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Did Recent Medicaid Reforms Cause the Caseload Explosion in the Food Stamp Program?

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Abstract

I examine whether changes in Medicaid eligibility for young children can help explain the caseload growth in the Food Stamp program between 1987 and 1995. Medicaid may increase food stamp participation through increased awareness about other welfare benefits. It could also reduce earnings through perverse labor supply incentives, thereby increasing food stamp participation.

The Medicaid expansions enacted during the 1980s offer a unique opportunity to examine empirically Medicaid's interaction with the Food Stamp program because they conditioned eligibility on the age of the child. Households with ineligible children (based on the child's age) serve as a control group to isolate Medicaid's effect. They help to eliminate many other plausible explanations for the rise in food stamp participation, including economic fluctuations at the state and national levels.

I use the Survey of Income and Program Participation (SIPP) to tackle this question. It shows evidence that expanding Medicaid eligibility increased food stamp participation. The effect is quite modest, however. The expansions explain less than 10 percent of the growth in food stamps, substantially smaller than previous estimates. Moreover, its effect on food stamp participation comes entirely through increased program awareness, rather than from any change in labor supply.

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1. INTRODUCTION

The Food Stamp program is currently the second most expensive welfare program in the United States. More than 10 percent of the U.S. population participated during 1993, and expenditure amounted to $24.8 billion. After hovering around 19 to 20 million participants per year for most of the 1980s, the Food Stamp program grew dramatically in the late 1980s and early 1990s. Between 1988 and 1993, the number of participants shot up 44 percent, from 18.8 million to 27.0 million. This caseload rise was largely due to increased takeup among eligibles rather than from increased eligibility. Trippe and Sykes (1994) report that takeup increased from 59 percent of eligibles in 1989 to 74 percent of eligibles in 1992. Since the growth in food stamp participation continued both before and after 1990, reasons other than the recession of 1990 must be considered for the rise. This study explores the link between food stamps and Medicaid.

Medicaid, the most expensive welfare program, has also grown rapidly. Enrollment rose from 22.9 to 33.4 million between 1988 and 1993, an increase of 45 percent. While there were only trivial changes in the food stamp rules, there were dramatic changes in the Medicaid rules. In particular, Medicaid eligibility was greatly expanded for pregnant women, infants, and children. These expansions offered Medicaid coverage to those in middle-class families who were ineligible for Medicaid coverage through Aid to Families with Dependent Children (AFDC).

There are two distinct reasons why changing the Medicaid rules could lead to an increase in food stamp participation. The first is related to program awareness. As Corson and McConnell (1990) note, the first welfare program that a family comes in contact with may be Medicaid. If the family brings their child to the hospital, they then may discover they are eligible for Medicaid. Once they find out about Medicaid, the likelihood they learn about other welfare programs (such as food stamps)

increases. McConnell (1991) explains that the additional "hassle" of applying for food stamps may be low, because some states have joint application forms for Medicaid and food stamps, and because the Medicaid and food stamp offices are often located in the same building.

The second way Medicaid eligibility could affect food stamp participation is through changes in labor supply. As several studies have noted, collecting Medicaid is an all-or-nothing decision, and this could have important effects on the total amount of family earnings.[1] The expansions in the Medicaid program during the 1980s created incentives for some families to raise their earnings, but also offered incentives for other families to lower their earnings. For the first group, increases in earnings may make them ineligible for food stamps, lowering overall participation. For the second group, however, the perverse labor supply incentives may make them newly eligible for food stamps, thereby raising overall participation. Since food stamp participation may rise or fall from expanding Medicaid, this ambiguity motivates empirical testing.

Knowing whether, and understanding why, a link exists between Medicaid and food stamps is important for two purposes. First, it helps us better appreciate the overall costs and benefits of expanding Medicaid eligibility in the 1980s. Recent studies of Medicaid expansions have shed light on its impact on labor supply, AFDC participation, infant and child health, overall Medicaid coverage, and private health insurance coverage. None of these studies, however, focus on food stamp participation. Second, and more importantly from a policy perspective, this paper hopes to answer whether contracting Medicaid eligibility will have opposite effects, of similar magnitude, on food stamp participation. The key issue is to convincingly separate the awareness effect from the labor supply effect mentioned above. If expanding eligibility for one program raises overall awareness about all transfer programs, then scaling back eligibility will not have a symmetric effect—once the information

[1]See Blank (1989), Winkler (1991), Moffitt and Wolfe (1992), and Yelowitz (1995) for discussions of these effects.

about other welfare programs is known, it cannot be taken away. If, on the other hand, the increase mainly comes from some families reducing their earnings, then cutting back Medicaid eligibility should reduce food stamp participation.

Expanding Medicaid eligibility and rising food stamp participation are certainly positively correlated in the time-series data, but does this reflect causation? Both changing economic conditions and growing income inequality, for example, would increase participation in Medicaid and food stamps, but neither tells us about the link between the two. In the data analysis, I exploit the fact that Medicaid rules affected only certain groups in the population and not others. In particular, the Medicaid rules vary across states, over time, and by the ages of children. The aim is to separately identify Medicaid's effect from other economy-wide shocks by comparing food stamp participation rates of households who are eligible based on these state, time, and age dimensions to ineligible households.

I primarily use the 1987–1993 panels of the Survey of Income and Program Participation (SIPP) to tackle this question. It shows evidence that expanding Medicaid eligibility increased food stamp participation, but the estimate is smaller in economic terms than previous studies. While Medicaid had some effect on the Food Stamp program, it explains only 10 percent of the growth. Moreover, Medicaid's effect on food stamp participation came entirely through increased program awareness, rather than from changes in labor supply.

The remainder of the paper is arranged into four parts. In Section 2, I present some background on the Medicaid and Food Stamp programs. I also summarize the current body of knowledge on the link between Medicaid and food stamps. In Section 3, I provide empirical evidence on the link between Medicaid and food stamps. I start off with a descriptive analysis by showing trends in the programs for different socioeconomic groups. I then provide the empirical framework for identifying Medicaid's effect in the regression analysis. Finally, I take data spanning the years 1987 to 1995, and show that expanding Medicaid eligibility is associated with higher food stamp participation rates, even after

accounting for other factors. In Section 4, I separate the information and labor supply effects. I use some unique questions provided in the SIPP topical modules on prior food stamp authorization. For those who have had previous contact with the welfare system (where their response to welfare recipiency questions is used as a proxy), the effect of Medicaid eligibility should represent changes in labor supply, not information. For those without any previous recipiency, the estimated effect of Medicaid eligibility reflects both effects. I assess the importance of the two effects by comparing the magnitudes of Medicaid's impact. In this case, I find the effect of Medicaid comes solely through increases in information rather than changes in labor supply. As a final check, I restrict the sample to households who lived in high AFDC benefit states. The Medicaid expansions should have only a small impact on the labor supply decisions of households in high benefit states, because the household's budget constraint is less drastically changed. For this subsample, I continue to find large effects of Medicaid eligibility, which is again consistent with the information effect rather than the labor supply effect. In Section 5, I provide some conclusions and extensions.

2. BACKGROUND

2.1 The Expansions in the Medicaid Program

In fiscal year 1993, more than $125 billion was spent on Medicaid, with the federal government paying 58 percent of the total, and the state governments paying the remainder. Medicaid offers public health care through free or subsidized medical services to several distinct groups. Before the recent expansions, the two main ways a poor family could qualify were by participating in the AFDC or Supplemental Security Income (SSI) programs. Medicaid serves female-headed households with

children who participate in AFDC (and to smaller extent, the members of two-parent families in AFDC-Unemployed Parents).[2] It also serves the blind, disabled, and elderly through SSI.[3]

Starting in 1984, and especially from 1986 onward, Congress attempted to increase access to health care for pregnant women, infants, and children through a series of Medicaid expansions. These expansions in eligibility were motivated by rising concerns over infant mortality and child health. Thus, Medicaid was targeted to all poor children, not just to recipients of cash welfare.

Several pieces of legislation, which are documented in the timeline in Table 1, expanded access to health care for children. In 1986 and 1987, federal legislation gave the states several options for expanding their Medicaid program. Legislation in 1988, 1989, and 1990 mandated more extensive coverage. Table 2 illustrates the generosity of the expansions across the different states over time, by showing the age limit to qualify for Medicaid, and the Medicaid income eligibility limit for an infant expressed as a percentage of the federal poverty line (FPL).[4] The income limit for older children was usually lower than that for infants. The earliest legislation (effective April 1987) gave states the option to carry out the expansions to children under 2. By January 1988, half the states had expanded eligibility. By the end of 1989, every state had adopted some form of expansion, although there was a great deal of across-state variation in Medicaid eligibility, which was based on the age of the child. The later mandates increased the income threshold to 133 percent of the FPL and the age limit to 6. Thirty-two states were required to adjust their income threshold, and thirty-seven states were forced to increase their age limit. Finally, the mandates expanded eligibility to children over the

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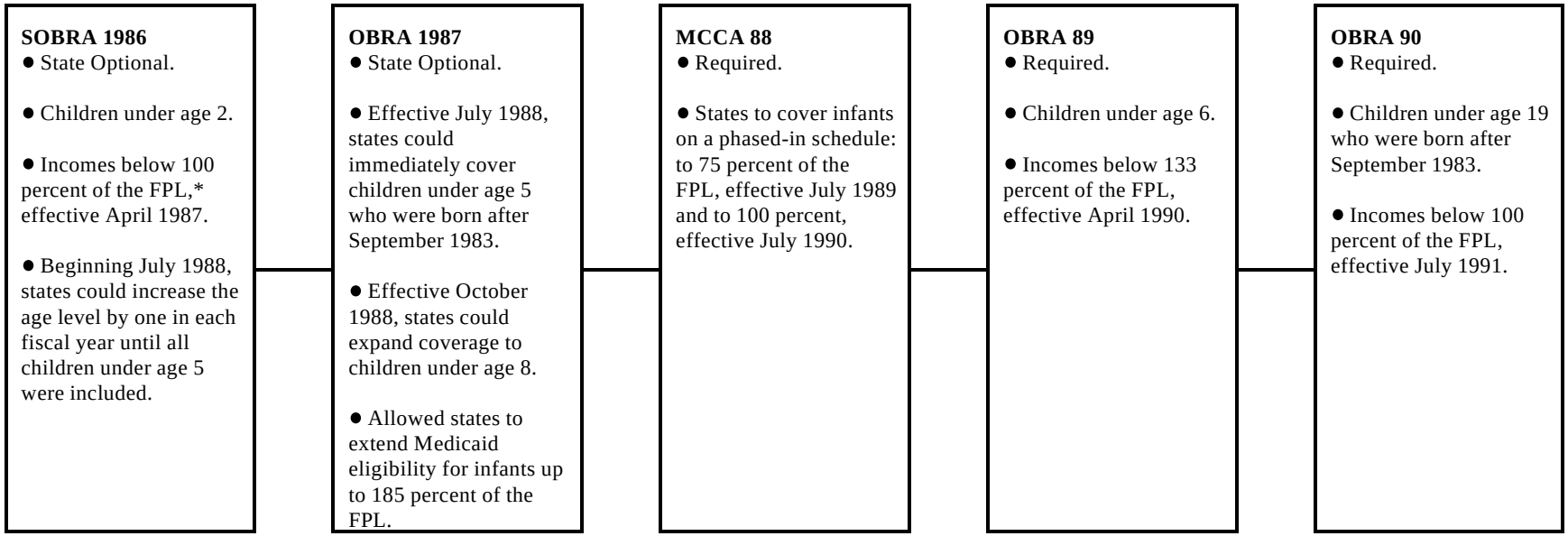
[2]See Hoynes (1996) for a discussion of the Unemployed Parents program.

[3]Finally, Medicaid serves people who suffer high medical expenses (mainly incurred by those entering nursing homes) through the "Medically Needy" program, which operated in forty-one states as of October 1991 (U.S. House of Representatives, *Medicaid Source Book*, 1993).

[4]The information on the Medicaid expansions was compiled from the Intergovernmental Health Policy Project (various editions). The income limit for children (in single-parent families) who were ineligible for the Medicaid expansions would be determined by AFDC.

TABLE 1
Timeline of Medicaid Expansions for Pregnant Women and Children, 1986–1990



Key: SOBRA = Sixth Omnibus Reconciliation Act; OBRA = Omnibus Reconciliation Act; MCCA = Medicare Catastrophic Care Act.

Source: Intergovernmental Health Policy Project.

*FPL = federal poverty line.

TABLE 2
State Medicaid Age and Income Eligibility Thresholds for Children

State	January 1988		December 1989		December 1991		December 1993	
	Age	Medicaid	Age	Medicaid	Age	Medicaid	Age	Medicaid
Alabama			1	185	8	133	10	133
Alaska			2	100	8	133	10	133
Arizona	1	100	2	100	8	140	12	140
Arkansas	2	75	7	100	8	185	10	133
California			5	185	8	185	10	200
Colorado			1	75	8	133	10	133
Connecticut	0.5	100	2.5	185	8	185	10	185
Delaware	0.5	100	2.5	100	8	160	18	185
D.C.	1	100	2	100	8	185	10	185
Florida	1.5	100	5	100	8	150	10	185
Georgia	0.5	100	3	100	8	133	18	185
Hawaii			4	100	8	185	10	185
Idaho			1	75	8	133	10	133
Illinois			1	100	8	133	10	133
Indiana			3	100	8	150	10	150
Iowa	0.5	100	5.5	185	8	185	10	185
Kansas			5	150	8	150	10	150
Kentucky	1.5	100	2	125	8	185	10	185
Louisiana			6	100	8	133	10	133
Maine			5	185	8	185	18	185
Maryland	0.5	100	6	185	8	185	10	185
Massachusetts	0.5	100	5	185	8	185	10	200
Michigan	1	100	3	185	8	185	10	185
Minnesota			6	185	8	185	18	275
Mississippi	1.5	100	5	185	8	185	10	185
Missouri	0.5	100	3	100	8	133	18	185
Montana			1	100	8	133	10	133
Nebraska			5	100	8	133	10	133
Nevada			1	75	8	133	10	133
New Hamp.			1	75	8	133	10	170
New Jersey	1	100	2	100	8	185	10	300
New Mexico	1	100	3	100	8	185	10	185
New York			1	185	8	185	12	185
North Carolina	1.5	100	7	100	8	185	10	185
North Dakota			1	75	8	133	10	133
Ohio			1	100	8	133	10	133
Oklahoma	1	100	3	100	8	133	10	150
Oregon	1.5	85	3	100	8	133	10	133
Pennsylvania	1.5	100	6	100	8	133	10	185
Rhode Island	1.5	100	6	185	8	185	10	185
South Carolina	1.5	100	6	185	8	185	10	185
South Dakota			1	100	8	133	10	133
Tennessee	1.5	100	6	100	8	185	10	185
Texas			3	130	8	185	10	185
Utah			1	100	8	133	10	133
Vermont	1.5	100	6	225	8	225	17	225
Virginia			1	100	8	133	18	133
Washington	1.5	100	8	185	8	185	18	185
West Virginia	0.5	100	6	150	8	150	18	150
Wisconsin			1	130	8	155	10	155
Wyoming			1	100	8	133	10	133

Sources: Yelowitz (1995) and Intergovernmental Health Policy Project (various editions).
Note: The age limit represents the oldest that a child could be (at a given point in time) and still be eligible. Medicaid represents the Medicaid income limit for an infant (the maximum for an older child is less).

age of 6 to 100 percent of the FPL in 1991. By December 1991, all states extended Medicaid coverage to children up to age 8, though the income eligibility limits for infants varied substantially. In subsequent years, several states expanded coverage beyond the federal requirements with their own funding. By December 1993, for instance, New York covered all children under age 13 to 185 percent of the FPL, while Minnesota covered all children under age 18 to 275 percent.

These reforms resulted in a dramatic increase in Medicaid eligibility and coverage. Administrative data show a sharp rise in the number of children covered by the Medicaid expansions (beneficiaries without cash assistance) starting in 1988, whereas the number of children enrolled in the Medically Needy program and AFDC program remained quite stable. By 1991, three million children were covered by Medicaid as a result of the expansions (U.S. House of Representatives, *Medicaid Source Book*, 1993).

The studies by Currie and Gruber (1994, 1996), Cutler and Gruber (1996), and Shore-Sheppard (1995) all find that the expansions in Medicaid eligibility translated into increases in Medicaid coverage. Currie and Gruber (1994) report that eligibility for Medicaid increased by 100 percent between 1984 and 1992. By the end of the period, one-third of children in the United States were eligible for Medicaid. Consistent with the administrative data, their findings show that Medicaid coverage from the expansions was flat until 1988, and rose steeply thereafter. Shore-Sheppard (1995) shows that the most dramatic growth in Medicaid coverage was for those who were typically not eligible for AFDC—married couples with children. These patterns offer some promise for finding spillovers to the Food Stamp program. It seems reasonable that married couples with children may not have had much contact with the welfare system before the expansions of Medicaid.

2.2 The Food Stamp Program[5]

In contrast to Medicaid, food stamp benefits are available to nearly all low-income households meeting uniform, national eligibility limits for income and assets. The government has taken an extremely active role in expanding Medicaid, but it has left the Food Stamp program essentially unchanged.[6] Four features about the Food Stamp program are noteworthy. First, the income eligibility limit is 130 percent of the FPL, and there is no cross-sectional variation in this limit (except for Alaska and Hawaii).[7] In addition, the income limit is indexed to the Consumer Price Index and updated every October. Second, there are no explicit family structure requirements. Both single and married households can qualify, as well as households with or without children. Benefits and eligibility are connected to a family's size, however. Third, there is no direct link to Medicaid. An indirect link exists through the AFDC program, however. Since 1985, an AFDC recipient automatically qualifies for both food stamps and Medicaid. In addition, for those off AFDC, the application costs are higher because eligibility is not automatic. Fourth, food stamp benefits are taxed at 30 percent. This implies that the actual food stamp benefit will become small as income approaches 130 percent of the FPL.

2.3 Prior Work Linking Medicaid and Food Stamps

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[5]This section draws upon Richardson (1992).

[6]Several minor pieces of legislation have affected the Food Stamp program during these years. In 1988, federal legislation increased food stamp benefits and eligibility. Relative to 1988, real benefits were increased by 0.65 percent in 1989, 2.05 percent in 1990, and 3.00 percent in subsequent years. In addition, more liberal eligibility rules and increased benefits were provided to those with high dependent care expenses. Some expansion of the program's employment and training activities was allowed, and a new deduction for the Earned Income Tax Credit was created. In the regression analysis, these factors will be accounted for by year dummy variables.

[7]This refers to the "gross" income test for food stamps. There is also a second test, the "countable" or "net" income test that accounts for different deductions (a standard deduction, child care, shelter expenses, some earnings disregards, and recently, deductions for child support and medical expenses). In most instances, the gross income test binds for eligibility.

Although several recent reports document changes in food stamp eligibility and takeup over time, only two studies directly examine the link between food stamps and Medicaid. Both Corson and McConnell (1990) and McConnell (1991) explore this, and their findings suggest Medicaid is an important factor. In their national-level analysis, Corson and McConnell (1990) found that an increase in Medicaid participation in one quarter leads to an increase in food stamp participation in the next quarter. The coefficient estimate was insignificant, however. In their state-level analysis, they found a more consistent relationship—an increase of 1,000 Medicaid recipients generated an increase of 193 to 295 food stamp participants. McConnell (1991) finds that as much as one-quarter of the increase in food stamp participation was due to Medicaid changes, with the largest impacts in Western and North-Central states and in Texas and Florida.

These studies have several limitations, however. First, they extend only until 1990, but the most dramatic Medicaid expansions were enacted *after* that date. Eligibility was extended to children under age 6 to 133 percent of the FPL in 1990, and to all children born after September 1983 to 100 percent of the FPL in 1991. My study makes use of data that extends out to the calendar year 1995. Second, I focus on the statutory law changes as my key independent variable rather than on the number of Medicaid recipients (which is potentially a consequence of the law changes). Since the government can more easily expand (or contract) Medicaid eligibility than Medicaid recipiency, the policy implications of this analysis are straightforward. Third, I compute Medicaid eligibility using household-level data rather than state-level aggregate data. Focusing on aggregate data masks much of the variation in the Medicaid law. The expansions affect families with young children, but not others. By using household-level data, I can exploit these “treatment” and “control” groups. Finally, I explore why Medicaid affects food stamp participation. As mentioned before, the information and labor supply effects have very different policy implications.

3. DOES MEDICAID ELIGIBILITY AFFECT FOOD STAMP PARTICIPATION?

3.1 Some Trends in Medicaid and Food Stamp Participation

Figure 1 presents the trends in household food stamp participation, overall Medicaid participation, and Medicaid expansion participation.[8] The middle line (with triangles) shows food stamp participation. It increased by more than 3 percentage points, from 7.51 percent in 1987 to 10.52 percent in 1993. This 40 percent growth in participation mirrors the increase derived from administrative records. As indicated by the top line (with squares), more households participated in Medicaid than food stamps. Moreover, Medicaid participation grew even faster than food stamp participation, rising from 8.27 percent to 12.46 percent. More than 60 percent of this increase in coverage can be attributed to the Medicaid expansions. The bottom line (with circles) shows the expansion coverage, which is defined as the household reporting Medicaid participation but neither AFDC nor SSI participation. Expansion coverage rose from 2.65 percent to 5.18 percent for all households. This figure, then, presents a mixed picture as to the importance of the expansions. Medicaid coverage rose among both cash welfare recipients and expansion households.[9]

Figures 2a and 2b separate these households by their private health insurance status. Since the households in Figure 2a have private health insurance coverage, we might not expect such a strong link between Medicaid and food stamp participation. For these households, participation in all three programs is much lower than for the entire sample, reflecting the fact that these households are more economically advantaged. In this figure, both overall Medicaid participation and expansion

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[8]The trends were constructed from March Current Population Survey data covering the calendar years 1987–1993. In the discussion that follows, the sample is restricted to CPS households with the head (and spouse, if present) aged 18 to 64. Appendix A gives details on the CPS data.

[9]Enrollment in the Medically Needy program provides another way for a household to receive Medicaid without participating in AFDC or SSI. This program probably explains the amount of "expansion" coverage in 1987.

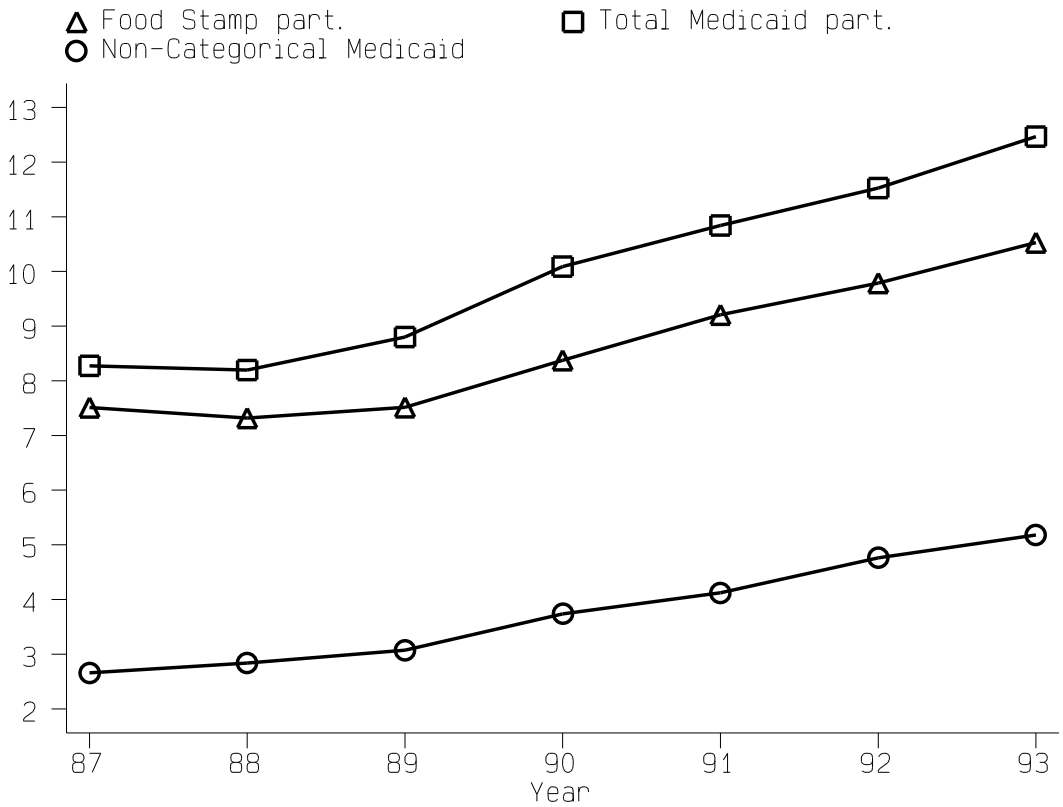

Figure 1: All Households

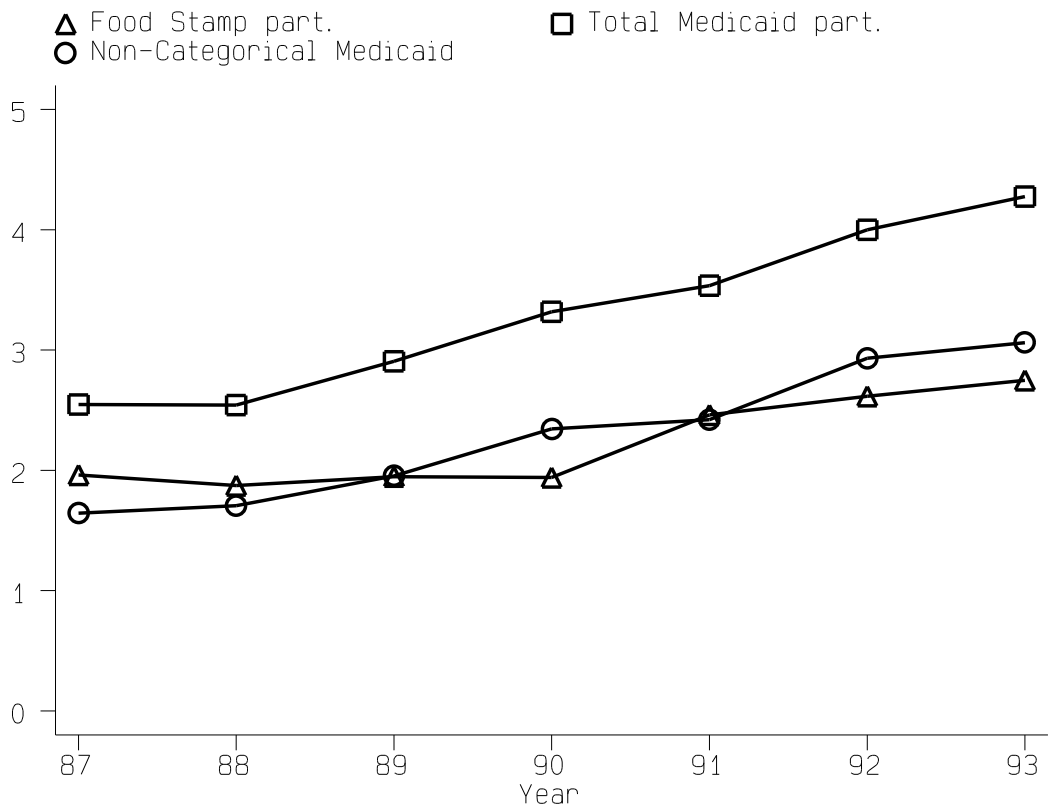

Figure 2a: Households with private health insurance

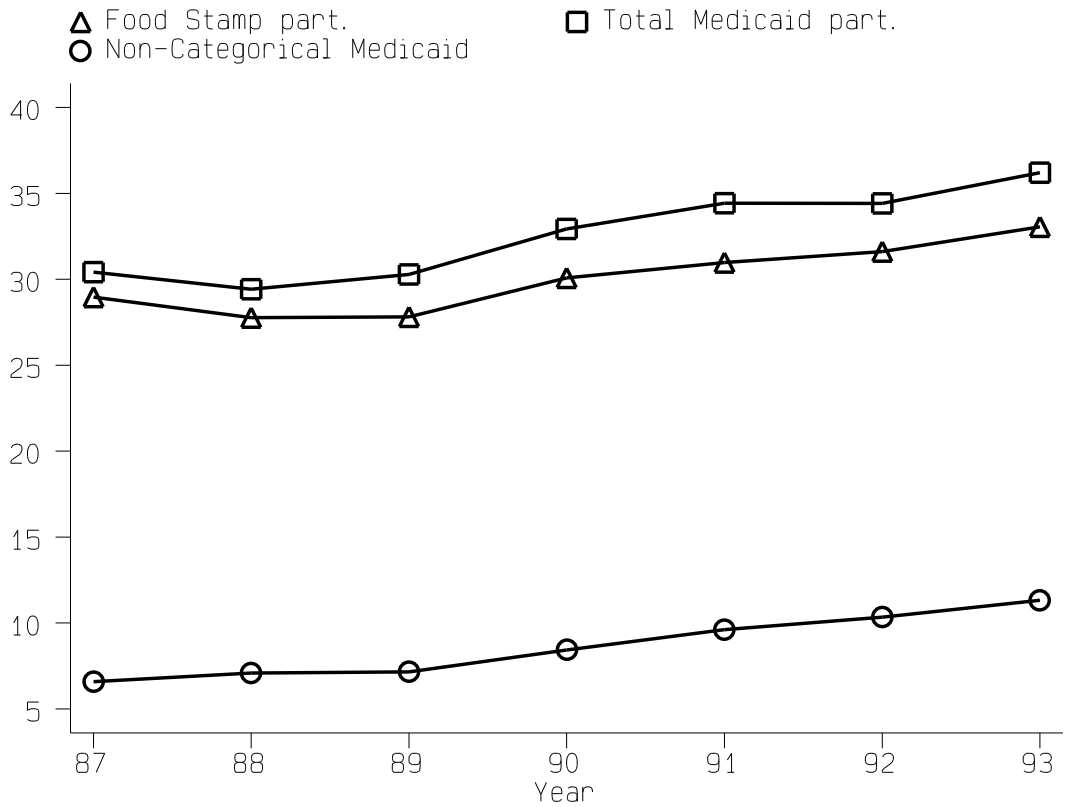

Figure 2b: Households without private health insurance

participation trend steadily upward, however (from 2.54 percent to 4.27 percent for overall coverage, and 1.64 percent to 3.06 percent for expansion coverage). On the other hand, food stamp participation remains nearly constant at 1.95 percent for the years 1987–1990, and then jumps upward, reaching 2.74 percent by 1993. Thus, the link between the expansions and participation is not transparent for households with private health insurance.

For the households without private health insurance in Figure 2b, the link is somewhat stronger. Expansion coverage rose 4.75 percentage points, from 6.57 to 11.32 percent, while food stamp participation rose 4.09 percentage points, from 28.96 to 33.05 percent. Since categorical Medicaid coverage increased by only 1.04 percentage points, this may suggest a causal effect of the expansions. Other factors, like changing economic conditions, would increase Medicaid participation among both categorical and expansion households.

3.2 Identification Strategy and Empirical Implementation

This section provides a framework for empirically identifying Medicaid effect. The reforms in the Medicaid program create "treatment" and "control" groups by providing variation in eligibility along three exogenous dimensions. The reforms create variation within a state at a given point in time, because they condition eligibility on the age of the child. In addition, they create variation in eligibility across states and over time, since the earlier legislation was state optional and the states adopted the expansions at different rates.

For purposes of illustration, consider the following hypothetical example: between 1988 and 1989, California implemented a Medicaid expansion to 130 percent of the FPL for children up to age 5, while New York did not. The "treatment" group, in all cases, is families in California in 1989 with young children. One potential estimate of Medicaid's effect on food stamp participation would use families with older children in California as a control group. Let $FSP_{j,t,k}$ stand for the average food stamp participation rate across households, where j indexes states, t indexes time, and k indexes child's

age. Therefore $FSP_{CA,89,5}$ and $FSP_{CA,89,6}$ represent the food stamp participation rates for households in California in 1989 with 5- and 6-year-olds, respectively. The impact of the Medicaid law change could be measured by the difference ($FSP_{CA,89,5}$-$FSP_{CA,89,6}$), which is hypothesized to be positive.

An important objection to this estimate is that the two groups may not be strictly comparable. If families with older children have greater food needs (and thus a higher propensity to participate in food stamps), then the previous estimate would be biased. Two other "first difference" estimates instead use the across-state and over-time dimensions. By comparing the participation rates for households with 5-year-olds in 1989 across California and New York, we eliminate the previous source of bias. Another estimate of Medicaid's impact on food stamp participation would therefore be ($FSP_{CA,89,5}$-$FSP_{NY,89,5}$). As a final alternative, we could examine changes in food stamp participation over time within California, that is ($FSP_{CA,89,5}$-$FSP_{CA,88,5}$). These alternatives could introduce new sources of bias, however. One obvious source of contamination would be varying economic conditions: if the economic conditions in New York were different from in California (or different in the years 1988 and 1989), then this would surely affect food stamp participation, and we would incorrectly attribute this effect to Medicaid.

In the regression analysis, I use all three sources of variation. I define a household as eligible for the Medicaid expansions if their youngest child would qualify based on the state, time, and age variation.[10] To address the concerns mentioned above, I include a full set of dummy variables for state, time, and child's age in the regression.[11] I estimate a probit model:

$$(1) \qquad FSP_h^* = \alpha + \beta ELIG_{hjtk} + \gamma X_h + \Sigma_j \delta_j S_{hj} + \Sigma_t \zeta_t T_{ht} + \Sigma_k \eta_k Y_{hk} + \epsilon_h$$

[10]I do not use total income, which is endogenous to the food stamp rules, in defining Medicaid eligibility. I have tried measures of Medicaid eligibility that take nonlabor, nontransfer income as exogenous, however, with conclusions similar to the SIPP estimates presented in Table 4.

[11]One could conceivably include second-order interactions of the 9 time periods, 42 states, and 18 ages. It was computationally difficult to estimate this richer probit model on the full sample.

where (1) is the underlying index function for the probit. FSP_h^* can take on both positive and negative values, which represents the net utility from participating in the program. $ELIG_{hjtk}$ is an indicator variable equal to 1 if the *h*th household was eligible for the Medicaid expansions (based on the state, time, and child's age), X_h is a vector of other individual characteristics that may affect food stamp participation (such as age, gender, ethnicity, education, and race of the head and spouse), S_{hj} is a dummy variable indicating the state of residence (j=1,...,42), T_{ht} is a dummy variable for calendar year (t=87,...,95), and Y_{hk} is a dummy variable indicating youngest child's age (k=0,1,..., 17). I also include a rich set of family structure variables: dummy variables for family size, as well as the number of children in each age bracket from 0 to 17 (entered linearly). The coefficients α, β, γ, δ, ζ, η will be estimated and ϵ_h is an error term assumed to be uncorrelated with the explanatory variables.

In practice, we do not observe the underlying value for FSP_h^*, but instead observe only the discrete outcome:

$$(2) \qquad FSP_h = 1 \text{ if } FSP_h^* \geq 0$$
$$0 \text{ if } FSP_h^* < 0.$$

FSP_h is an indicator variable equal to 1 if the *h*th household participated in food stamps. Assuming that $\epsilon_h \sim N(0,1)$ and denoting $\Phi(\bullet)$ as the cumulative normal function gives the following probability:

$$(3) \qquad Prob(FSP_h=1) = \Phi(\alpha + \beta ELIG_{hjtk} + \gamma X_h + \Sigma_j \delta_j S_{hj} + \Sigma_t \zeta_t T_{ht} + \Sigma_k \eta_k Y_{hk}).$$

3.3 Results from Household Level Data, SIPP 1987–1995

For the basic analysis, I use all interviews from the 1987, 1988, 1990, 1991, 1992, and 1993 SIPP panels (the 1989 panel was cut off after only one year). These cover the calendar years 1987 to 1995. Each panel follows individuals for approximately two to three years and interviews the respondent in four-month intervals known as waves. During each interview, the SIPP asks the respondent about program participation in each of the previous four months. While, in principle, the

SIPP asks about food stamp participation in every month, it is well known that many respondents tend to give the same answer for every month within a wave.[12] I therefore restrict the analysis to the last month within a given wave. I focus on nonelderly households because the food stamp rules treat income and resources of elderly members differently than others. Thus, the analysis focuses on households where the head (and spouse, if present) was between the ages of 18 and 64. I also restrict the sample to households who live in the 42 uniquely identified states in the SIPP, because I must impute Medicaid eligibility based on state rules.

The SIPP has several advantages for analyzing welfare programs relative to the CPS.[13] Determining Medicaid eligibility, the key independent variable, is less prone to measurement error in the SIPP. I am able to better impute state rules at a particular point in time (the CPS analysis in Appendix A imputes the state rules that were in effect during July of the given year). Measuring food stamp participation, the key dependent variable, is also easier in the SIPP. The SIPP asks household food stamp participation on a monthly basis, while the CPS asks about food stamps on an annual basis.

I include households with head (and spouse) between ages 18 and 64, and who were present when the SIPP asked the recipiency history questions. Overall, the sample consists of 536,350 observations on 113,628 unique households. The first column of Table 3 shows the means for the full sample. Household food stamp participation averaged 7.7 percent during the period. It increased from 6.4 percent in 1987 to 8.4 percent in 1995. Twenty-six percent of the sample had a child eligible for Medicaid based on the state rules, time period, and child's age (assuming zero income). This fraction grew dramatically over the time frame, from 0.5 percent in 1987, to 22 percent in 1990, to 39

[12]See Blank and Ruggles (1996) for a discussion of this seam bias.

[13]Appendix A replicates the basic results in Table 4 with the CPS.

TABLE 3
Means (Standard Deviations) from SIPP

	Full Sample	Recipiency History Sample		
	All Heads (1)	All Heads (2)	Head Authorized for Food Stamps (3)	Head Not Authorized for Food Stamps (4)
Food stamp participation in previous month? (=1 if yes)	.0774	.0738	.2203	.0571
Any child eligible for Medicaid expansion? Constructed from state, time, and child's age. (=1 if yes)	.2654	.2672	.2989	.2636
Head previously authorized for FS? (=1 if yes)	.1021	.1024	1.0000	0.0000
Head previously authorized for AFDC? (=1 if yes)	.0241	.0247	.1779	.0072
Head previously authorized for SSI? (=1 if yes)	.0073	.0074	.0329	.0045
Head's characteristics				
Age (range=18 to 64)	41.07 (11.57)	42.32 (11.28)	41.71 (10.17)	42.39 (11.40)
0≤Education≤8 (=1 if yes)	.0650	.0670	.1200	.0610
9≤Education≤11 (=1 if yes)	.1039	.1036	.1822	.0946
Education=12 (=1 if yes)	.3548	.3542	.3968	.3493
13≤Education≤15 (=1 if yes)	.2152	.2133	.2018	.2146
Education≥16 (=1 if yes)	.2609	.2617	.0989	.2803
White (=1 if yes)	.8511	.8498	.7613	.8599
Black (=1 if yes)	.1152	.1172	.2126	.1063
Nonblack, nonwhite (=1 if yes)	.0336	.0329	.0259	.0337
Hispanic origin (=1 if yes)	.0849	.0845	.1142	.0811
Male (=1 if yes)	.6819	.6981	.4774	.7233
Female (=1 if yes)	.3181	.3029	.5226	.2767
Married (=1 if yes)	.5959	.6215	.4414	.6420
Widowed (=1 if yes)	.0425	.0452	.0605	.0435
Divorced/Separated (=1 if yes)	.1925	.1863	.3556	.1670
Never married (=1 if yes)	.1689	.1468	.1424	.1473
Veteran status (=1 if yes)	.2220	.2346	.1615	.2429

(table continues)

TABLE 3, continued

	Full Sample	Recipiency History Sample		
	All Heads (1)	All Heads (2)	Head Authorized for Food Stamps (3)	Head Not Authorized for Food Stamps (4)
Spouse's characteristics (calculated only if spouse is present)				
No spouse present (=1 if yes)	.4136	.3870	.5683	.3663
Age (range=18 to 64)	40.04 (10.71)	40.90 (10.50)	39.76 (9.37)	40.99 (10.58)
0≤Education≤8 (=1 if yes)	.0524	.0524	.1126	.0477
9≤Education≤11 (=1 if yes)	.0921	.0911	.1904	.0834
Education=12 (=1 if yes)	.4159	.4181	.4588	.4149
13≤Education≤15 (=1 if yes)	.2153	.2146	.1479	.2198
Education≥16 (=1 if yes)	.2240	.2235	.0900	.2339
White (=1 if yes)	.8907	.8903	.8577	.8928
Black (=1 if yes)	.0701	.0711	.1079	.0683
Nonblack, nonwhite (=1 if yes)	.0391	.0385	.0343	.0388
Hispanic origin (=1 if yes)	.0818	.0798	.1140	.0772
Male (=1 if yes)	.1133	.1025	.1814	.0964
Female (=1 if yes)	.8867	.8975	.8186	.9036
Veteran status (=1 if yes)	.0399	.0375	.0568	.0360
Annual nonlabor, nontransfer income (nominal dollars)	$343 ($865)	$366 ($877)	$243 ($555)	$380 ($905)
Number of children ages 0 to 5 (range=0 to 6)	.3164	.3064	.3314	.3035
Number of children ages 0 to 17 (range=0 to 11)	.9181	.9340	1.2516	.8977
No children present (=1 if yes)	.5220	.5142	.3918	.5282
Number of observations	536,350	161,070	16,508	144,562
Number of unique households	113,628	72,555	7,572	64,983

percent in 1995.[14] More than half the sample of households did not have a child under 18 present. When they are excluded, Medicaid eligibility grew even faster: from 1.3 percent in 1987, to 45 percent in 1990, to 82 percent in 1995. Finally, the table reports demographic characteristics of the head and spouse which are included in the regressions.

Table 4 presents probit results. Column (1) includes state, time, and youngest age dummies, while column (2) also adds a state-specific time trend.[15] The SIPP results show a significant, positive effect of expanding Medicaid eligibility. The marginal effect of expanding eligibility to all households was to increase food stamp participation by 0.58 percentage points, which translates into a 7.5 percent increase in the food stamp caseload.[16] Not all households became eligible, however. By taking the true increase in eligibility from 1987 to 1995 (38.5 percentage points), the effect of the expansions was to increase food stamp participation by 0.22 percentage points. Over the same time, food stamp participation increased by a full 2 percentage points, suggesting that Medicaid can explain around 10 percent of the growth. Finally, the demographic variables enter in the expected directions, and are consistent with the findings of Trippe and Sykes (1994). Being less educated, black, or Hispanic raises the likelihood of participating in food stamps, while being married or male lowers it.

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[14]Eligibility calculations using nonlabor, nontransfer income give very similar numbers.

[15]The standard errors are corrected for repeated observations on the household in all specifications.

[16]The marginal effect was calculated by predicting, for each individual, the probability of food stamp participation with Medicaid set equal to 1 and equal to 0, then averaging the difference over the entire sample. The caseload increase is calculated by dividing the predicted change by the average food stamp participation rate (0.58/7.74 = 7.5 percent increase).

TABLE 4
Basic Results from SIPP Sample, 1987 to 1995

	Food Stamp Participation during Month 4 of SIPP Wave? (1)		(2)	
Eligible for Medicaid expansion?	.0602	(.0221) **.0058**	.0608	(.0221) **.0059**
Head's characteristics				
Age	-.0258	(.0045)	-.0258	(.0045)
Age^2/100	.0348	(.0055)	.0348	(.0055)
9≤Education≤11	-.1470	(.0247)	-.1471	(.0247)
Education=12	-.6233	(.0238)	-.6234	(.0238)
13≤Education≤15	-.8830	(.0271)	-.8831	(.0271)
Education≥16	-1.3780	(.0349)	-1.3780	(.0349)
White	-.2484	(.0425)	-.2480	(.0425)
Black	.2496	(.0453)	.2501	(.0453)
Hispanic origin	.2145	(.0242)	.2138	(.0242)
Male	-.6351	(.0232)	-.6351	(.0232)
Widowed	-.2167	(.0550)	-.2165	(.0550)
Divorced/Separated	.1033	(.0473)	.1035	(.0473)
Never married	.2334	(.0488)	.2338	(.0488)
Veteran status	.0150	(.0223)	.0150	(.0223)
Spouse's characteristics				
No spouse	-1.2296	(.1594)	-1.2291	(.1594)
Age	-.0549	(.0071)	-.0549	(.0071)
Age^2/100	.0664	(.0086)	.0664	(.0086)
9≤Education≤11	-.0007	(.0383)	-.0004	(.0383)
Education=12	-.2878	(.0368)	-.2876	(.0368)
13≤Education≤15	-.5010	(.0438)	-.5009	(.0438)
Education≥16	-.6512	(.0578)	-.6512	(.0578)
White	-.2911	(.0575)	-.2907	(.0575)
Black	-.3456	(.0649)	-.3452	(.0649)
Hispanic origin	-.0422	(.0370)	-.0426	(.0370)
Male	-.3537	(.0381)	-.3536	(.0381)
Veteran status	.0259	(.0506)	.0257	(.0506)
No children present	-.6759	(.0861)	-.6753	(.0861)
Sample	Full Sample		Full Sample	
Medicaid variable	Uses variation in state, time, and youngest child's age		Uses variation in state, time, and youngest child's age	
Observations	536,350		536,350	
Pseudo R^2	.3502		.3502	
Mean of dependent variable	.0774		.0774	

Notes: Estimated as probit model. Standard errors are in parentheses, corrected for repeated observations. Probability derivatives are in bold. The unit of observation is the household. Also included in each regression, but not shown, are linear controls for number of children in each age category (from age 0 to age 17) and a constant. Dummy variables for state, time, and youngest child's age. Second column also includes state-specific time trends. Omitted categories are: head's education dummy 0–8 years; head's race nonblack, nonwhite; head married; spouse's education dummy 0–8 years; spouse's race nonblack, nonwhite. Sample restricted to households with head (and spouse, if present) age 18 to 64.

4. SEPARATING INFORMATION FROM LABOR SUPPLY

4.1 Theoretical Considerations

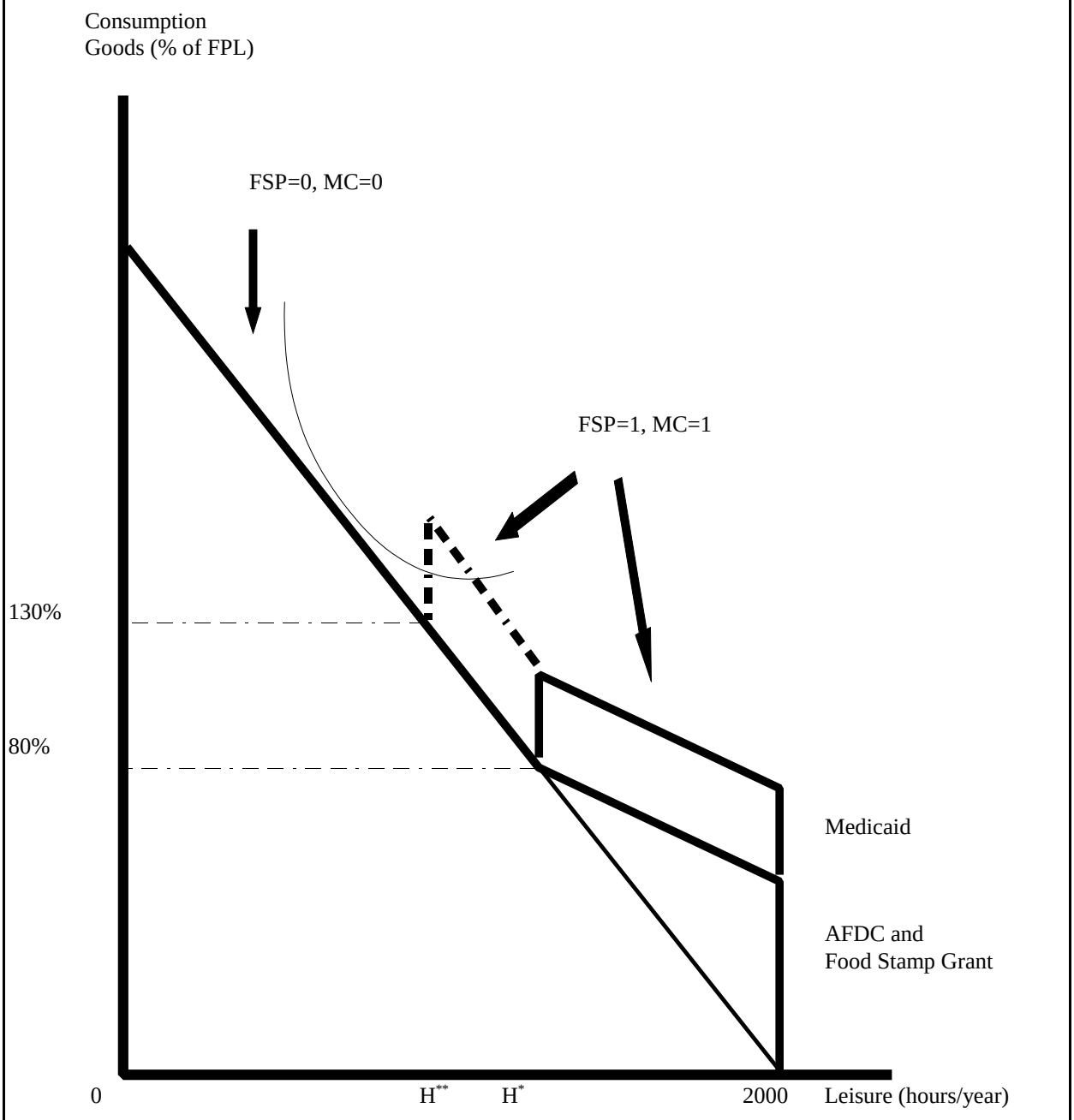
Although no direct link exists between Medicaid and food stamps, there are at least two mechanisms where Medicaid could affect food stamp participation. These include changes in labor supply and increases in awareness about welfare benefits.

First, reforms in the Medicaid program change the household's budget constraint. Since changes in the Medicaid program could distort the earning decision for households initially off welfare, food stamp participation might increase. On the other hand, relatively generous Medicaid expansions might increase earnings for households initially on welfare, thereby lowering food stamp participation since these households are no longer eligible.

Figure 3 illustrates how a Medicaid reform could increase food stamp participation. Following Yelowitz (1995), the figure focuses attention on a single-parent household who may also apply for AFDC. The conclusions, however, easily extend to married households. The household maximizes utility, U=u(Leisure, Consumption) and faces a constant pretax wage, w^0. The budget constraint with thick lines illustrates the household's options before the expansions. At zero hours of market work (2000 hours of leisure), the household receives a certain level of AFDC and food stamp benefits, known as the "guarantee," in addition to Medicaid. As the mother begins to work, her AFDC and food stamp benefits are taxed away, so her after-tax wage is $(1-\tau)w^0$. The tax rate on AFDC benefits varies between 67 and 100 percent, while the tax rate of food stamps is 30 percent.[17] Once she works more than H^* (represented in the figure as earning more than 80 percent of the FPL), her AFDC and Medicaid eligibility run out. Unlike cash benefits which are smoothly taxed away, the loss of

[17]See Moffitt (1992) and Keane and Moffitt (1996) for a discussion of the cumulative tax rates from the interaction of these programs.

FIGURE 3
Medicaid Expansion Could Increase Food Stamp Participation through Decreases in Work Hours (shown for single parent family)



Medicaid results in a discontinuous drop in benefits. The household is still eligible for food stamps until earnings exceed 130 percent of the FPL, however.

Suppose the Medicaid expansions extend health insurance to 130 percent of the poverty line. The new budget constraint now also includes the dashed lines. In this case, all the new {Leisure, Consumption} bundles are located where the household is eligible for food stamps, so food stamp participation should increase (through revealed preference arguments). The indifference curve shows this possibility. The mother initially locates along the part of the budget constraint where she does not participate in food stamps. After Medicaid is expanded, she reduces her work hours and enters the food stamp rolls.[18]

Second, the Medicaid expansions could increase access to the welfare system through increased awareness about program eligibility. Medicaid might be the first welfare program that a household joins, because of the high medical expenses for pregnancy delivery and for young children. Once on Medicaid, households might be more likely to learn about food stamps. Caseworkers had to inform Medicaid-eligible women about WIC (the Women, Infants and Children program), at which time it is likely they would also have informed them about food stamp eligibility.[19]

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[18]With an even more generous Medicaid expansion (say, to 185 percent of the FPL) the effect on food stamp participation is ambiguous: while the Medicaid reform creates new bundles on the budget set, some of these bundles are located where the household is eligible for food stamps, others where it is ineligible. Without more explicit information on the household's utility function, the model does not offer firm predictions for food stamp participation. Except for infants, the expansions usually did not raise the income limit above 133 percent of the FPL.

[19]A third way that food stamp participation could change is through welfare stigma. After being signed up for Medicaid, the additional stigma from participating in another welfare program may decrease. Moffitt (1983) finds that there is a "fixed" stigma cost for AFDC participation. Keane and Moffitt (1996) model participation in multiple welfare programs and find some evidence that there are implicit economies to joint program participation.

4.2 Empirical Implementation: Using the SIPP Recipiency History Topical Modules

Before discussing the empirical strategies to isolate the effect of information from labor supply in the SIPP, it is useful to distinguish information from an important, related story: network effects. Studies by Borjas (1995), Borjas and Hilton (1996), and Case and Katz (1991) demonstrate that the behavior of one's neighbors or community can affect the individual's welfare participation decision and other socioeconomic outcomes. The likely effect of these networks is to blur the distinction between the treatment and control groups. To illustrate, imagine a new Medicaid-eligible household learned about the Food Stamp program and passed this food stamp information along to Medicaid-ineligible households in its network or neighborhood. Then food stamp participation would also increase in the control group, causing the effect of Medicaid eligibility to be biased downward. To the extent networks operate in this direction, the subsequent estimates on the "information" effect may be viewed as lower bounds.

Ideally, one would like to ask the survey respondents about their knowledge of the program eligibility rules for food stamps and Medicaid at many different points in time, and if they do sign up for a transfer program, which mechanisms (i.e., learning about the programs at the hospital, networks, or changes in income) factored into their decision. With the limitations of microdata, there is no perfect way to directly test this hypothesis. Without such data, my strategy is to look for indirect proxies. In wave 2 (or wave 1 in later SIPP panels), the SIPP asked adults aged 18 and over about their prior experiences with the welfare system.[20] For respondents not currently participating in food stamps, it asked: "Has . . . ever been authorized to receive food stamps?" For those currently participating, the

[20]The welfare history questions were asked in wave 2 for the 1987–1991 panels, and in wave 1 for the 1992–1993 panels. For households with valid responses, I also take observations one and two years afterward. For the 1987 and 1988 panels, I use waves 2 and 5. For 1990 and 1991, I use waves 2, 5, and 8. For 1992 and 1993, I use waves 1, 4, and 7. Each household shows up, at most, three times. The standard errors in Table 5 are corrected for repeated observations on the same household. The recipiency history subsample consists of 161,070 observations on 72,555 unique households.

SIPP asked: “Besides this period of time, have there been other times when . . . was authorized to receive food stamps?” If the respondent answered “yes” to either question, I classify him as “authorized for food stamps.” Around 10 percent of the SIPP sample answered yes.

Besides this variable, which proxies for familiarity with the welfare system, I construct two additional variables from the SIPP recipiency history module. The SIPP asks similarly posed questions about AFDC authorization and SSI authorization. Around 2.5 percent of the sample had been previously authorized for AFDC, while 0.75 had been previously authorized for SSI. The results in the subsequent analysis are not sensitive to whether I simply use “ever authorized for food stamps” or “ever authorized for any welfare program.”

Briefly going back to Table 3, the final three columns show characteristics of the recipiency history subsample. Overall, the characteristics of the subsample are extremely similar to the full sample used in the preceding section. Columns (3) and (4) separate the sample by whether the head was ever previously authorized for food stamps. Not surprisingly, current food stamp participation is substantially higher when the head previously participated, which may reflect increased knowledge about the application process. These heads also have much higher likelihoods of previously participating in AFDC or SSI. Finally, they are more likely to be black, Hispanic, a high school dropout, unmarried, with children, or female.

I amend equation (3) to include an interaction term:

$$(4) \quad \text{Prob}(FSP_h=1) = \Phi(\alpha + \beta_1 ELIG_{hjtk} * NOT\_AUTH_h + \beta_2 ELIG_{hjtk} + \beta_3 NOT\_AUTH_h + \gamma X_h + \Sigma_j \delta_j S_{hj} + \Sigma_t \zeta_t T_{ht} + \Sigma_k \eta_k Y_{hk}).$$

The variables are defined in the same way as previous models, and NOT_AUTH_h is an indicator variable equal to one if the head reports no previous food stamp authorizations. The arguments in Section 4.1 suggest that Medicaid eligibility’s positive effect is composed of two parts: increased information and reduced labor supply. For those who were previously authorized for food stamps, any effect of Medicaid eligibility should reflect only changes in labor supply rather than increased

awareness about the program. In equation (4), the labor supply effect of Medicaid eligibility is the coefficient β_2. For those who were not authorized, Medicaid eligibility ($\beta_1+\beta_2$) reflects both effects. Assuming the labor supply effect is equal for both groups, the coefficient β_1 reflects the change in food stamp participation due to increased program awareness. It is expected that both the labor supply and information effects are positive, implying $\beta_1>0$ and $\beta_2>0$. Finally, we may expect those without previous familiarity of the welfare system to have inherently lower propensities to participate. This suggests $\beta_3<0$.

Table 5 presents the findings using a variety of definitions for contact with the welfare system. The results in the four columns are not sensitive to the particular definition of "contact." The models include the same set of controls as Table 4 (since the conclusions on the other variables are unchanged, I do not present them here). The first row shows the interaction term, β_1, representing the effect of information. In all specifications, it is positive and significant. The second row shows the effect of eligibility alone through the coefficient β_2, representing the labor supply effect. In all cases the coefficient is not significantly different from zero. In addition, the labor supply effect is also economically modest compared to the information effect—the impact of the interaction term on eligibility is around ten times as large as the eligibility term entered alone. Finally, the coefficient β_3 is negative, as expected. If the head was never previously authorized for food stamps, this variable entered alone lowers the probability of current participation by 5 to 6 percentage points.

4.3 The Effect of Medicaid in High AFDC Benefit States

In previous work (Yelowitz 1995), I noted that the Medicaid expansions should have their smallest impact in high AFDC benefit states, since the budget constraint is less drastically changed. In fact, Medicaid expansions to 100 or 133 percent of the poverty line would not change the budget constraint in some high AFDC benefit states, once the appropriate institutional detail is accounted for. This institutional feature suggests an alternative way to learn about the effects of information from

TABLE 5
Separating the Information and Labor Supply Effects

	Food Stamp Participation during Month 4 of SIPP Wave?											
	Response of Head of Household Only						Response of All Adults in Household					
	(1)			(2)			(3)			(4)		
MC Eligible*Never Authorized	.0945	(.0407)	**.0089**	.0990	(.0386)	**.0092**	.0994	(.0361)	**.0093**	.0891	(.0349)	**.0082**
Eligible for Medicaid expansion?	.0096	(.0425)	**.0008**	.0102	(.0404)	**.0009**	.0188	(.0377)	**.0017**	.0276	(.0362)	**.0025**
Never Authorized	-.4793	(.0261)	**-.0530**	-.5592	(.0251)	**-.0630**	-.5407	(.0240)	**-.0586**	-.6015	(.0234)	**-.0652**
Sample	Recipiency History Sample			Recipiency History Sample			Recipiency History Sample			Recipiency History Sample		
Medicaid variable	Uses variation in state, time, and youngest child's age			Uses variation in state, time, and youngest child's age			Uses variation in state, time, and youngest child's age			Uses variation in state, time, and youngest child's age		
Never authorized for:	Food stamps			Any welfare program			Food stamps			Any welfare program		
Observations	161,070			161,070			161,070			161,070		
Pseudo R^2	.3543			.3595			.3603			.3661		
Mean of dependent variable	.0738			.0738			.0738			.0738		

Notes: Estimated as probit model. Standard errors in parentheses, corrected for repeated observations. Probability derivative in bold. The unit of observation is the household. Also included in each regression, but not shown, are linear controls for number of children in each age category (from age 0 to age 17) and a constant. Dummy variables for state, time, and youngest child's age. Omitted categories are: Head's education dummy 0–8 years; head's race nonblack, nonwhite; head married; spouse's education dummy 0–8 years; spouse's race nonblack, nonwhite. The sample is restricted to households with head (and spouse, if present) age 18 to 64.

Medicaid: by focusing on high AFDC benefit states where the budget constraint is unchanged (and thus, no labor supply distortions).[21] To the extent that Medicaid eligibility has an impact on food stamp participation, the estimate may be viewed as the information effect.

The nine states I select had an AFDC benefit of at least $500 for a family of three in January 1988. They include California, Connecticut, Massachusetts, Michigan, Minnesota, New York, Rhode Island, Vermont, and Wisconsin.[22] Table 6 restricts the full sample (used in Table 4) to these states. The sample is one-third as large. The estimates on Medicaid eligibility in both columns continue to show strong effects of Medicaid eligibility, consistent with information playing a key role in food stamp participation. In fact, one cannot reject the hypothesis that these coefficients are equal to the coefficients presented in Table 4. This suggests the strong effects in Table 4 are driven by information rather than labor supply.

5. CONCLUSIONS

This study finds that the Medicaid expansions of the 1980s had the consequence of modestly increasing participation in the Food Stamp program. The most carefully controlled estimates suggest that making children in a household eligible for Medicaid explains around 10 percent of the actual growth in the food stamp participation, substantially smaller than previous studies using aggregate data. In addition to documenting the link between two seemingly separate welfare programs, this study attempts to explain why. The evidence here strongly points to information spillovers from Medicaid to food stamps. There is no evidence, however, that high-earning households reduced their

[21]In low benefit states, both effects would hold.

[22]These nine states also had AFDC-UP programs for the entire time period. Therefore, there should not be labor supply effects for either married or single households.

TABLE 6
Results Restricting SIPP Sample to High AFDC Benefit States

	Food Stamp Participation during Month 4 of SIPP Wave?	
	(1)	(2)
Eligible for Medicaid expansion?	.0838 (.0378) **.0078**	.0849 (.0378) **.0079**
Sample	High AFDC Benefit Sample	High AFDC Benefit Sample
Medicaid variable	Uses variation in state, time, and youngest child's age	Uses variation in state, time, and youngest child's age
Observations	175,517	175,517
Pseudo R^2	.3712	.3712
Mean of dependent variable	.0765	.0765

Notes: Estimated as probit model. Standard errors in parentheses, corrected for repeated observations. Probability derivative is in bold. The unit of observation is the household. Also included in each regression, but not shown, are linear controls for number of children in each age category (from age 0 to age 17) and a constant. Dummy variables for state, time, and youngest child's age. Second column includes state-specific time trends as well. Omitted categories are: head's education dummy 0–8 years; head's race nonblack, nonwhite; head married; spouse's education dummy 0–8 years; spouse's race nonblack, nonwhite. The sample is restricted to households with head (and spouse, if present) age 18 to 64.

labor supply in response to perverse Medicaid incentives, which would also then qualify them for food stamps.

These findings have direct policy consequences. First, they help illustrate the general lack of awareness about transfer programs. This implies outreach efforts for one program, like Medicaid, may then have spillovers onto other programs. Thus, the cost of outreach efforts may be higher than previously thought. Second, it is likely that the effects of cutting back Medicaid would be quite different from extending it. Recent proposals for Medicaid block grants to states would drastically cut back the eligibility expansions of the 1980s. Since the information about other transfer programs is better known, however, this will not translate into lower food stamp participation.

The current analysis will be extended in several directions. One issue that I hope to explore is how to better proxy for information and awareness about welfare benefits. Out of necessity, the survey question used in this study is whether the head of household was ever authorized for food stamps in the past. This may misclassify some individuals with accurate information about welfare benefits into those with poor information. Another issue which deserves attention is assessing the importance of network effects.

APPENDIX A
Findings from CPS Data

In this appendix, I present results from the Current Population Survey annual demographic files. I use the 1988–1994 March files, which include retrospective information on food stamp participation, demographics and household structure, and income sources. The CPS has larger samples than the SIPP and uniquely identifies every state. The analysis corresponds to the calendar years 1987 to 1993.

From the March files, I select all households where the head (and spouse, if present) is between the age of 18 and 64. The CPS sample consists of 315,523 households. To each household, I include information on the head's (and spouse's) age, education, race, ethnicity, gender, marital status, and veteran status. I also include some additional information on household structure: dummy variables for the presence of a spouse or child, as well as a detailed set of linear controls for the number of children in each age bracket ranging from 0 to 17. Finally, I include information on the family's annual nonlabor, nontransfer income and whether the family lived in a central city.

The food stamp questions in the CPS are asked only at the household level for the entire previous year. To make sure the CPS results are robust, I construct three measures of food stamp participation. The first is a dummy equal to 1 if the household participated in the Food Stamp program at any time during the previous calendar year. The second is a dummy for whether the household participated in food stamps for all twelve months. The final measure is a dummy for whether all members of the household participated in at least one month.

To each household, I also attached information on the Medicaid expansions from data obtained from the Intergovernmental Health Policy Project (various years).[23] In particular, I computed whether the youngest and oldest child in the household was eligible for the Medicaid expansions. For both

[23]I impute the state rules that were in effect as of July of each given year for the CPS.

measures, I computed eligibility in two ways: the first using only variation in the Medicaid law based on state, time, and the child's age; the second also using the family's nonlabor, nontransfer income. The coefficient estimates are usually stronger using the second measure.

Table A.1 presents the means and standard deviations from the CPS data. All statistics are computed using the family weight. The different measures of food stamp participation range between 5 and 9 percent. Around 19 percent of households had at least one child eligible for Medicaid, while roughly 13 percent had all children eligible. The percentages for any child eligible in the CPS are smaller than for the SIPP because the SIPP includes data for the calendar years 1994 and 1995, years having even more dramatic eligibility expansions. The table shows that by excluding nonlabor, nontransfer income, eligibility increases slightly (around one-half of 1 percentage point). It is important to point out that annual nonlabor, nontransfer income is less than $500, which helps explain why the Medicaid eligibility measures that exclude income look similar to the ones that include it. The demographic characteristics look very similar between the CPS and SIPP data sets.

Table A.2 shows the results for different food stamp measures. The policy variable in the first row is whether any child in the household is eligible for Medicaid (which maps into whether the youngest is covered). The probit models therefore include dummy variables for youngest child's age (in addition to state and year dummies). Column (1), which includes a measure of nonlabor, nontransfer income, shows a positive but insignificant effect of Medicaid eligibility. Column (2), which excludes these income variables, shows an even weaker effect. Columns (3) and (4), which use different definitions of food stamp participation, are positive but insignificant. The second row of Table A.2 uses as the policy variable whether all children under 18 in the household were covered. This corresponds to whether the oldest child was covered, so the probit models include dummy variables for oldest child's age. Column (1) shows a significant positive association between covering all children and food stamp participation. The estimates of Medicaid in the other columns are also

TABLE A.1
Means (Standard Deviations) from CPS

	CPS (1)
Food stamp participation in any month of previous year? (=1 if yes)	.0854
Food stamp participation in all months of previous year? (=1 if yes)	.0529
Entire household participated in food stamps? (=1 if yes)	.0648
Any child eligible for Medicaid expansion? Constructed from state, time, child's age, and nonlabor, nontransfer income. (=1 if yes)	.1925
Any child eligible for Medicaid expansion? Constructed from state, time, and child's age. (=1 if yes)	.1979
All children eligible for Medicaid expansion? Constructed from state, time, child's age, and nonlabor, nontransfer income. (=1 if yes)	.1265
All children eligible for Medicaid expansion? Constructed from state, time, and child's age. (=1 if yes)	.1306
Head's characteristics	
Age (range=18 to 64)	40.84 (11.69)
$0 \leq$ Education ≤ 8 (=1 if yes)	.0633
$9 \leq$ Education ≤ 11 (=1 if yes)	.1011
Education=12 (=1 if yes)	.3548
$13 \leq$ Education ≤ 15 (=1 if yes)	.2269
Education ≥ 16 (=1 if yes)	.2539
White (=1 if yes)	.8450
Black (=1 if yes)	.1209
Nonblack, nonwhite (=1 if yes)	.0341
Hispanic origin (=1 if yes)	.0758
Male (=1 if yes)	.7046
Female (=1 if yes)	.2954
Married (=1 if yes)	.5944
Widowed (=1 if yes)	.0410
Divorced/Separated (=1 if yes)	.1856
Never married (=1 if yes)	.1790
Veteran status (=1 if yes)	.2278

(table continues)

TABLE A.1, continued

	CPS (1)
Spouse's characteristics (calculated only if spouse is present)	
No spouse present (=1 if yes)	.4163
Age (range=18 to 64)	39.89 (10.83)
0≤Education≤8 (=1 if yes)	.0487
9≤Education≤11 (=1 if yes)	.0880
Education=12 (=1 if yes)	.4217
13≤Education≤15 (=1 if yes)	.2264
Education≥16 (=1 if yes)	.2152
White (=1 if yes)	.8909
Black (=1 if yes)	.0703
Nonblack, nonwhite (=1 if yes)	.0388
Hispanic origin (=1 if yes)	.0765
Male (=1 if yes)	.0832
Female (=1 if yes)	.9168
Veteran status (=1 if yes)	.0308
Annual nonlabor, nontransfer income (nominal dollars)	$422 ($1019)
Lives in central city (=1 if yes)	.1984
Number of children ages 0 to 5 (range=0 to 6)	.2856
Number of children ages 0 to 17 (range=0 to 11)	.8272
No children present (=1 if yes)	.5578
Number of households	315,523

TABLE A.2
Results from CPS Sample, 1987 to 1993

	Food Stamp Participation in Any Month during Year?		FSP in All Months during Year?	Entire HH FSP for at Least One Month
	(1)	(2)	(3)	(4)
Any child eligible for Medicaid expansion?	.0197 (.0149)	-.0015 (.0150)	.0134 (.0178)	.0130 (.0159)
Pseudo R^2	.3134	.3127	.3459	.3035
All children eligible for Medicaid expansion?	.0388 (.0158)	.0203 (.0159)	.0260 (.0190)	.0254 (.0170)
Pseudo R^2	.3139	.3132	.3466	.3037
Sample	Full Sample	Full Sample	Full Sample	Full Sample
Medicaid variable	Uses variation in state, time, youngest child's age, and income	Uses variation in state, time, and youngest child's age	Uses variation in state, time, youngest child's age, and income	Uses variation in state, time, youngest child's age, and income
Observations	315,523	315,523	315,523	315,523
Mean of dependent variable	.0854	.0854	.0532	.0653

Notes: Each coefficient is from a separate regression. Estimated as probit model. Standard errors are in parentheses. The unit of observation is the household. Also included in each regression, but not shown, are head's and spouse's characteristics, linear controls for number of children in each age category (from age 0 to age 17), time fixed effects (6), state fixed effects (50), youngest or oldest child's age fixed effects (17), central city dummy, no child present dummy, and a constant. Columns (1), (3), and (4) also include nonlabor, nontransfer income (and its square). Omitted categories are: head's education dummy 0–8 years; head's race nonblack, nonwhite; head married; spouse's education dummy 0–8 years; spouse's race nonblack, nonwhite.
The sample is restricted to households with head (and spouse, if present) age 18 to 64.

positive, but less precisely estimated. Since the probit coefficient estimates are not directly interpretable, I evaluated the change in probability of food stamp participation from expanding Medicaid eligibility at the mean values of the CPS data. The probability derivative for Medicaid eligibility in column (1) was 0.27 percentage points, which is quite modest. Since the mean CPS food stamp participation was 8.54 percent, then making all children in all households eligible for Medicaid raises the food stamp caseload by roughly 3 percent (=0.27/8.54).

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