USING THE MEDICARE BUY-IN PROGRAM TO ESTIMATE THE EFFECT OF MEDICAID ON SSI PARTICIPATION

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This article assesses the importance of receiving supplemental health insurance on participation in Supplemental Security Income (SSI) for the elderly. The implementation of the Qualified Medicare Beneficiary (QMB) program offered a substitute for Medicaid, and expanded health insurance eligibility to a higher income level. Using a sample of elderly respondents aged 66 to 75, I find that the QMB program reduced SSI participation. More than half of the QMB participants were previously covered by SSI and Medicaid. The calculations suggest that the QMB program was not as expensive as it might first appear because of reductions in SSI expenditure. (*JEL* H53, I38, J14)

I. INTRODUCTION

The Supplemental Security Income (SSI) program in the United States provides assistance to elderly, blind, and disabled individuals who are poor. It is federally financed and administered by the Social Security Administration. Although much more attention has been focused on the former Aid to Families with Dependent Children (AFDC) program, which primarily targets poor single-parent families, more money was spent on cash relief for SSI recipients in 1993: $23.6 billion compared to $22.3 billion.[1] In addition to cash, SSI recipients receive supplemental health insurance coverage for Medicare, similar to private Medigap policies, through the Medicaid program. This provides a second important benefit to SSI recipients: in fiscal year 1993, Medicaid expenditure for elderly, categorically needy SSI recipients amounted to $14.1 billion.[2]

Several studies have examined the importance of health insurance for working-age adults in the labor market.[3] In addition, the effects of recent Medicaid expansions for younger populations have been extensively studied.[4] Little is known, however, about the quantitative importance of Medicaid on the SSI participation of the elderly. The key ob-

ABBREVIATIONS

AIME: Average Indexed Monthly Earnings
AFDC: Aid to Families with Dependent Children
CPS: Current Population Survey
MCCA: Medicare Catastrophic Coverage Act
MN: Medically Needy
OBRA: Omnibus Reconciliation Act
QMB: Qualified Medicare Beneficiary
SIPP: Survey of Income and Program Participation
SLMB: Specified Low-Income Medicare Beneficiaries
SSA: Social Security Administration
SSI: Supplemental Security Income

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1. U.S. House of Representatives, *Overview of Entitlement Programs* [1994].
2. U.S. Department of Health and Human Services, "Medicaid Statistics: Program and Financial Statistics Fiscal Year 1993."
3. For instance, see Madrian [1994], Holtz-Eakin [1994], and Gruber and Madrian [1994] for evidence on job mobility, Gruber and Madrian [1995] for evidence on early-retirement, and Cutler and Madrian [1998] for evidence on hours of work. Cutler [1995] provides a nice summary of these studies.
4. See, for example, Currie and Gruber [1996a, 1996b] for effects on child health, Cutler and Gruber [1996] for crowd-out effects on private health insurance, Gruber and Yelowitz [1997] for effects on savings and consumption, Yelowitz [1995] for effects on labor supply and AFDC participation, and Yelowitz [1998b] for effects on marriage.

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stacle in assessing this effect is that, until recently, Medicaid eligibility had been closely related to SSI eligibility in most states. This study analyzes the introduction of the Qualified Medicare Beneficiary (QMB) program, enacted in different states from 1987 to 1992, which offered supplemental health insurance coverage to the elderly without the need to participate in SSI. The QMB program offered some of the same Medicare cost sharing benefits that an elderly SSI recipient would receive from Medicaid, including the payment of Medicare premiums, deductibles, and copayments.[5] Moreover, the QMB program expanded Medicaid coverage to individuals with higher incomes and assets than the SSI program.[6]

The primary goal of this article is to document the link between the QMB program and the decision to participate in SSI. I find that raising the income limit in QMB program significantly reduces SSI participation, particularly among African-Americans and the less educated. The coefficient estimates suggest that, in the absence of the QMB buy-in program, SSI participation would have been 45% higher in 1992 than it actually was. The caseload growth in the elderly SSI population would have looked very similar to the caseload growth of the disabled SSI population, a group not eligible for QMB. In addition, the QMB program was considerably less expensive than one would infer from simply calculating the increased health care expenditure because of reductions in SSI expenditure for cash benefits.

The rest of the article is arranged as follows. Section II outlines some relevant features of the SSI, Medicaid, and QMB programs. In particular, it reviews how the income eligibility limits for QMB and SSI are computed. The difference between those limits is a measure of how closely are Medicaid and SSI linked. It will subsequently be used as the key independent variable in the regression analysis. This section also shows the cross-sectional and time-series variation in the QMB program. Section III models the potential effects on SSI participation of the introduction of the QMB program, and considers the role of information. By providing an alternative source of health insurance, the QMB program might reduce SSI participation. But if QMB increases awareness about other transfer programs to the elderly, then it could increase SSI participation. Section IV provides a data description. I use repeated cross sections of the March Current Population Survey from the calendar years 1987 to 1992—the period when the QMB expansions were being phased in. Section V presents the empirical results and cost implications. Section VI concludes.

II. BACKGROUND ON THE SSI, MEDICAID, AND QMB PROGRAMS

The SSI Program

The federal government introduced the Supplemental Security Income (SSI) program in 1974. It replaced old-age assistance programs previously run by the states. In 1994, SSI paid an annual maximum benefit of $5,352 to an individual and $8,028 to a couple. In addition, roughly half of the states supplement the federal SSI benefit. In 1994, the median state supplement (conditional on providing a supplement) was $468 per year to a couple, though the supplement exceeded $1,200 in several states.

To be eligible for SSI, the recipient's annual income must be less than a state-specific limit.[7] This limit, in turn, will be vital in determining how much the budget constraint changes from the QMB laws, and in constructing a sensible independent variable in the regression analysis. If all of an individual's income is in the form of nonwage income, then the SSI limit is deter-

5. Throughout the article I use the terms "QMB coverage" and "Medicaid coverage" interchangeably, because they offer similar services in terms of Medicare cost sharing.

6. I will argue that one of three mechanisms for Medicaid's effect on SSI participation is through distortions in earnings. Two recent studies show that the labor supply of senior citizens does respond to the parameters of the tax and welfare system in other contexts. Friedberg [1997] shows that the earnings of seniors are reduced by the Social Security retirement earnings test, which often imposes tax rates in excess of 50 percent. Friedberg [1999] shows that the introduction of the Old Age Assistance program (the precursor to SSI) substantially increased retirements in the 1940s and 1950s.

7. In reality, SSI eligibility is actually determined on a monthly basis. To keep the analysis consistent with what follows, I convert all numbers from a monthly to an annual basis. There are also asset requirements (known as "resource tests"). A single or widowed recipient may not have more than $2,000 in liquid assets and a married recipient may not have more than $3,000. The value of the recipient's home is not included, however.

mined as:

$$(1) \qquad I^* = (G^{FED} + G^{STATE}) + D$$

where I^* is the maximum annual income for SSI eligibility, G^{FED} and G^{STATE} represent the federal and state annual SSI grant for a recipient with zero income, and D represents the annual standard deduction (equal to \$240).

If all of the individual's income is in the form of wages, then the limit is:

$$(2) \qquad I^* = (G^{FED} + G^{STATE})/\tau + (D + EXP)$$

where τ represents the benefit reduction rate (equal to 50%), *EXP* represents an annual work expense deduction (equal to \$780), and the other variables are as defined above. An individual in California (who was provided an annual supplemental benefit of \$1,884 in 1994) could earn up to \$15,492 per year in wages (= (\$5,352 + \$1,884)/0.5 + (\$240 + \$780)) and still retain SSI eligibility. Alternatively, he could receive up to \$7,476 in nonlabor income (perhaps through Social Security) and still retain SSI eligibility. This same individual in Florida would not receive a state supplement and could earn only up to \$11,724 in wages or receive \$5,592 in nonlabor income. Finally, consider the SSI income limit if the California individual's income had portions of both earnings and Social Security income. Assuming the individual received \$2,400 per year in Social Security benefits, the limit is computed as follows. After applying the \$240 standard deduction, we first subtract the \$2,160 Social Security income from the \$7,236 grant, leaving \$5,076. The earnings level that brings the grant to zero is therefore \$10,932 (= (\$5,076/0.5) + \$780). The sum of Social Security income, \$2,400, and total earnings, \$10,932, gives the limit of \$13,332.[8]

The Medicaid Program and QMB Expansions

In most states, SSI participation automatically entitles the recipient to Medicaid coverage.[9] In thirty-one states (and Washington, D.C.) this coverage is automatic, and in another seven it is granted if the recipient completes a second application with the state agency that administers the Medicaid program. In several states, Medicaid eligibility is not automatic. Twelve states, known as Section 209(b) states, have Medicaid requirements that are potentially more restrictive than the SSI requirements. These states may impose more restrictive income or asset requirements or require an additional application.

Forty-one states also offer Medicaid coverage through the Medically Needy (MN) program to elderly who incur high medical expenses and "spend down" to the MN income level. This optional program turns out to be less important for the elderly who are contemplating participating in SSI, because the MN income limit tends to be lower than the SSI income limit and the scope of Medicaid services is more limited.[10]

Starting in 1987, the states were given additional options to expand Medicaid to the elderly through the QMB program. In this study, these changes serve as the primary source of variation in the Medicaid program to identify its importance on SSI participation. The Omnibus Reconciliation Act of 1986 (OBRA) gave states the option to extend Medicaid up to 100% of the poverty line for elderly who qualified for Medicare Part A coverage and met certain asset limits. The Medicaid program was responsible for paying Medicare Part B premiums along with coinsurance and deductible amounts. OBRA 1986 also gave states the option to provide full Medicaid benefits (rather than just cost sharing for Medicare) to those elderly who had income below a state-established standard. The Medicare Catastrophic Coverage

8. In the analysis that follows, I compute an individual's SSI limit by first taking his Social Security income level as nonlabor income, and then assuming the remainder of his income can potentially be in the form of wages.

9. These states are known as Section 1634 states.

10. In July 1987, for instance, the Medically Needy level exceeded the SSI level in only two states, and these differences were smaller than \$10 per month (U.S. House of Representatives, [1988]).

Act of 1988 (MCCA) made the Medicare buy-in option mandatory, and phased in QMB eligibility over time. In addition, five states (Hawaii, Illinois, North Carolina, Ohio, and Utah) were permitted to phase in the mandate on a different schedule. Finally, OBRA 1990 increased the income limit to 110% of the poverty line in 1993, and to 120% in 1995. Those covered by the 1990 law changes were designated "Specified Low-Income Medicare Beneficiaries" (or SLMBs). The states were required to pay Medicare Part B premiums for SLMBs, but not the coinsurance or deductibles.

The QMB income limits (expressed as a percentage of the poverty line) from voluntary state adoptions between 1987 and 1992 are documented in Table I. From 1987 to 1990, several states implemented the QMB expansions prior to the federal mandates. These states typically adopted an income limit of 100% of the poverty line. The states included California, the District of Columbia, Florida, Hawaii, Maine, Massachusetts, Mississippi, New Jersey, New York, Pennsylvania, and South Carolina. These voluntary adoptions create additional variation beyond the federal mandates to identify the effect of the QMB laws on SSI participation.[11]

This QMB coverage itself represents a valuable benefit to an elderly individual. In 1993, the national average actuarial value of

11. As with any empirical study that relies on variation in program rules across states, the issue of legislative endogeneity arises. In particular, the states that implemented the QMB program prior to the federal mandates may have done so to reduce the SSI rolls. While it is difficult to think of compelling instruments for early QMB implementation, there are five reasons to believe that this potential problem may be small. First, states were allowed to implement QMB expansions for the elderly only if they also implemented Medicaid expansions for pregnant women and children. This means the cost of getting the elderly off SSI is greatly increased. Second, SSI is mainly financed by the federal government, meaning that the state's incentive to move recipients off the program is reduced. Third, the subsequent empirical results are not sensitive to restricting the sample to states brought into compliance by the federal mandates. Fourth, Section III shows that the theoretical impact of the QMB expansions is ambiguous. Thus, states may not have had enough information to assess whether the QMB expansions would remove senior citizens from SSI. Fifth, the link between QMB and SSI participation is never mentioned in congressional hearings on the QMB program (U.S. House of Representatives [1992]).

TABLE I
Implementation of the QMB Program over Time (Income Limit Expressed as Percentage of the FPL)

State	1987	1988	1989	1990	1991	1992
Alaska	100	100	100	100	100	100
Arkansas	—	85	85	90	100	100
California	100	100	100	100	100	100
Colorado	—	85	85	90	100	100
Connecticut	100	100	100	100	100	100
D.C.	100	100	100	100	100	100
Florida	90	100	100	100	100	100
Hawaii	—	—	100	100	100	100
Illinois	—	—	80	85	95	100
Kentucky	—	—	100	100	100	100
Louisiana	—	—	85	100	100	100
Maine	—	100	100	100	100	100
Massachusetts	100	100	100	100	100	100
Mississippi	—	—	100	100	100	100
New Jersey	100	100	100	100	100	100
North Carolina	—	—	80	85	95	100
Ohio	—	—	80	85	95	100
Utah	—	—	80	85	95	100
Schedule for all other states	—	—	85	90	100	100

Source: Intergovernmental Health Policy Project, various editions.

the QMB program was $950 per year, and the minimum benefit was $439 (the annual Medicare Part B premium for a QMB who received no services during the year). Out-of-pocket costs would be reduced by over $2,300 per year for a beneficiary who has a typical hospitalization and skilled nursing facility stay during the year.[12]

III. THEORETICAL CONSIDERATIONS

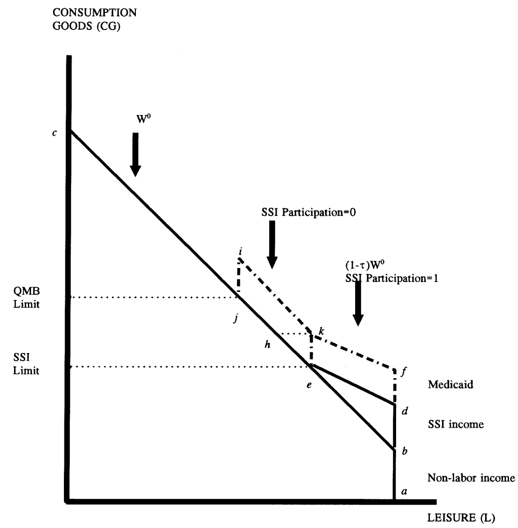
Basic Model

I assume that an elderly individual (or household) maximizes his utility subject to a budget constraint. Utility is assumed to be a function of leisure and consumption goods, $U(L,CG)$, and the price of consumption goods is normalized to $1 per unit. The individual may have some form of nonlabor, nontransfer income (for instance, income through Social Security or private pensions). If the elderly individual chooses to work, he earns a wage, W^0, in the labor market. This results in the budget set *abc* in Figure 1.

By introducing the SSI system, the government offers a grant (G) and reduces it at a tax rate (τ).[13] This results in the budget set given by *adec*. After the introduction of SSI, the recipient's after-tax wage falls from W^0 to $(1 - \tau)W^0$ on the part of the budget segment spanning *de*. The income limit where SSI eligibility ends is a weighted average of the limits given in equations (1) and (2) in section II, depending on the mix of nonlabor, nontransfer income and earnings.

SSI's treatment of Medicaid benefits is quite different from its treatment of cash benefits. A beneficiary receives Medicaid when participating in SSI and loses it completely when leaving SSI. This creates the budget segment given by *afkec*. Clearly the loss of Medicaid creates a certain segment of the budget set (segment *eh*) where the individual could receive higher utility by instead

FIGURE 1
How the QMB Program Affects the Budget Constraint



locating at point *k*. This discrete loss of health insurance benefits is known as the "Medicaid notch." The QMB expansions change the budget set further, by allowing a recipient to receive Medicaid without the need to participate in SSI. This now changes the budget set to *afkijc*. Compared to the budget set before the QMB expansions (segment *afkec*), this model predicts that SSI participation should fall or remain unchanged if there is no behavioral response. The reasoning behind this prediction is that all the new {L,CG} bundles on segment *ki* occur where the individual does not participate in SSI.

An increase in earnings is only one of three reasons why an individual or household would leave SSI. As Moffitt [1983] has noted, welfare can be stigmatizing. The utility function discussed earlier could then be modified to $U(L,G,P_{SSI},P_{QMB})$ where P stands for the disutility of participation in the SSI or QMB programs. If collecting a cash handout is more stigmatizing than collecting Medicaid alone, then an individual who was initially on SSI may decide to leave after the QMB expansions, and thus give up his cash benefits.

12. General Accounting Office [1994].

13. For simplicity, the figure does not include the standard deduction or work expenses discussed in the prior section, but the predictions will continue to hold by adding in this detail. In addition, Figure 1 also assumes that the value of the QMB program is equal to the value of Medicaid when on SSI. Again, the predictions will continue to hold by making more realistic assumptions.

Finally, the QMB expansions had asset limits that were double those of SSI. Thus, a single individual could have as much as \$4,000 of assets under QMB, while a married couple could have \$6,000. If a household prefers accumulating higher assets than SSI allows, it might choose to leave SSI and join the QMB program instead. Neumark and Powers [1998] find that higher SSI benefits reduce saving among households with heads who are approaching the SSI eligibility age and are likely participants in the program.

The Role of Information

The theoretical model assumed perfect awareness about SSI benefits, but this assumption is clearly false.[14] If awareness about SSI is a serious problem, then the QMB expansions could increase SSI participation. Some states took active efforts to inform QMB recipients of their eligibility. These effects included the distribution of press releases, toll-free telephone "hot line" numbers, brochures, fact sheets, and public service announcements.[15] Another possibility is that some health shock may land the individual in the hospital, where he learns about the QMB program and other welfare benefits available to him. In either case, he perceives his original budget set (before the QMB expansions) to be *abc* rather than *afkec*, and after the expansions *afkijc*. In this case, the expansions may increase SSI participation: after learning about SSI, he may choose to enroll in SSI and locate somewhere along the segment *fk*, or he may choose to not enroll, and locate somewhere along segment *kijc*.

IV. DATA DESCRIPTION

Operationalizing the QMB Expansions

As described in section III, changes in QMB law could increase or decrease SSI participation. The budget constraint in Figure 1 illustrates a way to represent the QMB expansions. Essentially, the QMB expansions amount to changing the income limit for Medicaid, possibly above the SSI income limit. By setting the price of consumption goods at \$1 per unit, the *y*-axis in this figure measures the maximum income limit for Medicaid before and after the QMB expansion. This can be denoted as:

$$
\begin{aligned}
(3)\quad GAIN &= \max\{QMB - SSI, 0\} \\
QMB &= \text{f(state, time, poverty line)} \\
SSI &= \text{f(state, time,} \\
&\qquad \text{family structure,} \\
&\qquad \text{Social Security income)}
\end{aligned}
$$

where QMB stands for the annual Medicaid income limit (in dollars) and SSI stands for the annual SSI income limit. GAIN therefore represents the increase in the income limit for Medicaid above and beyond the income limit for SSI—in other words, how drastically has the budget constraint for the individual changed. I take the maximum of this number and zero, because there are instances when a QMB expansion (to, say, 85% of the poverty line) is less generous than the SSI income limit. In this case, the Medicaid income limit is not lowered, but remains unchanged.

Measuring QMB is straightforward: the Medicaid income limit is imputed for a person based on his state of residence, time period, and the federal poverty line. The SSI income limit is computed from the state rules, time period, family circumstances, and the individual's Social Security income. By including *GAIN* as an explanatory variable for SSI participation, the preceding analysis shows we would expect a negative coefficient —intuitively, weakening the link between Medicaid and SSI will reduce SSI participation.

In addition to the variable *GAIN*, I include four other policy variables. The first is the SSI limit itself. Raising the SSI income limit (everything else held constant) should increase SSI participation. The second is a dummy variable for whether the individual's state had implemented a QMB expansion. If individuals learn about SSI through the QMB program, then the implementation could increase participation. The third is the MN limit. Technically, the QMB program did not "break the link" between SSI and Medicaid, because the MN program is not conditional on SSI participation. It is expected that SSI

14. The role of program awareness and outreach efforts is discussed in Coe [1985] and Hill [1990].

15. General Accounting Office [1994].

participation should be lower, when the MN limit is higher. Finally, I include a dummy variable for whether the respondent lived in a 209(b) state—that is, a state where he must file a separate application for Medicaid and possibly face stricter standards for Medicaid eligibility. Because of these hassles, living in a 209(b) state should reduce SSI participation.

Current Population Survey Data, 1987–1992

I use repeated cross-sections from the March Current Population Survey (CPS). The CPS is a nationally representative data set that surveys approximately 50,000 households. In addition to demographic characteristics, the March Annual Demographic File provides retrospective information on income and health insurance sources such as SSI income, Social Security income, and Medicaid. Therefore the 1988 to 1993 surveys provide information from calendar years 1987 to 1992.

When compared to other data sets, such as the Survey of Income and Program Participation (SIPP), the CPS has some advantages and disadvantages for examining Medicaid's impact. The CPS is an excellent starting point, because it provides data in a more timely fashion, which facilitates examining recent changes in law. In addition, the CPS uniquely identifies every state and has larger sample sizes than the SIPP. The CPS has some drawbacks, however. The key outcome, SSI participation, is defined as whether the respondent received any SSI income in the previous year. This retrospective information could be subject to recall bias. Also, even if the QMB program removed the elderly from the SSI rolls partway through the year, the respondent would still correctly claim he participated in SSI. Thus, this aggregation likely understates the effectiveness of the QMB laws. In addition, the respondent may not report SSI participation, either because of confusion about the program's name (such as the distinction between SSI and AFDC) or because of the stigma in admitting welfare participation. Finally, the CPS does not directly report asset holdings, a point I address later. The SSI eligibility rules prohibit individuals with more than $2,000 in assets (and families with more than $3,000) from applying to the program.

From the CPS, I extract respondents aged 66 to 75. This encompasses the same age range that Friedberg [1997, 1999] studied when she examined the effects of Social Security and Old Age Assistance on the elderly. Thus, this is an elderly sample where we might expect some changes in labor supply when the budget constraint changes. The labor force participation rate for my CPS sample varied between 15%–16% during the time period. I exclude individuals with imputed information on SSI eligibility. In addition, I exclude elderly respondents who do not report Medicare coverage, since QMB eligibility requires the individual to be eligible for Medicare (this eliminates roughly 5% of the elderly sample). To the remaining observations, I attach information on QMB eligibility derived from Intergovernmental Health Policy Project documentation.

The CPS sample consists of 52,256 observations.[16] The means of the variables used in the analysis are shown in Table II. The dependent variable, SSI participation, averages 3.7%. Although not shown, several of the policy variables change quite dramatically over time. The variable *GAIN*—the increase in the income limit above the SSI limit, averages $212. It increases more than tenfold during the period, from an average of $31 in 1987 (when only a few states had implemented optional mandates) to an average of $455 in 1992 (when binding federal mandates forced all states to cover all senior citizens under the poverty line). The variation in Social Security income (which has a mean of $8,936 and a standard deviation of $4,690) leads to considerable variation in the SSI income eligibility limit, which averages $8,014. The demographic composition of the sample remains fairly stable over time. Family size averages 1.9 people. The average age of the respondent is 70.24 years (this increases slightly, from 70.2 to 70.3 during the period). Approximately 6.6% of the sample are African American and 91.5% are white. Around 4.8% are Hispanic. Nearly 57% are female, and almost 30% are veterans. More than 60% of the sample are currently mar-

16. See Appendix Table I for the sample selection criteria.

TABLE II
Summary Statistics, 1987–1992

Name	Full Sample	SSI Recipient	Non-recipient	Range	Other Comments
SSI participation	.037	1.000	0.000	{0,1}	"Did ... receive SSI in previous year?"
Medicaid participation	.065	.904	.033	{0,1}	"Did ... receive Medicaid in previous year?"
GAIN	$212 (380)	$94 (292)	$216 (383)	[$0,$1,416]	= max{QMB Limit-SSI Limit,0}, measured in dollars annually.
SSI Limit	$8,014 (3,397)	$9,017 (4,124)	$7,976 (3,360)	[$4,320, $29,580]	Annual SSI income eligibility limit
MN Limit	$3,936 (2,616)	$3,407 (2,599)	$3,956 (2,615)	[$0,$9,192]	Annual Medically Needy income limit
Eligible for QMB?	.753	.758	.753	{0,1}	Had the QMB program been implemented in the respondent's state?
Lives in 209(b) state?	.245	.237	.246	{0,1}	Does the respondent live in a Section 209(b) state?
Respondent's age	70.24 (2.82)	70.42 (2.84)	70.23 (2.81)	[66,75]	Age as of March 1 of survey year
Total number of people in family	1.929 (.908)	1.775 (1.215)	1.935 (.894)	[1,18]	
Number of own children under 18 in family	.026 (.232)	.068 (.381)	.025 (.225)	[0,8]	
African American	.066	.242	.060	{0,1}	
White	.915	.712	.923	{0,1}	
Other nonwhite	.019	.046	.018	{0,1}	
Hispanic origin	.048	.188	.043	{0,1}	
Education in years	11.29	7.62	11.43	[0,18]	
Less than high school diploma	.370	.792	.354	{0,1}	
At least some college	.250	.052	.258	{0,1}	
Married	.618	.242	.633	{0,1}	
Widowed	.273	.443	.267	{0,1}	
Social Security income	$8,936 (4,690)	$3,957 (2,988)	$9,125 (4,639)	[$0,$42,999]	Annual Social Security incomes for all members of family
Female	.565	.749	.558	{0,1}	
Veteran	.293	.060	.301	{0,1}	

Source: Author's tabulation of the 1988–93 March CPS. Standard deviations in parentheses. Full sample is 52,256 observations. There are 1,919 SSI recipients, and 50,337 nonrecipients.

ried, and more than 25% are widowed. Around 37% did not complete high school, while 25% had some college education. The table also breaks the sample out into SSI recipients and nonrecipients. The two groups differ considerably along many of the demographic dimensions. SSI recipients are more likely to be nonwhite, or of Hispanic origin. They are far less educated, more likely to be single, to be female, and to have lower levels of Social Security income. They tend to live in more generous SSI states, as reflected through the SSI limit.

V. RESULTS

This section is divided into five parts. The first part sets up the regression framework and explains how the estimates account for other stories that could potentially contaminate the inferences. It then presents results from the CPS sample, along with cost estimates of the QMB program. The second part illustrates how the QMB effect varies by demographic group. The last three parts check the robustness of the initial findings. The third part addresses some concerns about asset holdings. The fourth part checks the robustness of the findings to other parameterizations of the policy variables that do not rely on the individual's Social Security income. The fifth part explores the comparability of the "treatment" and "control" groups.

Basic Results from the Full CPS Sample

The outcome of interest is whether or not the respondent participated in SSI. For ease of presentation, I show results from a linear probability model.[17] The preferred specification (presented in Table III, column 3, and all the tables that follow) is:

$$\begin{aligned}(4)\quad SSI_i = {} & \beta_0 + \beta_1 GAIN_{ijtk} \\ & + \beta_2 QMB\_ELIG_{ijt} \\ & + \beta_3 SSI\_LIM_{ijtk} \\ & + \beta_4 MN\_LIM_{ijtk} \\ & + \beta_5 CAID209_{ijtk} + \beta_6 X_i \\ & + \textstyle\sum_j \sum_k \eta_{jk} S_{ij} I_{ik} \\ & + \textstyle\sum_t \sum_k \theta_{tk} T_{it} I_{ik} + \epsilon_i\end{aligned}$$

where SSI_i is an indicator variable equal to 1 if the ith individual participated in SSI, $GAIN_{ijtk}$ represents the dollar difference between the QMB and SSI income eligibility limits as a function of state, time, and Social Security income, QMB_ELIG_{ijt} is an indicator variable equal to 1 if the ith individual's state had implemented any QMB expansion, SSI_LIM_{ijtk} represents (in dollars) the SSI income eligibility limit, MN_LIM_{ijtk} represents the Medically Needy income limit, CAID209 is an indicator variable equal to 1 if the respondent lives in a Medicaid 209(b) state, X_i is a vector of other individual characteristics that may affect SSI participation (such as age, gender, ethnicity, and race), S_{ij} is a dummy variable indicating the state of residence ($j = 1, \ldots, 50$), I_{ik} is a dummy variable indicating Social Security income category in \$5,000 intervals up to \$30,000 ($k = 1, \ldots 6$), and T_{it} is a dummy variable for calendar year ($t = 1987, \ldots, 1991$). The coefficients $\beta_0 - \beta_6$, η, and θ will be estimated, and ϵ_i is an error term assumed to be uncorrelated with the explanatory variables. The model in section III predicts that $\beta_1 < 0$, $\beta_2 > 0$, $\beta_3 > 0$, $\beta_4 < 0$, and $\beta_5 > 0$.

By including S_{ij} and T_{it}, the specification controls for unmodeled state-specific or time-specific factors that may affect SSI participation. If these omitted variables are correlated with $GAIN_{ijtk}$ and affect SSI participation, then the coefficient β_1 will be biased without their inclusion. In 1990, for instance, Congress established federal minimum standards for marketing and selling Medigap policies.[18] If this nationally uniform reform in the Medigap insurance market reduced SSI participation (because the private health insurance alternative to Medicaid became more attractive), then the coefficient on *GAIN* may also capture this effect without the time dummies. Inclusion of state dummies could control for variation in access to or quality of health care facilities.

The SSI income eligibility limit is calculated based on the generosity of state and federal benefits, household composition, and the individual's or family's nonlabor, nontransfer income through Social Security. This study exploits this additional variation in the limit due to nonlabor income because SSI law requires that SSI applicants file for all other benefits for which they are entitled. Since its inception SSI has been viewed as the "program of last resort." That is, after evaluating all other income, SSI pays what is necessary to bring an individual to the statutorily prescribed income floor.[19]

As of September 1992, 68% of aged SSI recipients also received Social Security. Social Security benefits are the single highest source of income for SSI recipients.[20] The more income the family receives through Social Security, the lower the SSI income limit (with the limiting case being the SSI income limit calculated in equation (1) in Section II). Although other sources of nonlabor income, such as pension income, dividends, and interest, could be included, I pre-

17. The results are qualitatively similar from a logit or probit model. The standard errors on the linear probability model are corrected for heteroskedasticity. In addition, all models control for group correlations within state-year-income cells. Moulton [1986] explains that the standard errors can be understated without correcting for these correlations.

18. General Accounting Office [1991].

19. U.S. House of Representatives, *Overview of Entitlement Programs* [1993].

20. U.S. House of Representatives, *Overview of Entitlement Programs* [1993].

TABLE III
Full Sample CPS Results 1987−1992, Using Social Security Income

	(1)	(2)	(3)
GAIN/1000 = max{*QMB_LIM* − *SSI_LIM*,0}	−.0391 (.0030)	−.0363 (.0033)	−.0363 (.0038)
Eligible for QMB?	.0109 (.0038)	.0094 (.0038)	.0094 (.0040)
SSI limit/1000	−.0003 (.0005)	.0001 (.0006)	.0001 (.0012)
MN limit/1000	.0014 (.0016)	.0031 (.0018)	.0031 (.0024)
Total number of people in family	−.0026 (.0011)	−.0028 (.0011)	−.0028 (.0016)
Number of own children under 18 in family	.0065 (.0038)	.0075 (.0037)	.0075 (.0059)
Hispanic origin	.0814 (.0039)	.0814 (.0040)	.0814 (.0099)
African American	.0682 (.0033)	.0644 (.0033)	.0644 (.0063)
Other nonwhite	.0533 (.0066)	.0548 (.0066)	.0548 (.0157)
Female	−.0006 (.0022)	−.0005 (.0022)	−.0005 (.0024)
Veteran	−.0194 (.0024)	−.0194 (.0024)	−.0194 (.0026)
Married	−.0388 (.0034)	−.0391 (.0035)	−.0391 (.0054)
Did not complete high school	.0413 (.0019)	.0411 (.0019)	.0411 (.0029)
Some college	−.0053 (.0020)	−.0048 (.0020)	−.0048 (.0013)
Respondent's age	.0137 (.0151)	.0106 (.0150)	.0106 (.0154)
$Age^2/100$	−.0096 (.0107)	−.0074 (.0107)	−.0074 (.0110)
Adjusted R^2	.1286	.1416	.1416
Other controls	*STATE*, *TIME*, *INCOME*	*STATE*INCOME*, *TIME*INCOME*	*STATE*INCOME*, *TIME*INCOME*, group correlations within state*time* income cluster

Source: CPS March Annual Demographic File, 1988−1993.

Notes: All specifications run as linear probability models. Heteroskedastic consistent standard errors in parenthesis. Sample size is 52,256. Mean of dependent variable is 0.0367. A dummy variable for 209(b) state was included in the specification, but was not significant and therefore not reported.

fer to exclude these more portable sources that could be transferred to the respondent's children if the parent anticipated participating in SSI.[21]

I was also concerned that Social Security income itself may be correlated with SSI participation in ways other than its direct effect on the SSI income eligibility limit and *GAIN*. For instance, if respondents with higher Social Security income have more attachment to the labor force, a larger stigma cost of participating in SSI, or higher savings, then the estimate on the SSI income limit and the variable *GAIN* may not represent variation in program rules, but rather dif-

21. See McGarry and Schoeni [1995] for evidence on transfer behavior from elderly parents to their children.

ferent preferences. To control for this possibility, I included a set of dummy variables for different levels of Social Security income. Moreover, I added interactions of these six income dummies with the fifty state dummies, and also with the five time dummies. These interactions may help control for the possibility that states have other transfer programs for the poor elderly or have different amounts of bureaucracy in applying for SSI. Similarly, if other programs (such as General Assistance) were being scaled back in all states over time, its effect on SSI participation would come through the interaction of T_{it} and I_{ik}. I will explore this point later, by using other measures of the SSI limit that do not rely on the individual's measure of Social Security income.

The findings on SSI participation for the full sample are presented in Table III.[22] As we move across the three columns, the model adds a more detailed set of dummy variables. In all specifications, increasing the Medicaid income limit significantly reduces SSI participation. The most careful specification, column (3), corresponds to the model in equation (4). The coefficient estimate on *GAIN* reads: increasing the income limit for Medicaid by $1,000 beyond the SSI limit would result in a reduction in SSI participation of 3.6 percentage points. In the absence of the QMB expansions this model implies that SSI participation would have been 1.7 percentage points higher, or 45% higher than it actually was, because the fully phased-in QMB expansions increased *GAIN* by roughly $455 in 1992. In terms of number of people leaving SSI, this corresponds to 240,000 respondents in the CPS sample. Since administrative numbers from HCFA show that 885,000 senior citizens were covered by QMB in calendar year 1992, and approximately 42% of elderly Medicaid eligibles were between 66 and 75, then more than 60% of those covered were previously insured by Medicaid through SSI.[23]

It is not possible to directly compare my number to other estimates, because no previous study has estimated the impact of Medicaid on SSI participation.[24] Similar estimates exist in AFDC literature, however. In previous work, I found that increasing the Medicaid income limit above the AFDC income limit by $1,000, for a family of three, results in a 1.8 percentage point drop in AFDC participation (Yelowitz [1995]). Thus, it appears that Medicaid is more important in the SSI participation decision of the elderly than in the AFDC participation of female heads.

Does this help us understand how expensive the QMB program really was? In 1992, the average payment to an aged individual was $196 per month, and to an aged couple $414 per month. Thus the average aged recipient received around $2,400 in SSI benefits during that year. The results from above imply that, for the elderly aged 66 to 75, the SSI caseload would have been 240,000 higher than the 663,000 actual SSI recipients if the QMB buy-in program did not exist.[25] This implies a saving to the SSI program of $576 million. On the other hand, around 1.4 million QMB beneficiaries had joined by the end of 1992 (General Accounting Office [1994]), of which approximately 42% fell into this age range. If these beneficiaries valued the buy-in coverage at its actuarial value (roughly $950 per year), then this implies a cost of $559 million. Thus, the QMB program was considerably less expensive than one would calculate from simply examining the increased health care expenditure, and may have even been self-financing through reductions in SSI participation.

22. In alternative specifications, I have include a state-specific time trend to control for omitted factors within a state that vary over time (such as changing economic conditions) that may be correlated with GAIN and affect SSI participation. The conclusions from these specifications are similar to the ones presented. I have also calculated the SSI limit using all nonlabor, nontransfer income instead of just Social Security income. In these specifications, I again arrive at similar conclusions about the efficacy of the QMB laws.

23. This number is computed by taking a weighted average of the number of QMB participants in FY 1992 (which runs from October 1991 to September 1992) and the number of participants in FY 1993. Since 840,000 were covered in FY 1992, and 1,022,000 were covered in FY 1993, this weighted average is 0.75*840,000 + 0.25*1,022,000 = 885,000 participants.

24. To the best of my knowledge, just one other study tries to model any aspect of the Medicaid program in the elderly's SSI participation decision. McGarry [1996] tests whether automatic entitlement to Medicaid, that is not living in a 209(b) state, affects SSI participation. Her findings on the 209(b) are similar to the findings in my study.

25. Approximately 45% of elderly SSI recipients are between the ages of 66 and 75. U.S. House of Representatives, *Overview Entitlement Programs* [1994].

The second policy variable asks whether the respondent's state had enacted any form of the QMB buy-in program. From 1989 onward, every state was forced by federal mandate to implement the program, but there is variation across states in 1987 and 1988. If learning about the SSI program is facilitated through the existence of the QMB program, then the sign on this variable should be positive. The existence of the QMB program is associated with an increase in SSI participation of 0.9 percentage points, as shown in Table III, column (3). This significant positive association also appears in most of the alternative specifications in the subsequent sections.

The results on increasing the SSI limit are weaker than those on increasing the Medicaid limit. Increasing the SSI limit by $1,000 is associated with an increase in SSI participation of 0.1 percentage points, and is insignificant for the full sample. Moreover, the economic magnitude is much smaller than the effect of increasing the limit in the first row. The coefficient also varies in sign and statistical significance in the models that follow. The coefficient is correctly signed for demographic groups that are more disadvantaged, but usually imprecisely estimated for other groups.

The findings on the demographic variables in the first column are expected. African Americans, other nonwhites, and those of Hispanic origin have significantly higher propensities to participate in SSI. These groups are more likely to be familiar with other welfare programs such as AFDC, and live in urban areas with greater access to welfare offices. Being female increases participation, while being a veteran lowers participation by 1.9 percentage points. This is reasonable since veterans may have pension income or alternative sources of health insurance coverage from the military. Those with less than a high school diploma are significantly more likely to participate in SSI. Again, this could reflect a history of welfare participation, lower stigma costs, superior information about SSI, lower income, or lack of pension coverage. Relative to respondents who completed high school, being in the dropout group raises the participation probability by 4.1 percentage points. Respondents who completed at least some college are less likely to participate compared to those who completed only high school, but the difference in participation rates is not as dramatic.

Demographic Differentials in the Effect of QMB

Several studies find different responses to welfare policy across demographic groups. To analyze the ultimate incidence of the QMB reforms, it is important to see whether all groups benefited equally by the QMB coverage.

Table IV, columns (1) and (2), divides the sample into married and single individuals. For both groups the QMB expansions reduce SSI participation, though the effect is smaller for single respondents (and not significant). The coefficients on several explanatory variables change signs and the coefficient estimates on others change magnitude, which suggests an interaction effect between them and marital status. Most notably, the SSI limit has a much bigger positive effect on single individuals, an effect that is larger than from increasing the QMB limit by the same dollar amount. Being a single woman raises the probability of SSI participation, while being a married woman lowers it. While it may seem puzzling that being female lowers SSI participation, recall that both Social Security income and marital status are controlled for.

Does the effect vary by race? I examine this in columns (3) and (4) by dividing the sample into African Americans and whites (I exclude the other nonwhite category from the analysis). While increasing the income limit results in significant reductions in SSI participation for both groups, the estimated effect is much stronger for African Americans, and we can reject that the coefficients are equal. Increasing the income limit by $445 reduces SSI participation by more than 3.2 percentage points for African-Americans. The African American caseload would have been almost 25% higher in 1992 without the buy-in program. This strong result might be attributable to the likelihood that many African Americans do not have retiree health insurance from a previous employer, and so are more dependent on SSI to provide a health insurance policy. A policy change that offered health insurance coverage off of SSI would therefore have stronger effects. Chulis, Eppic, Hogan, Waldor, and Arnett [1993]

TABLE IV
Demographic Differentials in CPS Results, 1987–1992, Using Social Security Income

	(1)	(2)	(3)
GAIN/1000 = max{*QMB_LIM* − *SSI_LIM*,0}	−.0075 (.0044)	−.0063 (.0071)	−.0711 (.0206)
Eligible for QMB?	.0029 (.0041)	.0112 (.0085)	.0076 (.0253)
SSI Limit/1000	.0057 (.0018)	.0189 (.0031)	.0127 (.0051)
MN Limit/1000	.0045 (.0028)	.0053 (.0046)	.0143 (.0109)
Total number of people in family	−.0032 (.0015)	−.0045 (.0028)	−.0070 (.0053)
Number of own children under 18 in family	.0134 (.0079)	.0028 (.0084)	.0452 (.0238)
Hispanic origin	.0480 (.0083)	.1265 (.0171)	−.0252 (.0523)
African American	.0350 (.0072)	.0815 (.0092)	— —
Other nonwhite	.0678 (.0182)	.0336 (.0219)	— —
Female	−.0063 (.0019)	.0093 (.0066)	.0215 (.0126)
Veteran	−.0174 (.0022)	−.0344 (.0070)	−.0736 (.0148)
Married	— —	— —	−.1149 (.0255)
Did not complete high school	.0195 (.0020)	.0677 (.0052)	.0761 (.0131)
Some college	−.0018 (.0010)	.0149 (.0032)	−.0231 (.0130)
Respondent's age	.0091 (.0125)	.0104 (.0343)	.1314 (.1059)
$Age^2/100$	−.0062 (.0089)	−.0077 (.0243)	−.0942 (.0754)
Observations	32,308	19,948	3,466
Adjusted R^2	.0837	.1679	.1803
Mean of dependent variable	.0144	.0729	.1342
Sample	Married	Single	African-American

continued

find that only 20.2% of elderly African Americans had employer-sponsored retiree health insurance, compared with 34.6% of whites. Another explanation is that African Americans are better informed about the availability of welfare benefits, which implies that the introduction of the QMB program would be less likely to increase SSI participation. This may explain the insignificant coefficient on QMB eligibility in column (3).

Columns (5) and (6) examine gender differences. The expansions appear to have a greater effect on reducing SSI participation for women than men, though the caseload reductions from a $1,000 change in the income limit are similar. Again, this may be due to the availability of retiree health insurance. Chulis et al. [1993] also find gender differences in private health insurance coverage. Approximately 38% of men had retiree health insurance through their employer, compared to 30% of women. Finally, education differences are examined in columns (7), (8), and (9). These columns show, successively, that the buy-in program had larger effects on the less educated. Increasing

TABLE IV continued

	(4)	(5)	(6)
GAIN/1000	−.0312 (.0037)	−.0379 (.0048)	−.0230 (.0050)
Eligible for QMB?	.0084 (.0036)	.0121 (.0055)	.0062 (.0044)
SSI Limit/1000	−.0016 (.0012)	.0024 (.0014)	−.0002 (.0014)
MN Limit/1000	.0022 (.0025)	.0015 (.0031)	.0022 (.0028)
Total number of people in family	−.0022 (.0017)	−.0047 (.0024)	−.0015 (.0017)
Number of own children under 18 in family	.0022 (.0058)	.0068 (.0093)	.0092 (.0072)
Hispanic origin	.0904 (.0106)	.1081 (.0132)	.0458 (.0089)
African American	— —	.0868 (.0084)	.0307 (.0066)
Other nonwhite	— —	.0695 (.0197)	.0360 (.0173)
Female	−.0035 (.0024)	— —	— —
Veteran	−.0177 (.0024)	−.0058 (.0050)	−.0293 (.0030)
Married	−.0299 (.0050)	−.0502 (.0068)	−.0250 (.0064)
Did not complete high school	.0366 (.0027)	.0524 (.0040)	.0245 (.0024)
Some college	−.0046 (.0013)	−.0125 (.0020)	.0004 (.0013)
Respondent's age	−.0053 (.0143)	.0053 (.0228)	.0253 (.0184)
$Age^2/100$	.0037 (.0102)	−.0037 (.0162)	−.0182 (.0131)
Observations	47,815	29,516	22,740
Adjusted R^2	.1172	.1610	.1021
Mean of dependent variable	.0286	.0487	.0212
Sample	White	Female	Male

continued

GAIN by $1,000 leads to a fall in SSI participation of 6.6 percentage points for high school dropouts, whereas the same policy change leads to a fall of just 0.9 percentage points for college-educated respondents.

Accounting for Asset Holdings

The preceding estimates have ignored the fact that an individual must also have low asset levels to qualify for SSI. Unlike other segments of the population, many senior citizens do indeed have assets. The liquid asset limit is currently $2,000 for individuals and $3,000 for married couples. The asset limits changed modestly during the period I studied, but were always very low.

The Social Security Administration (SSA) is quite vigorous in enforcing the asset rules. It receives information from the Internal Revenue Service on an applicant's nonwage income, mainly interest payments submitted to the IRS by financial institutions, dividend income, and unemployment compensation. SSA currently examines cases where this reported income exceeds the limit by as little as $41.

Unfortunately, the CPS only has crude measures of assets. I amend the model to include three measures. I include a dummy

TABLE IV continued

	(7)	(8)	(9)
GAIN/1000	−.0662 (.0084)	−.0158 (.0041)	−.0089 (.0027)
Eligible for QMB?	.0104 (.0093)	.0116 (.0047)	.0030 (.0033)
SSI Limit/1000	.0094 (.0022)	−.0052 (.0013)	−.0014 (.0011)
MN Limit/1000	−.0052 (.0052)	.0068 (.0021)	.0009 (.0018)
Total number of people in family	−.0053 (.0027)	−.0007 (.0017)	−.0004 (.0024)
Number of own children under 18 in family	.0058 (.0084)	.0031 (.0085)	.0227 (.0126)
Hispanic origin	.0860 (.0124)	.0437 (.0130)	.0352 (.0117)
African American	.0609 (.0084)	.0522 (.0101)	.0139 (.0079)
Other nonwhite	.0703 (.0239)	.0261 (.0150)	.0256 (.0160)
Female	.0017 (.0048)	−.0003 (.0025)	−.0029 (.0026)
Veteran	−.0414 (.0051)	−.0101 (.0026)	−.0058 (.0027)
Married	−.0838 (.0105)	−.0067 (.0053)	−.0097 (.0048)
Did not complete high school	—	—	—
Some college	—	—	—
Respondent's age	.0106 (.0327)	.0064 (.0156)	.0022 (.0153)
$Age^2/100$	−.0074 (.0232)	−.0045 (.0111)	−.0017 (.0109)
Observations	19,349	19,819	13,088
Adjusted R^2	.1841	.0635	.0371
Mean of dependent variable	.0786	.0151	.0076
Sample	Less than HS	Completed HS	College

Source: CPS March Annual Demographic File, 1988–93. *STATE*INCOME* and *TIME*INCOME* fixed effects and a constant term are included all specifications. All models correct for intercorrelations within each *STATE*TIME*INCOME* cell. A dummy variable for 209(b) state was included in the specification, but was not significant and therefore not reported.

Notes: All specifications run as linear probability models. Heteroskedastic consistent standard errors in parenthesis.

variable for whether the respondent owned his home. Although the SSI rules do not count a home in determining eligibility, owning a home is correlated with other forms of wealth. I also include a dummy variable for whether the respondent's family had any income in the form of interest, dividends, or rent. Finally, I add a dummy variable for whether the sum of these three income sources was greater than \$300 per year. Assuming that the rate of return on these assets is 10%, this sum would correspond to having asset holdings in excess of \$3,000—making the respondent categorically ineligible for SSI.[26]

26. It is not clear that including these asset variables as exogenous is entirely appropriate, which is why they are not in the baseline specification. Hubbard, Skinner, and Zeldes [1995] point out that saving behavior could be a function of social insurance programs, in which case the decision to participate in SSI and have asset holdings should be modeled jointly. Gruber and Yelowitz [1997] find evidence that the Medicaid program affects savings and consumption among working age adults.

The results are shown in Table V. Column (1) includes these variables in the regression directly, and it includes the other covariates in the baseline specification. Compared to the model that omitted these asset variables, the coefficient estimate barely changes. The adjusted R^2 increases, however. In addition, all three asset variables have significant negative effects on SSI participation. The second column examines 4,364 individuals who have all three of these asset variables set equal to zero. For this group, the effect of *GAIN* is much stronger than for the whole sample, as expected. The final column examines 28,282 individuals with all the asset variables set equal to one. The effect of the QMB reforms on this group is around 50 times smaller than the effect is on those without any assets.

Parameterizations of the Policy Variables Not Using An Individual's Social Security Income

All of the prior estimates rest on the assumption that Social Security income is exogenous. While this may be reasonable, there are two key arguments on why Social Security's influence may not come through the policy variable *GAIN* (as well as the SSI limit). First, preferences vary across individuals. If a person has a strong labor force attachment during his life and a high stigma cost to welfare participation, then he is likely to have high Social Security benefits.[27] This translates into a lower SSI limit and a higher value of *GAIN*. Since this person also has a lower propensity to participate in SSI, then the larger value of *GAIN* associated with this person could lead to a spurious finding that the QMB laws reduce SSI participation.

27. Eissa [1995] makes a similar argument about preferences in the context of identifying labor supply elasticities of married women. To surmount the problem, she examines the relative changes in labor supply for those women in the 99th and 75th income percentiles (conditioning on the husband's labor income and other nonlabor income), both before and after Tax Reform Act of 1986. Poterba, Venti, and Wise [1995] examine the effect of 401(k) eligibility on saving. They argue that while 401(k) eligibility is not random overall, it is approximately random with respect to saving behavior, given income. By including a series of indicator variables for income intervals and interactions with 401(k) eligibility, they identify the effect of 401(k) eligibility within income categories.

TABLE V
Accounting for Asset Holdings

	(1)	(2)	(3)
GAIN/1000	−.0351	−.1099	−.0020
= max{*QMB_LM-SSI_LIM*,0}	(.0037)	(.0205)	(.0013)
Eligible for QMB?	.0093	.0526	.0014
	(.0039)	(.0260)	(.0012)
SSI Limit/1000	.0008	.0249	−.0002
	(.0011)	(.0048)	(.0004)
MN Limit/1000	.0033	−.0156	−.0004
	(.0024)	(.0135)	(.0007)
Homeowner? (1 = yes)	−.0517	—	—
	(.0044)	—	—
Have asset income from interest, dividends or rent? (1 = yes)	−.0486	—	—
	(.0040)	—	—
Value of asset income > \$300 per year? (1 = yes)	−.0128	—	—
	(.0023)	—	—
Observations	52,256	4,364	28,282
Adjusted R^2	.1705	.2398	.0162
Mean of dependent variable	.0367	.2012	.0021
Sample	All	Individuals with all asset variables = 0	Individuals with all asset variables = 1

Source: CPS March Annual Demographic File, 1988–93. All specifications also include same variables as the baseline specification (Table III, column 3).

Notes: All specifications run as linear probability models. Heteroskedastic consistent standard errors in parenthesis.

If the model were only estimated within a single state at a point in time, then the variation in *GAIN* would reflect preferences rather than the budget constraint—which means that we do not learn about the QMB laws. By and large, this is addressed through the comparisons across states and over time within a given income group. By including *INCOME* controls (or interactions of *STATE*INCOME* and *TIME*INCOME*), the variation in the *GAIN* variable comes from changes in the QMB laws within a given income group.[28] Conceptually, the regression compares groups of individuals with similar Social Security levels who live in different states, or similar income groups in different time periods who face different Medicaid regimes.

A second criticism of using Social Security income is that it may be endogenous to the SSI program rules. To understand why, we need to understand how Social Security benefits are determined. The benefits are computed based on average indexed monthly earnings (AIME), the age at which benefits are drawn, the recipient's family status, and current earnings levels for those between the ages of 62 and 69. While a person approaching the age of 65 who is contemplating SSI participation may not be able to substantially influence the AIME level (since it is determined from the recipient's 40 years of highest earnings), he has some choice over his retirement age. If he retires at age 62, he gets just 80% of the Social Security benefit he would receive at 65. If he delays retirement past 65, the benefits increase by 3% per year (until age 72). Moreover, his work (and hence, welfare) decisions between ages 62 and 69 influence his Social Security benefit through the retirement earnings test.

Because of both concerns, it is important to try measures of GAIN (and the SSI limit) that do not rely on the individual's own Social Security income. I reestimated the model including measures of Social Security income constructed from the mean (and also, median) Social Security values within a birth cohort/marital status/education/race/year cell.[29] In this way, the construction of *GAIN* is not as susceptible to the criticism that it is influenced by an individual's decisions. The method does have a tradeoff, however, in that it adds a great deal of measurement error to the policy variables. The results are presented in Table VI.[30] In both columns, raising the Medicaid limit still reduces SSI participation. The coefficient estimate on *GAIN* is less than one half of the size in the baseline specification, however. To some extent, this is expected, because of the measurement error in *GAIN*.

How Comparable Are the "Treatment" and "Control" Groups?

The whole motivation for using some source of nonlabor income to construct GAIN is that many elderly are not going to be on the margin of SSI participation. This section explores whether the prior findings are very sensitive to changes in the sample selection, and to constructing *GAIN* using finer intervals of Social Security income.

I modify the baseline specification by restricting the sample to elderly individuals who report Social Security income of less than $7,500. By doing so, the aim is to restrict the sample to individuals who are "at-risk" of participating in SSI. In addition, the previous income categories were somewhat large—there could be a fair degree of heterogeneity even within the *INCOME* cell. A person with $4,999 in Social Security income may not be comparable to a person with $1, but the previous specifications would classify them in the same group.

From this smaller sample of 21,424, I classify individuals into fifteen income intervals ranging from $0–$500, $500–$1,000, . . . , up to $7,000–$7,500. For each individual in that interval, I assign the midpoint of the Social Security value to construct GAIN (i.e., $250 for the first category, and $7,250 for the last). Therefore, all individuals within an income group, in one state at a single point in time, will have the SSI limit.

The means of observable variables for each group are shown in Table VII. Casual inspection shows that the demographic variables stay fairly steady across income groups. There appear to be differences in observable

28. That is, variation comes from *STATE*TIME* and *STATE*TIME*INCOME* variation.

29. Birth cohorts range from 1912 to 1926. Race includes white, African American and other. Education includes less than 8th grade, grades 9 to 11, grade 12, and grade 13 and beyond. Marital status is zero or one.

30. Note that these models include *STATE* and *TIME* fixed effects, but not interactions with income.

TABLE VI
Policy Variables That Do Not Use Individual Social Security Income, on the Full Sample

	(1)	(2)
GAIN/1000 = max{*QMB_LIM-SI_LIM*,0)	−.0141 (.0067)	−.0173 (.0067)
Eligible for QMB?	.0053 (.0086)	.0068 (.0087)
SSI Limit/1000	−.0002 (.0017)	.0012 (.0018)
MN Limit/1000	.0020 (.0036)	.0015 (.0036)
Total number of people in family	−.0038 (.0016)	−.0038 (.0016)
Number of own children under 18 in family	.0117 (.0060)	.0116 (.0060)
Hispanic origin	.0945 (.0109)	.0943 (.0109)
African American	.0806 (.0068)	.0786 (.0068)
Other nonwhite	.0677 (.0168)	.0655 (.0165)
Female	.0017 (.0025)	.0016 (.0025)
Veteran	−.0185 (.0026)	−.0186 (.0026)
Married	−.0483 (.0061)	−.0528 (.0062)
Did not complete high school	.0440 (.0030)	.0437 (.0030)
Some college	−.0045 (.0012)	−.0044 (.0012)
Respondent's age	.0030 (.0155)	.0032 (.0155)
$Age^2/100$	−.0024 (.0110)	−.0026 (.0110)
Adjusted R^2	.0845	.0847
GAIN computed from:	Average social security income within cohort-year-education-race-marital status cell	Median social security income within cohort-year-education-race-marital status cell
Other controls	*STATE* and *TIME*, and group correlations within state*time cluster	*STATE* and *TIME* and group correlations within state*time cluster

Notes: All specifications run as linear probability models. Heteroskedastic consistent standard errors in parenthesis. CPS March Annual Demographic File, 1988–93. Sample size is 52,256. Mean of dependent variable is 0.0367. A dummy variable for 209(b) state was included in the specification, but was not significant and therefore not reported.

characteristics between those with very low levels of Social Security income (i.e., \$250–\$1,750) and those with somewhat higher levels (i.e., over \$3,000), however. In particular, the number of people in a household drops for the higher income groups, while the percentage who are female or single increases. SSI participation declines for higher income categories, starting at \$2,750. For lower income categories, however, the pattern is not as clear. In particular, the first income category has a much higher participation rate than the other categories close to it. Finally, the Medicaid policy was not binding for income groups below \$4,250.

Table VIII presents three additional specifications, motivated by the patterns in the previous table. The first column shows the results for all individuals with income less than \$7,500. The model includes interactions

TABLE VII
Summary Statistics Broken out by Social Security Income Category

Social Security Income	$250	$750	$1,250	$1,750	$2,250	$2,750	$3,250	$3,750	$4,250	$4,750	$5,250	$5,750	$6,250	$6,750	$7,250
SSI Participation	.15	.03	.07	.11	.18	.21	.19	.15	.11	.11	.06	.04	.03	.02	.02
Policy variables															
GAIN	$0	$0	$0	$0	$0	$0	$0	$0	$25	$173	$284	$302	$317	$289	$314
QMB Eligible?	.77	.76	.78	.68	.66	.67	.70	.69	.70	.72	.70	.70	.71	.71	.74
SSI Limit	$13,847	$13,792	$13,939	$12,119	$10,361	$9,589	$9,469	$8,905	$8,168	$7,607	$7,234	$7,121	$6,861	$6,775	$6,764
MN Limit	$3,884	$4,237	$4,136	$3,788	$3,485	$3,268	$3,382	$3,431	$3,275	$3,458	$3,551	$3,604	$3,641	$3,595	$3,653
209(b) state	.25	.23	.22	.28	.25	.26	.26	.24	.27	.25	.25	.25	.26	.24	.26
Demographic variables															
# people	1.94	1.92	1.91	1.83	1.75	1.67	1.73	1.71	1.70	1.65	1.68	1.67	1.69	1.69	1.74
# kids	.05	.05	.04	.04	.05	.04	.06	.05	.05	.04	.05	.04	.04	.03	.03
Hispanic	.10	.07	.05	.07	.09	.08	.08	.09	.07	.08	.07	.06	.05	.06	.05
African American	.09	.08	.07	.14	.14	.14	.14	.13	.13	.13	.09	.09	.08	.08	.08
Other	.05	.03	.05	.02	.02	.03	.04	.03	.04	.02	.02	.02	.02	.02	.01
Female	.57	.57	.57	.63	.66	.71	.68	.68	.71	.71	.69	.70	.66	.65	.59
Veteran	.29	.31	.31	.25	.23	.20	.21	.19	.19	.18	.19	.18	.22	.24	.27
Married	.52	.56	.65	.48	.33	.29	.33	.32	.30	.28	.30	.33	.33	.37	.42
Educ < 12	.37	.34	.27	.37	.48	.54	.47	.51	.48	.50	.48	.47	.44	.41	.41
Educ > 12	.29	.29	.36	.28	.20	.16	.19	.17	.19	.18	.18	.19	.19	.20	.21
Age	69.68	69.71	69.81	69.58	70.10	70.35	70.11	70.18	70.33	70.23	70.33	70.39	70.31	70.26	70.26
Observations	1,936	414	427	500	672	747	1,114	1,367	1,507	1,793	2,040	1,726	2,489	2,095	2,597

TABLE VIII
Restricting the Sample to Those on the Margin of SSI Participation and Using $500 Income Intervals

	(1)	(2)	(3)
GAIN/1000 = max{*QMB_LIM SSI_LIM*,0}	−.0461 (.0061)	−.0428 (.0061)	−.0132 (.0061)
Eligible for QMB?	.0099 (.0084)	.0148 (.0082)	−.0013 (.0085)
SSI Limit/1000	−.0059 (.0019)	−.0080 (.0018)	−.0068 (.0021)
MN Limit/1000	.0093 (.0042)	.0117 (.0042)	.0027 (.0045)
Total number of people in family	−.0120 (.0026)	−.0133 (.0026)	−.0074 (.0028)
Number of own children under 18 in family	.0166 (.0091)	.0217 (.0093)	.0143 (.0095)
Hispanic origin	.1201 (.0135)	.0953 (.0123)	.0551 (.0121)
African American	.0892 (.0090)	.0849 (.0092)	.0557 (.0097)
Other nonwhite	.0939 (.0219)	.0484 (.0192)	.0442 (.0234)
Female	−.0053 (.0058)	−.0046 (.0058)	−.0004 (.0057)
Veteran	−.0540 (.0060)	−.0482 (.0060)	−.0304 (.0057)
Married	−.0105 (.0099)	.0037 (.0097)	.0372 (.0098)
Did not complete high school	.0773 (.0045)	.0673 (.0044)	.0409 (.0042)
Some college	−.0140 (.0035)	−.0157 (.0034)	−.0138 (.0034)
Respondent's age	.0164 (.0353)	.0195 (.0366)	.0126 (.0361)
Age^2/100	−.0112 (.0251)	−.0137 (.0260)	−.0082 (.0256)
Observations	21,424	19,488	14,247
Adjusted R^2	.1710	.1590	.0875
Mean of dependent variable	.0825	.0760	.0486
Sample	All individuals with Soc. Sec. Income < $7500, SSI limit constructed from midpoint of interval	Same as (1) except exclude those with income < $500	Same as (1) except exclude those with income < $4000

Notes: All specifications run as linear probability models. Heteroskedastic consistent standard errors in parenthesis. CPS March Annual Demographic File, 1988–93. *STATE*INCOME*, and *TIME*INCOME* fixed effects and a constant term are included all specifications. All models correct for intercorrelations within each *STATE*TIME*INCOME* cell. A dummy variable for 209(b) state was included in the specification, but was not significant and therefore not reported.

of the fifteen income categories with the state dummies, as well as with the time dummies. The second column excludes those in the lowest income group of $0 to $500, since Table VII shows some differences between this group and the others. The third column includes those with incomes between $4,000 and $7,500, since the QMB expansions only change the budget constraint for this part of the sample.

The first two columns present very similar findings on QMB policy. In both cases, increasing the QMB limit reduces SSI participation. The final column, which only examines groups where GAIN was positive, shows smaller findings than the first two columns. In addition the SSI income limit variable is incorrectly signed.

Overall, three conclusions can be made from this section. First, at least on observable characteristics, there are not dramatic differences between the income categories. Second, by looking at those who are on the margin for SSI eligibility, the impact of the QMB law increases compared to the full sample. Third, the findings on the SSI limit are more sensitive in this framework. Dropping the lowest income category affects the results on the SSI income limit.

VI. CONCLUDING REMARKS

Although the majority of policy attention devoted to the QMB program has focused on the pattern of less-than-full take-up, the program appears to have the important consequence of reducing SSI participation. This article has shown sizable effects on SSI participation of decoupling health insurance coverage from SSI eligibility. The QMB expansions show the most dramatic effects for African Americans and the least educated. Cost estimates show that the program may come close to paying for itself.

During the 1980s and 1990s, the caseload growth of disabled SSI beneficiaries shot up dramatically, while the caseload growth of elderly SSI beneficiaries was minimal. Why then do I focus my analysis on the elderly population? The first reason is practicality. The definition of the elderly group remained constant during the sample period and this group is clearly identifiable in the CPS data. In contrast, only self-reported, rather than objective, measures of disability are available in the CPS data. In addition, disability reporting may be a function of the generosity of the SSI program.[31] Also, there were some changes in evaluating disability over the sample period. For instance, the Supreme Court's 1990 *Sullivan v. Zebley* decision resulted in a revised definition of disability for children under the age of 18. The second reason is policy-oriented. If we can explain why the elderly caseload remained stable, while the caseloads of other entitlement programs such as AFDC, Food Stamps, and Medicaid increased dramatically, then we may be able to offer policy proposals that will control the caseload growth in other programs.

Recent proposals for Medicaid reform would cut back on the QMB expansions for elderly (and perhaps also the Medicaid coverage of pregnant women and children). This study helps illustrate the full consequences of such on costs, by emphasizing the link to SSI. By scaling back eligibility, the states may assist senior citizens in moving onto the federal SSI rolls.

The analysis will be extended in three directions. First, this article has focused on the effects of delinking the Medicaid and SSI program. It has not focused on the role of health in determining SSI participation. A more complete model of SSI participation that accounted for the effects of health, along the lines of Wolfe and Hill [1995], could help determine what type of person was likely to leave SSI from the QMB program. Second, it is important to know the extent to which the QMB program crowded out private Medigap purchases. Cutler and Gruber [1996] find that a significant fraction of newly covered Medicaid beneficiaries among pregnant women and children formerly had some sort of private coverage. To the extent that the QMB coverage simply displaces private coverage, it does not reduce the number of uninsured. A similar crowd-out effect for the elderly may occur in the Medigap market. Finally, since it appears that Medicaid is an important determinant of SSI participation for the elderly, is the same true for the disabled population? Could offering health insurance off of SSI slow the caseload growth in the SSI disabled program? In other work, I use the variation in Medicaid expenditure across states and over time as a proxy for its value, to assess Medicaid's importance on SSI participation (Yelowitz [1998a]). In that

31. The CPS question asks those who did not work the following question: "What was the main reason . . . did not work in 19..," for which ill/disable is a potential response. If the decision to work and the decision to participate in SSI are jointly determined, then selecting disabled individuals could lead to selection bias.

TABLE A1
Sample Selection Criteria—CPS Extract

	March 1988	March 1989	March 1990	March 1991	March 1992	March 1993
Initial observations	155,980	144,687	158,079	158,477	155,796	155,197
$>$ 64 years ($A\_AGE > 64$)	18,610	17,740	18,902	19,043	18,954	19,074
No imputed Medicaid participation ($I\_MCAID = 0$)	18,151	17,320	18,469	18,539	18,508	18,615
No imputed SSI income ($I\_SSIYN = 0$)	18,071	17,247	18,382	18,471	18,450	18,533
No imputed Medicare participation ($I\_MCARE = 0$)	16,936	16,170	17,102	17,195	17,249	17,226
No imputed age ($APAGE = 0$)	16,868	16,103	17,049	17,147	17,212	17,167
No imputed marital status ($APMARITL = 0$)	16,809	16,049	17,007	17,087	17,165	17,139
No imputed spouse number ($APSPOUSE = 0$)	16,608	15,760	16,674	16,763	17,023	16,998
No imputed sex ($APSEX = 0$)	16,584	15,728	16,641	16,734	16,990	16,976
No imputed race ($APRACE = 0$)	16,574	15,722	16,634	16,729	16,982	16,969
No imputed highest grade attended ($APHGA = 0$)	16,494	15,657	16,584	16,662	16,882	16,906
No imputed CHAMPUS part. ($I\_CHAM = 0$)	16,289	15,428	16,347	16,427	16,675	16,650
No imputed Social Security income ($I\_SSYN = 0$)	16,288	15,425	16,344	16,426	16,672	16,648
No imputed public assist. income ($I\_PAWYN = 0$)	16,200	15,350	16,271	16,342	16,609	16,584
No imputed disability ($I\_DISHP = 0$)	16,183	15,341	16,255	16,336	16,597	16,564
No imputed health insurance ($I\_HIYN = 0$)	15,858	14,953	15,918	16,017	16,228	16,218
No imputed pension plan ($I\_PENPLA = 0$)	15,661	14,834	15,811	15,884	16,176	16,113
Has Medicare ($MCARE = 1$)	15,035	14,210	15,102	15,187	15,534	15,530
Between 66 and 75 years old	8,839	8,276	8,671	8,755	8,899	8,816

work, I also find that Medicaid significantly influences SSI participation.

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