dependents		-		-***		-***
ECE – informational all		+		-***		-**
Vehicles – asset raised		-		+*		+
Vehicles – some		-		+		-
Vehicles – most		+		+**		+
Vehicles – all		+**		+		-
Electronic app – part		-		-***		-**
Electronic app – full		-*		-**		-*
Electronic app – e-sig		+*		+**		+*

*** p<0.01, ** p<0.05, * p<0.1

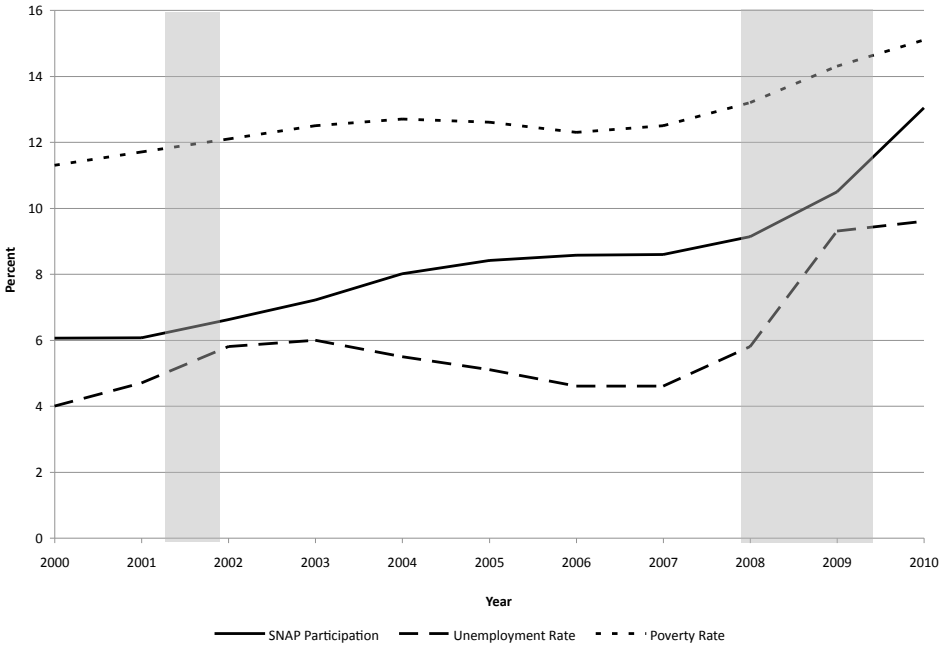
Notes: "PPL" denotes "Pre-panel Length". Signs and significance levels of coefficients displayed. Observation totals not displayed due to confidentiality concerns. Samples include all individuals age 15 and above. 2001 recession defined as January 2001-June 2003, recovery defined as July 2003-April 2007, and Great Recession defined as May 2007-March 2010. All specifications include controls for demographics, duration dependence, and Census divisions.

Figure 1: SNAP Participation, Poverty, and Unemployment Rates, 1980-2010



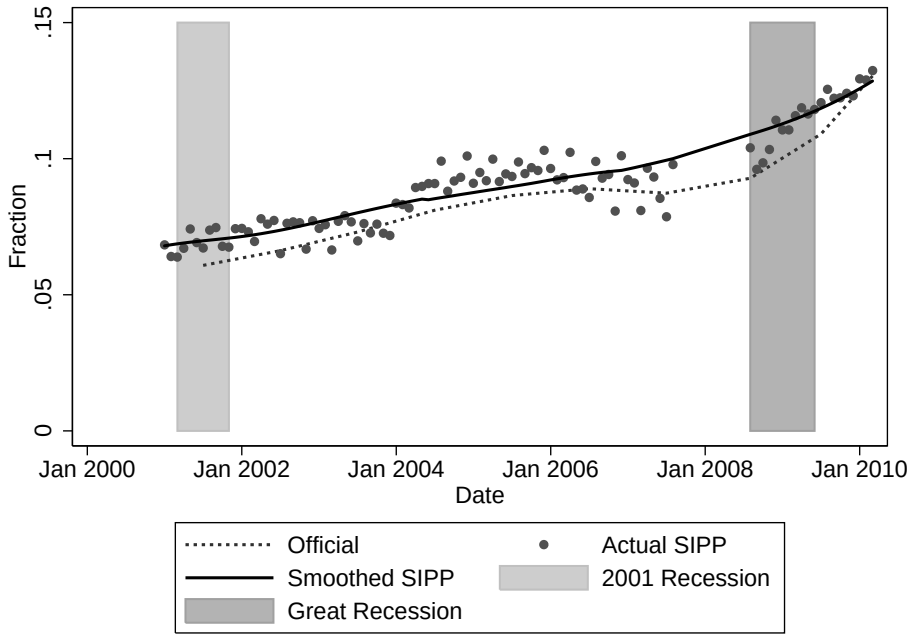
Source: BLS, USDA, and U.S. Census data.
Note: NBER Recessions outlined in gray.

Figure 2: SNAP Participation, Poverty, and Unemployment Rates, 2000-2010



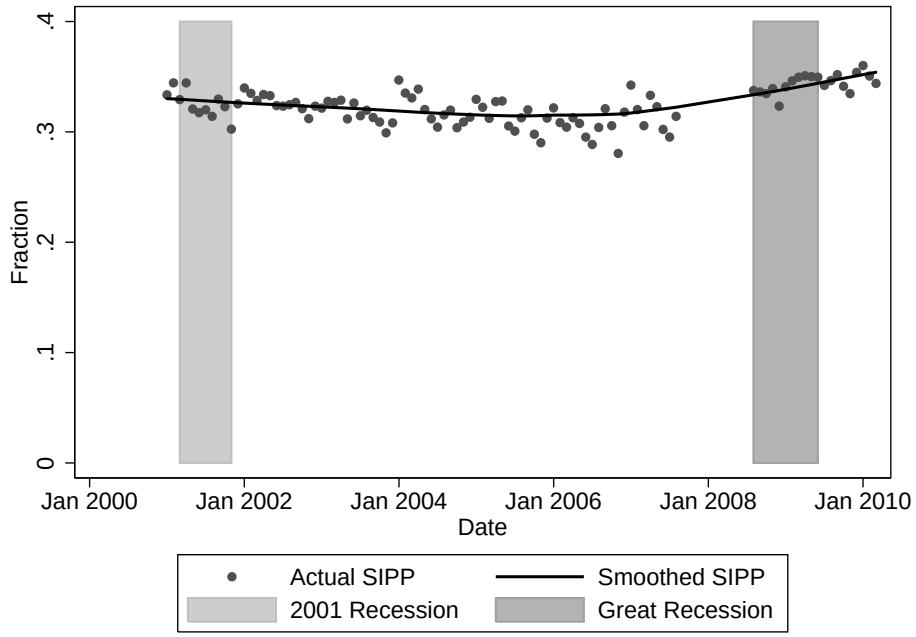
Source: BLS, USDA, and U.S. Census data.
Note: NBER Recessions outlined in gray.

Figure 3: SNAP Participation Rate, 2001, 2004, 2008 SIPP



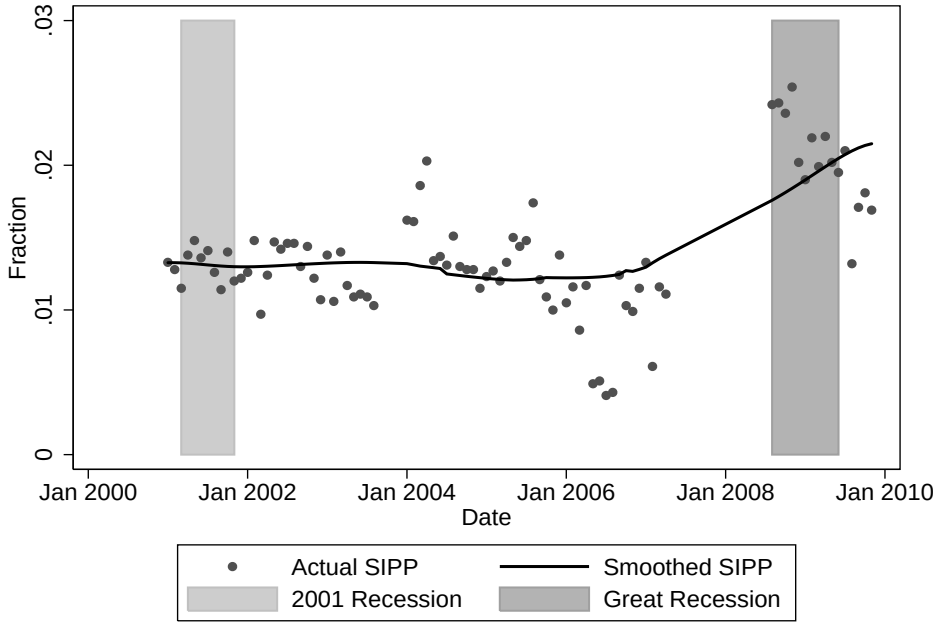
Source: Authors calculations using SIPP data and USDA.
Note: Participation rate defined as percent of population participating in SNAP. Sample includes the fourth month for each SIPP wave for all individuals. Points on graph are monthly average participation rates. Smoothed SIPP calculated using Lowess smoothing with a bandwidth of 0.8.

Figure 4: Fraction of Population below 200% of Poverty, 2001, 2004, 2008 SIPP



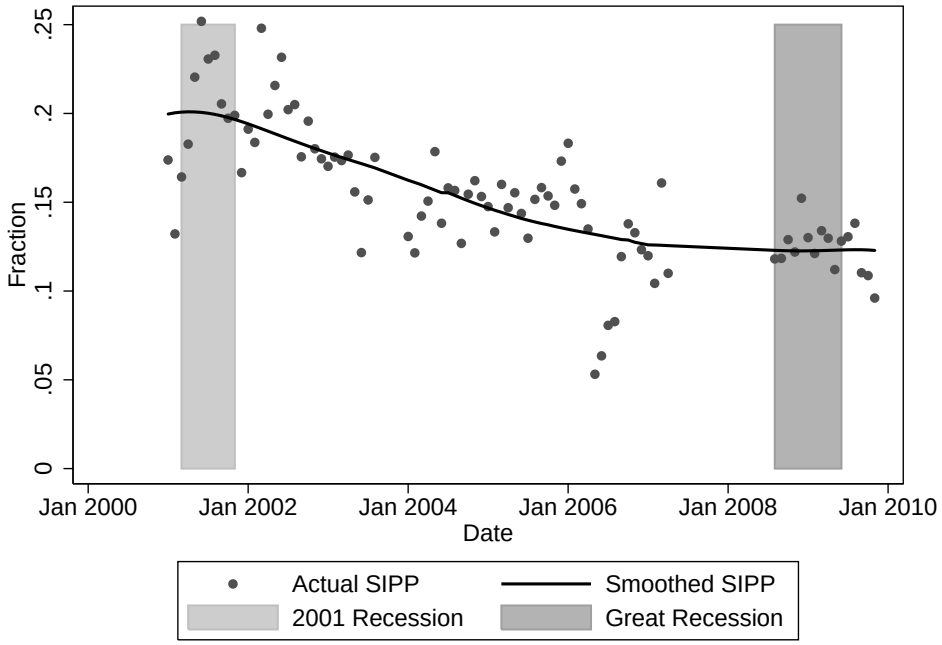
Source: Authors calculations using SIPP data.
Note: Sample includes the fourth month for each SIPP wave for all individuals. Points on graph are monthly average fractions below poverty. Smoothed SIPP calculated using Lowess smoothing with a bandwidth of 0.8.

Figure 5: SNAP Entry Rate, 2001, 2004, 2008 SIPP



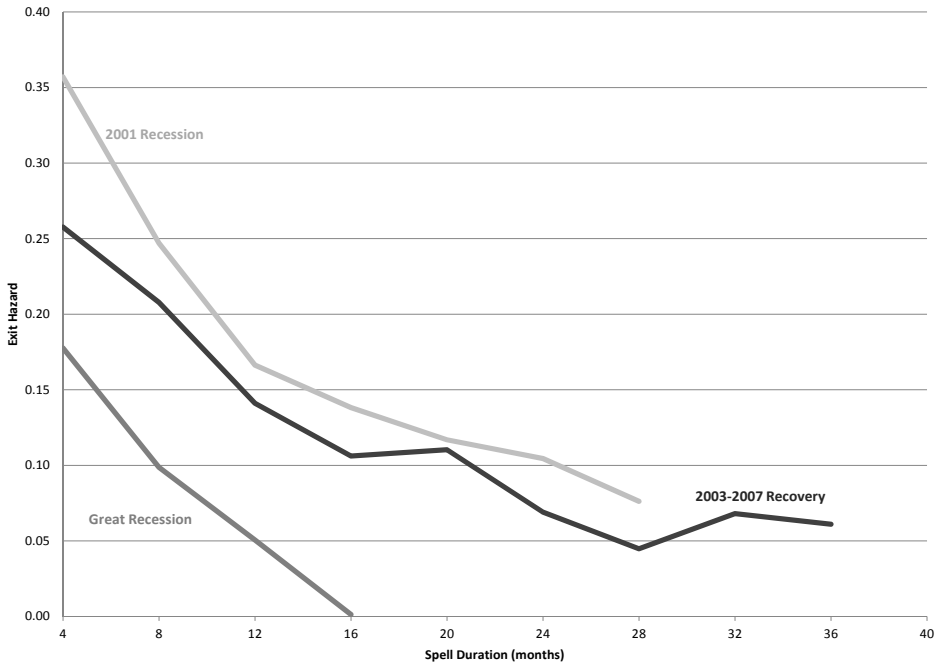
Source: Authors calculations using SIPP data.
Note: Sample includes the fourth month for each SIPP wave for individuals aged 15 and above. Points on graph are monthly average entry rates. Entry rates only defined for individuals observed not participating in SNAP one wave and observed participating the next. Smoothed SIPP calculated using Lowess smoothing with a bandwidth of 0.8.

Figure 6: SNAP Exit Rate, 2001, 2004, 2008 SIPP



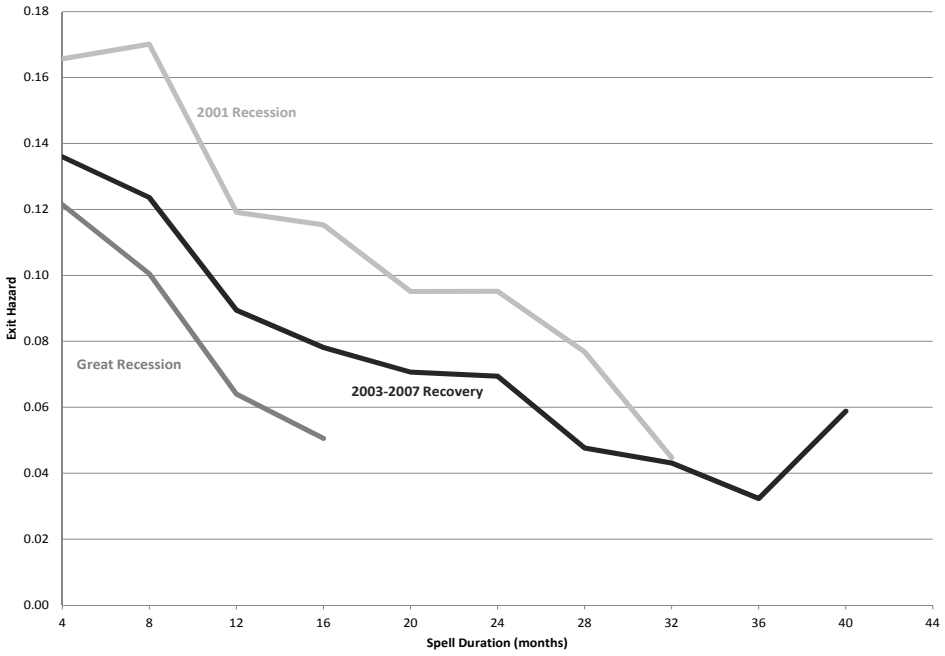
Source: Authors calculations using SIPP data.
Note: Sample includes the fourth month for each SIPP wave for individuals aged 15 and above. Points on graph are monthly average exit rates. Exit rates only defined for individuals observed participating in SNAP one wave and observed not participating the next. Smoothed SIPP calculated using Lowess smoothing with a bandwidth of 0.8.

Figure 7: Kaplan-Meier Exit Hazard Rates, Fresh Spells, 2001, 2004, 2008 SIPP



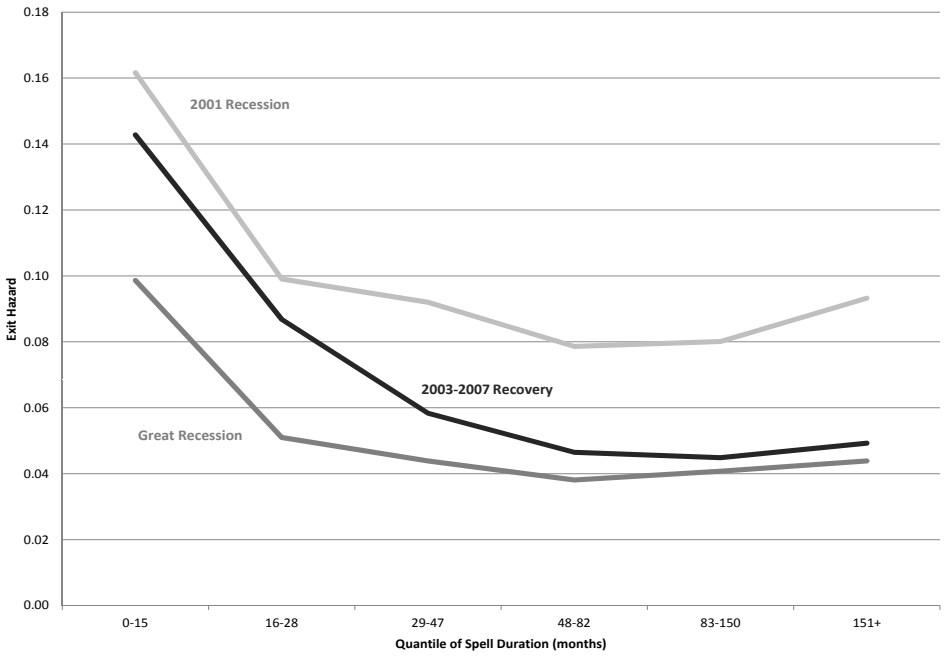
Source: Authors calculations using SIPP data.
Note: Sample includes the fourth month of each wave for all individuals age 15 and above experiencing a fresh SNAP participation spell. 2001 recession defined as January 2001-June 2003, recovery defined as July 2003-April 2007, and Great Recession defined as May 2007-March 2010.

Figure 8: Kaplan-Meier Exit Hazard Rates, Left-Censored Spells, 2001, 2004, 2008 SIPP



Source: Authors calculations using SIPP data.
Note: Sample includes the fourth month of each wave for all individuals age 15 and above experiencing a left-censored SNAP participation spell. Spell duration is measured as duration since entry into SIPP panel. 2001 recession defined as January 2001-June 2003, recovery defined as July 2003-April 2007, and Great Recession defined as May 2007-March 2010.

Figure 9: Kaplan-Meier Exit Hazard Rates, Left-Censored Spells, Controlling for Pre-Panel Length, 2001, 2004, 2008 SIPP



Source: Authors calculations using SIPP data.
Note: Sample includes the fourth month of each wave for all individuals age 15 and above experiencing a left-censored SNAP participation spell with non-missing pre-panel length. Spell duration is measured using six quantiles of reported spell length. 2001 recession defined as January 2001-June 2003, recovery defined as July 2003-April 2007, and Great Recession defined as May 2007-March 2010.