Center for Retirement Research

Center for Retirement Research Working Papers

Boston College *Year* 2001

The Supplemental Security Income Program and Incentives to Take up Social Security Early Retirement: Empirical Evidence from Matched SIPP and Social Security Administrative Files

Elizabeth T. Powers David Neumark

This paper is posted at eScholarship at Boston College.
http://escholarship.bc.edu/retirement_papers/50

The Supplemental Security Income Program and Incentives to Take up Social Security Early Retirement: Empirical Evidence from Matched SIPP and Social Security Administrative Files

Elizabeth T. Powers*
David Neumark

CRR WP 2001-06
September 2001

Center for Retirement Research at Boston College
550 Fulton Hall
140 Commonwealth Ave.
Chestnut Hill, MA 02467
Tel: 617-552-1762 Fax: 617-552-1750
http://www.bc.edu/crr

*Elizabeth T. Powers is an Assistant Professor in the Institute of Government and Public Affairs and the Economics Department at the University of Illinois at Urbana-Champaign. David Neumark is a Professor of Economics at Michigan State University and a Research Associate of the National Bureau of Economic Research. The research reported herein was performed pursuant to a grant from the U.S. Social Security Administration (SSA) to the Center for Retirement Research at Boston College (CRR) funded as part of the Retirement Research Consortium. This grant was awarded through the CRR's Steven H. Sandell Grant Program for Junior Scholars in Retirement Research. The opinions and conclusions are solely those of the authors and should not be construed as representing the opinions or policy of the SSA or any agency of the Federal Government or of the CRR. Linda Bailey and Parker Yi provided research assistance with the public use data. The authors thank Howard Iams and Minh Huynh of the Social Security Administration for their assistance with Social Security administrative records, Claudia Sahm of The Brookings Institution for her generous help with this project, and Roger Gordon for initially stimulating our thinking in this direction. This version of the paper was completed in November 2001 and replaces the version released in September 2001.

© 2001, by Elizabeth T. Powers and David Neumark. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

About the Sandell Grant Program

This paper received funding from the *Steven H. Sandell Grant Program for Junior Scholars in Retirement Research*. Established in 1999, the Sandell program's purpose is to promote research on retirement issues by junior scholars in a wide variety of disciplines, including actuarial science, demography, economics, finance, gerontology, political science, psychology, public administration, public policy, sociology, social work, and statistics. The program is funded through a grant from the Social Security Administration (SSA). Each grant awarded is up to $25,000. In addition to submitting a paper, successful applicants also present their results to SSA in Washington, DC. For more information on the Sandell program, please visit our web site at *http://www.bc.edu/bc_org/avp/csom/executive/crr/sandellguidelines.shtml*, send e-mail to crr@bc.edu or call Elizabeth Lidstone at (617) 552-1677.

About the Center for Retirement Research

The *Center for Retirement Research at Boston College*, part of a consortium that includes a parallel center at the University of Michigan, was established in 1998 through a 5-year $5.25 million grant from the Social Security Administration. The goals of the Center are to promote research on retirement issues, to transmit new findings to the policy community and the public, to help train new scholars, and to broaden access to valuable data sources. Through these initiatives, the Center hopes to forge a strong link between the academic and policy communities around an issue of critical importance to the nation's future.

Center for Retirement Research at Boston College
550 Fulton Hall
140 Commonwealth Ave.
Chestnut Hill, MA 02467
phone: 617-552-1762 fax: 617-552-1750
e-mail: crr@bc.edu
http://www.bc.edu/crr

Affiliated Institutions:

Massachusetts Institute of Technology
Syracuse University
The Brookings Institution
National Academy of Social Insurance
Urban Institute

Abstract

Features of the Supplemental Security Income (SSI) program and the social security retirement system may interact in a manner that creates incentives for prospective SSI recipients to take social security early retirement (SSER). This paper takes a first close look at this issue. The work disincentives posed by SSI rules and the potential interactions between the SSI and SSER programs are outlined in a basic theoretical framework. The hypotheses that emerge can be tested using public-use microdata linked to Social Security Administration records. We first present evidence supporting the hypothesis that SSI rules induce prospective SSI recipients to substantially reduce work activity (by various measures) prior to age 65. We then present two types of evidence on SSI-SSER interactions. We do not find a simple correspondence between generous SSI benefits and SSER use, which might be an expected *indirect* SSI-SSER interaction. However, estimates for some specifications for SSER receipt, derived directly from the theoretical interaction between SSER and SSI rules through the household budget constraint, provide evidence of a *direct* interaction between SSER and SSI, with SSI inducing use of SSER for those individuals for whom the SSI-SSER interaction eliminates the reduction in benefits associated with early receipt of social security benefits.

Correspondence to:

Elizabeth Powers
Institute of Government and Public Affairs
1007 W. Nevada Street
Urbana, Illinois 61801
Phone: (217) 244-4818
Fax: (217) 244-4817
e-mail: epowers@uiuc.edu

I. Introduction

Perhaps because individuals only become eligible for the Supplemental Security Income (SSI) program at age 65, there has been little investigation of the possible incentive effects on behavior prior to age 65, including possible work reductions and increased participation in other programs. In fact, the incentives imbedded in SSI could lead individuals to withdraw from the labor market at earlier ages. There may also be important interactions between SSI rules and the early retirement option in the social security system (henceforth referred to as SSER, for "social security early retirement"). This paper is the first of which we are aware to investigate how the SSI and SSER programs interact. The theory laid out below predicts that they will, but this is under an assumption of knowledge of these government programs on the part of their actual and prospective participants. Only an empirical analysis can confirm whether these interactions are important in practice. We use multiple panels of the Survey of Income and Program Participation (SIPP), linked to confidential Social Security Administration data on earnings histories and SSI recipiency, to investigate our hypotheses.[1]

We note at the outset that there is a *statutory* relationship between SSI receipt and social security receipt, because SSI recipients are *required* to claim their social security entitlements. This phenomenon is not generated by individual behavior, and it is not the focus of this paper. Rather, there are two paths of interaction considered below. First, we have provided evidence in earlier work (Neumark and Powers, 1999, 2000) that SSI creates work disincentives for prospective recipients as they approach the age of SSI-aged eligibility. This is because SSI effectively places a confiscatory tax on retirement income exceeding very small disregards, regardless of whether it is from private or public sources, including social security.[2] Therefore a potentially important incentive for working today–additional pension income tomorrow–is eliminated by SSI rules. We have speculated in past work that a by-product of decreased work may be an increased reliance on SSER to meet consumption needs following a reduction in labor

[1] Throughout the paper we interchangeably use "SSI" and "SSI-aged" to refer to the program for which sufficiently poor elderly qualify. We refer to the disability portion of the program as "SSI-disabled."
[2] Additionally, there is an asset test for eligibility for SSI, which may discourage saving (Neumark and Powers, 1998) and therefore the labor supply needed to meet saving goals.

supply. We therefore first ask whether generous SSI benefits, in addition to discouraging labor supply near the age of eligibility, encourage the use of SSER.

We then rely on more explicit modeling of the unified budget constraint facing an older low-income individual when both SSI and SSER are considered. We show that SSI rules should encourage SSER participation by nullifying the actuarial reduction in the SSER benefit once age 65 is reached, for those who will participate in SSI. We formulate and test this specific hypothesis, which we regard as a more direct test of an interaction between SSI and SSER.

The two approaches and their related concerns are qualitatively different. The examination of whether SSI's incentives to diminish work activity prior to age 65 are also reflected in increased SSER use is an exploration of what can be thought of as an *indirect* linkage between the programs, due to effects of SSI rules on prospective recipients' work behavior prior to age 65. That is, SSI rules reduce work incentives, in turn leading to SSER participation (if eligible). Therefore, in the first set of analyses, we treat SSER participation just like any other measure of work activity. While this indirect approach is certainly *consistent* with a person perceiving a unified SSI-SSER budget constraint, by no means is it definitive. For example, we may fail to find that SSI induces SSER use because people go on SSER for a wide variety of reasons, many unrelated to SSI, so the effect is simply not detectable in the data.

The second type of evidence, which we consider the primary evidence on SSI-SSER interactions presented in this paper, hones in on the question of *direct* program interactions. The hypothesis underlying this exploration is that prospective recipients face a "unified" budget constraint that incorporates both SSI and SSER program rules. The test for direct program interactions is likely to be more informative because it focuses explicitly on asking whether those individuals for whom SSER should be more attractive *because of* how SSI and SSER interact are in fact more likely to take SSER. What unites these analyses is the fact that regardless of whether linkages are direct or indirect, if they exist researchers and policymakers should be mindful of the unintended consequences of changes in SSI on the social security system, and vice versa.

The use of Social Security Administration records greatly enhances the empirical evidence that can be brought to bear on this issue. In the case of the indirect influence of SSI rules on SSER receipt, we are better able to characterize the likelihood that an older individual, not yet aged 65, takes up SSI in old age, because we are able to access the individual's program history for a substantial number of years. In contrast, a SIPP panel typically follows a household for a couple of years, and participation probabilities must be inferred from the cross-section when only public-use data are available. In the analysis of direct program interactions, we are able to characterize the critical portion of the unified SSI-SSER budget constraint faced by an individual reasonably well, while only a crude guess could be surmised using public-use SIPP data alone. Because we know each sample member's entire social security earnings history, we can ascertain whether they face a government old-age transfer determined at the margin by SSI or social security (the significance of which is explained below).

Because SSI is a welfare program, this topic is of general interest for understanding the retirement process of very low-income people (especially its timing) and the potential supports that enable retirement. If work plans are made contingent upon the structure of public programs, changes to SSER or SSI rules could have a substantial impact on retirement patterns among this group. While the issue of spillovers between programs has been studied in other contexts, it has been ignored in the case of SSI and the social security retirement system.[3]

Changes to SSI generosity or social security early retirement rules are predicted to have spillover effects on the other program. Hypothetical examples include an increase in the age of early retirement and an increase in SSI benefits. Since the availability of SSER allows potential SSI recipients to act on work disincentives, enhancing the value of SSI participation, an increase in the age of early retirement may reduce SSI participation. Increased SSI benefits for elderly recipients might not only increase SSI use but also have a positive impact on SSER take-up.

[3] Most of the economics literature on program interactions involving cash welfare has focused on Medicaid policy. Yelowitz (1998) finds that the value of Medicaid increases SSI-disabled participation. Blank (1989) and Yelowitz (1995) find evidence that the value of Medicaid also increases AFDC participation. McGarry (1996) finds little influence of Medicaid on SSI-aged participation, however. Kubik (1999) and Garrett and Glied (2000) find evidence that households' participation in SSI-disabled is related to financial incentives posed by the AFDC and SSI programs.

In fact, policy changes of direct relevance to SSER are currently underway, including a change in the normal retirement age. Beginning with the 1938 birth cohort, the normal retirement age is scheduled to rise gradually, topping out at age 67 for 1959 and later birth cohorts. The early retirement age will remain at 62 indefinitely under current law, and this lengthening of the early retirement period causes a reduction in the value of SSER benefits received, as the actuarial reduction will increase. Our model predicts that such a change will contribute further to the downward trend in SSI receipt among the elderly that has been occurring since the program's inception in 1974. While this longstanding trend has been driven by increasingly generous social security benefits and the increasing affluence of newer cohorts of elderly generally, future declines could in part result from decreasing effective generosity of public programs to the very low-income elderly, due to policymakers' failure to consider SSER-SSI program interactions.

The next section presents the relevant institutional detail on the SSI and SSER programs. Section III presents the theoretical framework and resulting hypotheses. This is followed by a discussion of the data and empirical specifications for the hypothesis tests. Section V presents the empirical findings. The results of these tests are summarized and discussed in Section VI. The relevant previous literature is discussed at appropriate points throughout the paper.

II. Program Background

Social Security

The 1935 Social Security Act provided monthly benefits to retired workers aged 65 and over and a lump-sum death benefit to the estates of these workers. Since 1961, both men and women as young as 62 have been allowed to collect benefits if fully insured (defined as attaining 40 or more quarters of social security covered earnings). Until recently, age 65 was the "full retirement age." For most workers, the benefit is based upon a primary insurance amount (PIA) computed from their average indexed monthly earnings (AIME). An early retiree faces an actuarial reduction to their PIA. If an individual chooses to work and receive social security

benefits prior to the full retirement age, his benefits are no longer reduced. However, in the era of our sample, benefits were reduced by $1 for every $2 in earnings over a given threshold.[4]

Because the actuarial reduction in benefits for early retirement is larger the greater the time elapsing between the actual and full retirement ages, increases in the full retirement age currently underway affect the benefits of early retirees to varying degrees, depending on their birth cohort. Beginning with the 1938 birth cohort, the full retirement age rises above age 65, reaching age 67 for cohorts born in 1960 or later, while the age of early retirement remains fixed at 62. Thus, while a worker born prior to 1938 faces an actuarial reduction for age-62 retirement of 20%, a worker born in 1960 who retires at age 62 faces a reduction of 30%. This difference by age cohort is solely the result of applying the actuarial reduction to a lengthier period of early retirement.[5]

Supplemental Security Income

The SSI program was begun in 1974 to provide a uniform federal safety net for the elderly and disabled. The concern of this paper is with the elderly component, which sufficiently poor individuals may participate in upon attaining age 65. While SSI is largely a federal program, state variation exists in policy and administration. The federal government sets eligibility criteria and maximum benefit levels for individuals and couples in the federal portion of the program. Since some states (those with more generous safety nets prior to 1974) were required, and other states chose, to supplement the basic federal benefit, there is also cross-state benefit variation. Wealth holdings also affect eligibility. In the federal program, couples' resources–after exclusions of specific items like home equity–may not exceed $2,000; for individuals the figure is $1,000 (Social Security Administration, 2001).

The federal SSI benefit is generous relative to other welfare programs and the SSI program comprises a potentially substantial source of income for the elderly poor. Federal SSI,

[4] The threshold at the time of the law change was $9,600. While Congress ended the so-called "earnings test," these benefit reductions were in fact offset by actuarially adjusted benefit increases upon attainment of the full retirement age, a feature that was little understood by recipients or policymakers (Gruber and Orszag, 1999).

[5] Some members of our sample belong to birth cohorts affected by these changes and consequently face a full retirement age between 65 and 66. This is accounted for in our computations.

when combined with Food Stamps, brings an elderly household's resources to a substantial fraction of the federal poverty line. State supplements can also be large. For example, in January 1991 (which is within our sample period) the maximum monthly federal benefit was $407 for an individual and $610 for a couple. At that time, the highest state benefit for couples was in California, which resulted in a maximum combined benefit of $630 for individuals and $1,167 for couples.

SSI benefits are reduced with other sources of retirement income. $20 per month of unearned, non-transfer income, $65 of earned income, and one-half of earnings exceeding $65, are disregarded in computing the SSI benefit.[6] The disregards are not indexed for inflation, nor are they differentiated by household type (couple or individual).[7] In most cases, the monthly SSI benefit is determined by the formula:

(1) SSI benefit = Guarantee - ½ Max{earned income-Min{earned income, $65},0}
- Max{unearned income - Min{unearned income, $20},0}
- {means-tested transfer income}.

The guarantee is the benefit amount paid when there is no other income. Earned income refers to the current earnings of the SSI recipient. Unearned income includes income from private pensions, public pensions such as social security, interest income, and the like. Means-tested transfer income (e.g., Veterans Benefits) offsets SSI income dollar-for-dollar and none of it is disregarded. These deductions for other income are first applied to the federal benefit amount. If there is any excess income, it is deducted from the state supplemental payment (Social Security Administration, 1994, pp. ii-iii). When the computed SSI benefit is positive, the person or couple is eligible for the program.[8]

[6] In addition, certain home energy and support and maintenance assistance, Food Stamps, most federally-funded housing assistance, state assistance based on need, one-third of child support payments, and income received infrequently or irregularly are excluded.

[7] While some states vary their disregard amounts from the federal level, it proved too difficult to incorporate this information in our analyses, given the idiosyncratic way in which different disregards are applied and the detailed knowledge about income sources that is needed to use them appropriately.

[8] Due to the benefit computation rules, it is possible for individuals to receive a state benefit without receiving a federal SSI benefit. Only federal payment status is recorded in SSA databases.

The number of SSI-aged recipients has been falling over most of the program's history. By 1998, 1.4 million elderly participated in SSI, down from 2.3 million in 1975 (Social Security Administration, 1999, Table 7.A3, p. 287).[9] The downward trend is due to the increasing affluence of the elderly, increasing social security coverage of the population, and increasing value of social security benefits claimed. SSI recipients are *required* to apply for all public benefits for which they may be eligible, including social security, and most SSI recipients are eligible for at least a modest social security benefit. By September 1993, near the end of our sample period, 65% of aged SSI recipients received social security benefits and 22% received some other unearned income. However, SSI recipients have little else to rely upon. Only 2.1% reported any earned income, while almost none reported private pension income (1994 Green Book, Tables 6-16 and 6-17).

Due to receipt of social security, the average SSI-aged benefit payments actually received by households are fairly low. In September 1989, the average federal payment to all elderly households on SSI was $163, with an average state supplement payment of $133 (49.6% of aged federal SSI recipients received a state supplement–1990 Green Book, p. 717). Perhaps because many elderly could collect only small SSI benefits, or are precluded from participating in SSI at all due to their social security benefits, take-up of SSI by the poor elderly is quite low. Zedlewski and Meyer (1989) estimate that only about 30% of the elderly poor receive SSI benefits. McGarry (1996) analyzes SSI participation and attributes much of the low take-up by potential eligibles to the quite modest cash benefits for which most elderly poor would actually qualify.

III. Theoretical Models of SSI and SSER Use

In this section, we lay out the theoretical framework underlying the linkages between SSI and SSER. To illustrate most of our points, we use a simple model in which leisure and consumption are choice variables but saving is not allowed. The results in this case are then contrasted with a model in which saving is possible. Finally, the implications of possible

[9] The era of our sample, 1984-1993, is fairly stable however, with roughly 1.5 million elderly participating each year.

extensions to the models are briefly discussed. The theoretical discussion proceeds in two phases. In the first phase, we review the incentive to participate in SSI and the concomitant work disincentives of the SSI program. In the second phase, we discuss how SSI and SSER rules interact in the budget constraint to enhance incentives to participate in SSER. The technical background to the discussion is contained in Appendix A.

SSI Participation and Work Disincentives

Consider a simple model in which people live for two periods. In the first period the worker chooses how much to work and consume. In the second period, consumption is financed solely by pension benefits and welfare. Financial resources cannot be transferred between periods. Pension benefits–which may be from both private and public sources–are determined as an increasing function of first-period earnings. Since all income is consumed each period, once the first-period leisure choice is known, the other choices are determined. First-period work hours affect second-period retirement income by increasing social security and private pension benefits.

We introduce an SSI policy into this framework. An SSI policy is characterized by a maximum benefit level (G), an amount of pension income that is disregarded before the benefit is computed (D), and a rate at which pension income in excess of D is reduced (in the case of SSI, this rate has always been 100%). In the first period, the person is not age-eligible for SSI. In the second period, the person is age-eligible and could be income-eligible, so long as retirement income is not too high.

The worker's global optimum is found by considering his actions in each of the scenarios involving SSI participation. Each scenario is described by the decision to participate or not, as well as whether second-period income is above or below the disregard. Budget constraints and the first-order conditions associated with the local optima are presented in Appendix A. Work effort is affected by SSI policy in determining both local and global optima, and it is straightforward to show that a more generous SSI policy discourages work effort, due to the implicit confiscatory tax on pension income imposed by SSI in period 2. In two scenarios, the SSI guarantee has no effect on behavior. First, in the local optimum with nonparticipation, SSI

policy is irrelevant. Second, the SSI guarantee has no effect on labor supply in the local optimum where a participant's income exceeds the disregard amount. In this instance, the person's labor supply depends solely on consumption needs in period 1, because there is no way to influence period 2 resources by adjusting first period labor supply (it is G+D regardless). Because of the inability to transfer resources, the size of the SSI guarantee can have no impact on first-period consumption and hence on work decisions. Finally, in the case of participation with income below the disregard, the Appendix demonstrates that labor supply is negatively related to the guarantee.

What is actually observed, of course, is the global optimum. It is straightforward to demonstrate that an increase in the SSI guarantee widens the gap between the lifetime utility value associated with SSI-participation versus non-participation outcomes. Since all choices involving SSI participation are associated with lower labor supply, the fact that an increase in G widens the portion of the budget constraint over which participation is attractive implies that the increase in G will also decrease labor supply globally.

The Budget Constraint under SSI and SSER Rules and Incentives to Participate in SSER

Now consider the addition of an SSER program to this model, in which the person can begin participating during period 1. This policy is described by a benefit, B_0, to which the individual is entitled at the full retirement age in the second period; an actuarial reduction rate to be applied in the case of early retirement (β); and an implicit tax rate on the earned income of SSER recipients (τ).

It is evident from examining the budget constraints associated with the various permutations of SSI and SSER participation that it will be advantageous to participate in SSER and SSI together. When the worker participates in SSI in period 2 (focusing on the simplest case, where second-period nonwelfare income will exceed the modest disregard), his total period 2 resources are determined by the SSI benefit schedule. There is no advantage to deferring social security receipt, because the actuarial benefit reduction for early retirement is effectively removed in the second period by the SSI program. Therefore, the worker's SSER decision is made solely on the basis of whether he can obtain higher utility in period 1 as a consequence of

taking up SSER. This depends entirely upon the tradeoff between the SSER benefit and the tax rate on earnings above the SSER disregard, and the worker's preference for leisure versus consumption in period 1. Appendix A presents the various cases and argues that for the sort of low-wage workers who are potentially eligible for SSI-aged, utility is higher using SSER and SSI together. This is most obvious in the case where workers are not subject to the SSER earnings tax: for any choice of work hours, the worker is always better off receiving earnings plus the SSER benefit (βB_0+wh) rather than earnings alone (wh), and in either case second-period consumption will be G+D.

Because the net government transfer is determined by SSI policy in period 2, early retirement is "costless," in the sense that the actuarial reduction in benefits that would normally give an early retiree pause are lifted when the second period is reached. The exception is if the individual faces a very low level of retirement income that falls short of the SSI disregard level. In this unlikely event, the agent is in the traditional situation of trading off receiving some social security benefits today against the actuarial reduction for early retirement.

Note that this direct interaction between SSI and SSER is independent of the size of the SSI benefit. If two agents living in different states with differing SSI generosity levels both face a government transfer in retirement that is determined by the SSI program, it would be to the advantage of both of them to participate in SSER. Of course, while this is true for individuals, the transfer margin is more likely to be determined by SSI in states with more generous SSI supplementation, all else constant. Therefore, this could contribute to a positive relationship between SSI benefit generosity and SSER take-up in the data, controlling for other factors. However, in our more direct implementation of the test for this effect, we compute whether a specific couple or individual's government transfer in retirement is prospectively determined by the SSI program.

Other Considerations and Extensions

It is interesting to note that incentives for using SSI and SSER are different in a simple model allowing saving. As we have mentioned, SSI has an asset as well as income test. In this case, when weighing whether to participate in SSI, the agent decides if it is worth having to

consume sufficiently more today and consequently less in the future in order to maintain asset-eligibility for SSI.

Even in a model permitting saving but not a choice of labor supply, the effective neutralization (after age 64) of SSER's usual actuarial reduction in social security benefits still serves to make SSER relatively more attractive. However, in contrast to the model just presented, the possibility of collecting SSER cannot alleviate–and in fact serves to aggravate–the problem of intertemporal distortion brought about by SSI. This is because in a model with saving and an asset limit in the SSI program, the problem is one of allocating *too much* consumption to the first period in order to meet the asset test. Not surprisingly then, in a model allowing both labor choice and saving, the predicted effect of SSI benefits on labor supply is ambiguous. While we have presented empirical evidence (Neumark and Powers, 1998) that the SSI asset test may discourage saving, we believe that the predominant problem individuals face is maintaining income just prior to retirement, while responding to the labor supply disincentives of SSI, in which case SSER is relatively *more* attractive to those who will be eligible for SSI (although ultimately this is an empirical question).

The models discussed to this point simplify but convey the basic insights for understanding the interactions of SSI and SSER. Some potentially important issues cannot be addressed easily in this framework. One possibility is beginning SSI participation after (rather than at) age 65, which we only address through the empirical implementation and do not attempt to model explicitly. Similarly, the age of retirement could in principle be treated as endogenous, although since labor supply is so heavily taxed by both the SSI and SSER programs (in the sample period), we suspect that the essential qualitative predictions would be unchanged.

In addition, there are several relevant sources of uncertainty, including health, family structure, and job stability. Those facing a high probability of adverse health shocks have a greater incentive to ensure SSI eligibility because SSI automatically brings Medicaid coverage.[10] In the pre-retirement period, individuals may be uncertain of their future marital status and

[10] However those with sufficient quarters of covered earnings are eligible to purchase Medicare coverage at modest premiums after age 65.

options to continue working. The prospect of widowhood introduces uncertainty about the size of the future benefit payment and consumption needs. Those facing high probabilities of job loss might engage in precautionary saving to prevent a "zero consumption" outcome. These precautionary savings may be sufficient to render them ineligible for SSI (at least at age 65), even though others with equal permanent income might make choices that assure SSI eligibility. In a world of certainty, people intending to participate in SSI might display low work effort and low saving throughout much of their lives. However, due to uncertainty, people may delay committing to an SSI-participation strategy until sufficient information is revealed or, put another way, until they are reasonably close to the eligibility age.

Family structure is also ignored in these simple models. Husbands and wives may determine their labor supplies jointly and presumably saving decisions are made collectively. In the "male chauvinist" model (Killingsworth, 1983), the wife regards the husband's labor supply (and income) as exogenous to her labor supply decision. This implies that when analyzing married men, we need not be concerned with wives' labor supply. However, there is some evidence against this model, more consonant (in some circumstances) with joint decision making (e.g., Lundberg, 1988). Consequently, we include exogenous factors affecting the wife's labor supply in the husband's labor supply specification.

IV. Data and Implementation

Hypothesis Tests and Empirical Specifications

The first approach to studying the interactions between SSI and SSER is a simple indirect test of whether more generous SSI encourages SSER participation. In this first set of tests, SSER is treated as a measure of work activity (with SSER use corresponding to less work), following the difference-in-differences framework developed in Neumark and Powers (2000). The parallels in the framework highlight the idea that the work reductions spurred by SSI (as reported in that paper) are to some extent enabled by SSER participation. Of course, another means of preserving consumption is by running down assets to maintain consumption, which also serves the purpose of meeting the asset test for SSI eligibility (Neumark and Powers, 1998). In addition, it is entirely possible to work and take SSER, which may weaken the relationship

between SSER receipt and conventional measures of work activity. These qualifications imply that we might fail to detect this simple relationship between SSER and SSI policy in the data, even if SSI and SSER interact as outlined in the previous section, and despite evidence of work disincentive effects of SSI.

For this analysis, we need to classify sample members according to two major characteristics: whether they live in a state with a generous SSI supplementation policy, and whether they have characteristics indicating that they are sufficiently likely to participate in SSI-aged in the future. Our cutoff for generous states is that their supplement exceed 20% of the federal benefit. To sharpen the distinction, observations from households residing in states that supplement, but by less than 20%, are discarded.

The construction of the variable indicating whether a sample member is a likely future SSI participant or not is more involved. In previous work, we estimated an SSI participation equation using public-use data from the SIPP on SSI recipiency for the contemporaneous sample of elderly. To determine the threshold probability value for "likely participant" status, we selected a cutoff value; for most of our previous analyses, and in this paper, we classify as "likely participants" those whose predicted probability of participation is at the 90th centile or higher.

There are several potential sources of inaccuracy in such imputations. First, there is an implicit assumption that the model of SSI participation is unchanging from one birth cohort to the next. Particularly since SSI is a relatively new program (only 10 years old at the outset of our sample), this assumption could be problematic. Second, from the limited information provided in the SIPP, we do not know whether a person over age 64 is truly an SSI-aged participant, or if they came onto the program earlier through SSI-disabled. Since SSI-disabled participation is no doubt governed by a very different process, this is also a potentially serious problem. In this paper, we are able to remedy these shortcomings by using longitudinal administrative data on each individual in our sample. The administrative data allow us to track sample members' future SSI use and to properly define SSI receipt as the SSI-aged or SSI-disabled variety, based upon whether the age at first receipt of benefits exceeds 64.

In our original analysis of labor supply (Neumark and Powers, 2000) we used classifications of generous states and likely participants to conduct several types of "difference" comparisons. The "simple difference" specification examines only the activities of likely future SSI recipients, and tests whether their choices vary significantly with the generosity of their states' SSI benefits. This is a reduced-form estimate of the effect of the SSI benefit guarantee on the behavior of the sample members for whom SSI policy is relevant. It is desirable to introduce a control group into the analysis if unobserved, state-varying characteristics are thought to affect behavior independently. The "difference-in-difference" specification also uses only samples of likely participants, but introduces differences in the behavior of younger sample members across more and less generous states as a further control. A second version of a "difference-in-difference" specification estimates the response of older likely participants to variation in generosity, using the behavior of older unlikely participants as a control. Finally, the "difference-in-difference-in-difference" specification compares the differences across states between the responses of likely participants of different ages, using the unlikely participant differences as a control.

In the indirect test of an SSI-SSER interaction we apply similar analyses using receipt of SSER as the dependent variable. We first briefly revisit the evidence on labor supply effects, since we now have an expanded sample and administrative information not previously available to us. We are able to estimate four "difference" models for our labor supply measures, but since SSER can only be received between the ages of 62 and 64, the set of feasible specifications is curtailed in this instance. For likely participants in this age group, we compare SSER use across more or less generous states in the same "simple difference" specification. We then introduce the remaining group of 62-64 year-old unlikely SSI participants into the analysis as a control group (corresponding to the second difference-in-difference). It should be noted that all specifications include, in addition to the interaction terms of interest, further controls for likely participant status, age, cohort (i.e., SIPP panel), SSI generosity, own and spouse characteristics, and state unemployment rates.

The second approach–which we regard as the more substantive empirical contribution of this paper–is a test for a "direct" interaction between SSI and SSER. That is, do the sample members behave as if they face (and understand and respond to) a budget constraint that accounts for the SSI and SSER interaction? If so, then by nullifying the actuarial reduction in the social security benefit for early retirement after age 64 for those whose old-age government transfer is determined on the margin by SSI, SSI policy should encourage SSER participation. This provides more direct and therefore more convincing evidence that some people make a deliberate choice to complement SSI participation with SSER use, precisely because of the interaction embedded in the program rules.

Using a sample of individuals aged 62-64, we estimate the probability that person i aged t living in state s participates in SSER as a function of their government transfer after age 64 being determined at the margin by SSI policy, and other variables. That is,

(2) $SSER_{ist} = \alpha M_{ist} + X\beta_{ist}$.

M_{ist} is a dummy variable equal to 1 when non-SSI income after age 64 is expected to surpass the SSI disregard but to fall short of the SSI income-eligibility cutoff (equal to the guarantee plus the disregard, G+D), so that SSI determines the individual's government transfer after age 65. X includes variables affecting resources that are thought to govern the SSER decision independently of these incentives (e.g., health, educational attainment, race, sex, marital status, and accumulated social security and pension wealth). For couples, information on spouses is also included in X to capture factors underlying joint retirement decisions.

An important question is what income concept to use in the computation of "M." Since expected income at age 65 is partly determined by SSER participation, estimates of α will be inconsistent if *expected* non-SSI income at age 65 is used. Because expected non-SSI income at age 65 will be lower if SSER is taken, M will more often take on the value 1, and the bias will be towards accepting the hypothesis that α is positive. To remove this source of bias, a proxy value of M is constructed based on the social security benefit an individual would be owed if he stopped working after age 61. This removes the systematic relationship between SSER and M, although M may still be measured with error, likely biasing the estimate of α toward zero and

hence against finding our hypothesized result. For every member of our sample of 62-64 year-olds, social security records provide a complete earnings history that can be used to determine the exact amount of this hypothetical benefit. We improve the accuracy of the social security benefit for married men by incorporating information on the spouse's earnings record. The maximum SSI benefit varies with state and marital status, while the disregard is assumed not to vary. Note that we have no information on these individuals' potential retirement income from other sources, another source of error in M.

Therefore, the value of the binary variable M is determined by the individual's work/earnings history, their marital status, and their state's SSI supplement. State SSI generosity is the most compelling exogenous source of identifying information, providing variation in M for individuals with identical work histories and family statuses, who may still face different marginal government transfers in old age due to state variation in SSI benefits.

It is important to recognize that SSER participation preceding SSI participation could be (and probably is) a common pattern for reasons other than those hypothesized. For example, poor health (or unobserved characteristics) could lead to an inability or reluctance to work from age 62 onwards, increasing the likelihood of both SSER and SSI participation. Therefore, in both approaches, we have been careful to distinguish the effects of policy from other influences, both by exploiting the state-level variation in SSI benefits that is exogenous to the individual and by controlling for other important individual characteristics.

Matched SSA-SIPP Samples

We use multiple public-use panels from the SIPP. The particular panels are from 1984, 1990, 1991, and 1993.[11] For comparability with our previous work, we begin by looking at labor supply using samples of 40-64 year-old male household heads (defining 60-64 year-olds as the "old" individuals for whom labor supply effects of SSI might appear) in the difference analyses of work activity. Obviously, we are always restricted to the 62-64 year-old subgroup when analyzing SSER receipt, since sample members of other ages are ineligible. While the analysis

[11] There were no SIPPs conducted in 1994-1995. The 1996 public-use data have only recently become available.

is restricted to men, we match spouse information and include information about wives that may be relevant for husbands' choices in all specifications.

The Social Security Administration allowed us access to SIPP-matched confidential data on covered earnings and SSI use. The SSA data usually correspond to wave 1 or 2 of the SIPPs. Typically, about 10% of SIPP adults fail to match to the earnings record database due to reporting errors in the social security number.[12] We have each sample member's complete social security covered earnings history from 1951-1999. In principle, given a complete earnings history, each sample member's hypothetical age-61 benefit can be computed with a high degree of accuracy.

We also have a record of each sample member's SSI administrative activity from 1974-1999. Access to the SSI record provides several advantages. First, the SIPP self-reports of SSI use may be less accurate than the SSA's records. Second, as mentioned above, by using the age at first benefit receipt, we are able to better distinguish between SSI-aged and SSI-disabled cases.[13] Third, because the SSA file follows panel members for as many as 15 years after the Census Bureau has finished with them, we are able to determine SSI-aged receipt (over a reasonable horizon) for men who are younger than 65 when they are surveyed in the SIPP; of course, this is increasingly true the older is the sample member during the survey and the earlier the SIPP panel.

There are limitations of the administrative data. First, we were not able to obtain the separate administrative file on actual social security receipt. Thus, we use self-reported social security recipiency from the SIPP, which may be subject to error. Second, when there are disputes or mistakes about benefit eligibility or amounts, upon resolution the SSI administrative file is altered to reflect the history of SSI receipt for individuals as it should have been, not as it actually unfolded. This generates errors in the recorded timing of payments. Given our focus on the aged (in contrast to the disabled), whose eligibility rules are fairly cut-and-dried, this should

[12] Communication from Howard Iams, Division of Policy Evaluation, Social Security Administration.
[13] The distinction is still not be perfect. For example, a person may have received SSI-disabled, made a full recovery, and then come into SSI-aged. We would record that person as "SSI-disabled" since their first payment was received prior to age 65.

not generate substantial errors. Finally, it should be noted that we were only allowed access to SIPP-matched observations, not the universes of SSI applicants and/or recipients and social security earners.

Table 1 presents statistics for the samples used in the analyses. These fall into three age groups, 40-64 (we briefly re-examine the work activity of 40-64 year-olds), 62-64 year-olds, whose SSER participation we study, and those 65 and over, who are used in one instance to estimate the likelihood of SSI participation. The sample statistics for the largest group of 40-64 year-olds are broken down by SIPP panel. Work activity measures include social security covered quarters, employment, and hours. Total covered quarters increase over the panels, reflecting the secular increase in social security coverage of workers. They are highest for the 62-64 year-old sample. The change in covered quarters serves as a measure of recent work activity. It is evident from the smaller changes for the 62-64 year-olds that work activity slows at these ages, while the average change is positive but small for the elderly group. Employment and hours follow similar patterns, with high levels for the young group and dramatically declining levels across the older groups.

Characteristics of the sample men and their spouses also vary across subsamples as one would expect. Older cohorts have less education (e.g., 41% of the 1984 subsample has graduated high school as opposed to 53% of the 1993 sample, while only 36% of the pooled 62-64 year-old sample has and only 28% of the elderly). Similar patterns hold for spouses' educational attainment. Use of another welfare program, Food Stamps, is fairly similar across panels. However, it is much lower for the 62-64 year-old and 65-and-older groups, suggesting welfare use is less prevalent in older cohorts.

There is variation in macroeconomic factors across the panels. The 1984 sample faces the highest average state unemployment rate, at 7.6%, while the 1990 sample average is just 5.5%. There is considerable variation in the proportion of sample members facing a generous state supplement, as we define it. Just under 20% of the 1984 sample resides in a generous state. This rises to approximately 30% in the other panels. A bit over one-quarter of the 62-64 year-old subsample members reside in generous states.

Finally, for the older samples, we note that a bit over 1% of the 62-64 year-olds we track through the administrative data are observed to receive a first SSI payment after age 64. We also examine using the 65-and-over (65+) group to impute participation probabilities from the cross-section. While 3.4% of the 65+ group report receiving SSI income to the SIPP, 4.9% are recorded as being in current payment status in the administrative record.[14] It is possible that there is confusion among this elderly group about which old-age payments come from which programs, since SSI could easily be confused with "social security" (they are administered from the same local offices). Some of these sample members are also on SSI-disabled (3.0% of the 65+ group have a first SSI payment recorded at age 65 or later).

Patterns of Social Security and SSI Receipt

Figures 1 and 2 present the age patterns of SSI and social security receipt, using the sample of all male household heads older than 39. The social security information is from a person-level question in the public-use SIPP file, while the SSI participation information is from the SSA. Figure 1 confirms for our data the well-known fact that social security receipt grows rapidly after age 61. Beneficiaries, presumably in the disability and survivors' programs, account for the 12.3% of 61 year-old sample members reporting social security benefits. From ages 62 through 64, the ages of SSER, the receipt rate rises by more than 20 percentage points. A comparable increase occurs at age 65, when people opt into the system at the full retirement age. 95% of sample members of age 70, when benefit receipt can no longer be voluntarily delayed, are social security beneficiaries.

Figure 2 illustrates the frequency of SSI receipt according to the age at first payment of an SSI benefit. It is important to note at the outset that SSI receipt is rare: only 1,382 observations from pooled SIPP samples of heads aged 40 or older match to the SSI administrative file at all, a number which includes rejected applicants who never received a payment. Further, in only 270 cases can the observation be identified as an "SSI-aged" recipient,

[14] The 1% figure for later SSI receipt for 62-64 year-olds is held down because some of these individuals are observed for only short periods beyond age 64. In the empirical analysis that follows we require a minimum of three years of information on the post-64 period in the administrative data.

based on an age at first receipt exceeding 64. The question of interest here is how soon after age 64 people typically participate in SSI. The longer the typical delay after the eligibility age of 65, the more tenuous the link between early retirement benefit receipt or the labor market disincentives posed by the SSI program. In addition, a spike at the delayed retirement age of 69 would suggest that people only become aware of the SSI program upon the mandatory receipt of their delayed social security benefits. In contrast, the spike at age 65 that dominates Figure 2 indicates that the hypotheses of this paper are at least plausible on the surface.

V. Empirical Findings

Differences Analyses

Recall that a sample member is assigned to the "treatment" group if he is a likely future SSI recipient living in a generous state. Table 2 presents the findings from two probits that use alternative information on SSI participation to construct the dependent variable. The first column presents the findings from probits relying entirely on SIPP public-use data on sample members over 64 to estimate SSI participation. The results are similar to Neumark and Powers (2000), with slight differences due to the addition of public-use data for 1993 and the inclusion of information on the men's spouses. Except for the panel dummies and spouse age (not reported in the table), all coefficients are estimated to be significantly different from zero at the 5% level, and the signs are as one would hypothesize. More education of both the man and his spouse (even at levels below high school completion) decreases the participation probability. The divorced, widowed, or separated variable has a negative influence on SSI use, indicating that of the unmarried men 65 or older in the sample, those who once had a spouse are less likely to use SSI than the men who never married. Living in a state with a generous SSI benefit and a higher state unemployment rate increases the probability of participation. Blacks are apparently more likely to participate in SSI than others. We also include a dummy variable indicating whether (at the time of the survey) the respondent had *ever* been authorized to receive Food Stamps. Aside from conveying information about past income, this indicates prior experience with welfare programs, which may be associated with superior knowledge about programs or less stigma over

use. As expected, exposure to Food Stamps is estimated to increase the probability of SSI participation.

As we have noted, the administrative data can be used both to construct a longitudinal measure of SSI participation for selected sample members and to better identify SSI-aged participation. To reduce the problem of right-censoring in the data, the sample is restricted to sample members who reach at least age 67 by the end of the administrative record in 1999. The dependent variable equals one if a sample member is recorded as first receiving SSI at age 65 or later. The second column presents findings when the longitudinal information on sample individuals' subsequent SSI participation is exploited.

The longitudinal and cross-section estimates display some differences. The coefficient of benefit generosity is very similar in magnitude to the cross-section estimates. Estimated effects of own and spouse education are also significantly different from zero with the expected signs, but the magnitudes are smaller in absolute value than previously, as is also true for many of the other coefficient estimates. One expects many of the explanatory variables to have less power due to measurement error when looking over a longer horizon. For example, the unemployment rate in the sample year is not perfectly correlated with the unemployment rate at the time of future SSI participation and it does not significantly predict an individual's future participation. Most interestingly, marital and welfare use history at the time of the survey do not help predict which sample members will ultimately participate in SSI-aged.

The first three columns of Table 3 present the findings for labor supply measures, revisiting our earlier work. The labor supply measures include employment, hours, and the change in covered quarters over the previous 5 years. Overall, there are some negative effects of more generous SSI on labor supply, particularly for employment and hours. While the "simple difference" specification yields insignificant coefficients, employment, hours, and the accumulation of covered quarters (using the administrative longitudinal information on SSI receipt) appear to be reduced based on the first difference-in-difference (panel B); the estimated labor supply effects are uniformly stronger with the longitudinal information. All three labor supply measures are reduced by SSI in the difference-in-difference-in-difference estimates (panel

D), using cross-section or longitudinal information, with only one exception, and again the administrative data yield stronger evidence. In short, our earlier results are fairly robust with respect to the addition of spouse characteristics and another panel of the SIPP, while the use of longitudinal information on SSI participation strengthens the findings considerably.

A feature of these results with important implications for the analysis of SSER is that the only significant findings are from specifications exploiting cross-age comparisons. Apparently, there are differences in the level of work activity of older individuals across states that are correlated with SSI, but not caused by it, which obscure the SSI effects on the older group. Given the age-eligibility restrictions of SSER, this means that the most compelling specifications–in terms of those that reveal evidence of labor supply effects that might be reflected in a parallel fashion in SSER use–are infeasible to estimate.

The last column of Table 3 presents estimates of the key coefficients for the relevant models when the dependent variable is SSER receipt. We restrict attention to those with 40 or more covered quarters of social security earnings, since those with fewer than 40 quarters are not eligible for SSER. Due to sample age restrictions, only two specifications (those contrasting likely participants in more vs. less generous states, and those contrasting likely versus unlikely participants in more vs. less generous states) can be implemented. Only in one case is there support for the hypothesis that SSER and SSI are interlinked through work activity effects. However, the magnitude of this coefficient appears unreasonably large (a rise in the probability of SSER participation of 57% is predicted for a likely participant due to living in a generous SSI state, while the participation rate for the entire sample of likely participants aged 62-64 who are SSER-qualified is only 45.8%).

Testing for a Direct Effect

Finally, we present results from the specification of SSER participation as a function of the sample member's expected location on the "government transfer" schedule at age 65 and beyond. Recall that the dummy variable M in equation (2) equals one if the individual is predicted to face a post-64 government transfer marginally determined by SSI. The value of M is computed by imputing each man's age-62 SSER benefit from his actual earnings history

(reported in the administrative data).[15] If the man is married, M can also be defined with respect to the couple's joint prospective government transfer, which is also influenced by the wife's earnings record. The wife's benefit is equal to the benefit owed her as a worker or one-half of her husband's benefit, whichever is larger. If the wife has fewer than 40 covered quarters, her social security benefit as a worker is set to zero.

Because the SIPP does not contain good information about other sources of retirement income, M is measured with error. Private income, which might actually place a person on the "autonomous" portion of the budget constraint (for which M=0), is ignored. We again drop men with fewer than 40 covered quarters of social security earnings from the sample because they are not SSER-qualified. Before presenting the formal analysis, we note that in the raw data (based on the simplifying assumption that wives' benefits equal one-half of their husbands'), 75% of SSER-qualified sample members whose net government transfer is determined by SSI policy participate in SSER at age 64, in contrast to 68% of the group whose government transfer is determined at the margin by the social security benefit.

Table 4 presents the findings from the SSER participation probits (reported as simulated probability changes) that incorporate this feature of the budget constraint. The first column reports sample statistics. The first probit results we report are based on the simplifying assumption that wives' benefits are equal to one-half of their husbands'. In this case, as reported in the second column, the position on the budget constraint affects SSER as hypothesized, as the estimated coefficient of M is significant and positive, indicating an 11 percentage point higher probability of SSER participation for those whose post-65 retirement benefit is determined on the margin by SSI. The other significant variables are the age and education of the man. There is a pronounced trend towards SSER participation with age, and more educated men are less likely to retire early. Wives' characteristics are included, but all coefficients are insignificant and are not reported.

[15] The computation of the benefits of retirees is described in Section 2A of Social Security Administration (1999).

A potentially important issue is that M may simply be indicating low lifetime income or poor health, and individuals with a more tenuous lifetime attachment to the labor force may simply drop out of the labor market earlier and take up SSER. Because we have the entire history of social security earnings for each person in the sample, however, we have unusually good control variables for lifetime earnings capacity. In the third column the actual record of covered earnings (for each separate year from 1951 through age 61) is included in the specification for each sample member. A dummy variable indicating that the person is in poor health is also included and has an extremely large, positive, influence on SSER use. However, the positive effect of M on SSER receipt is robust with respect to these additional variables.

Assuming the spouse's benefit is one-half of the husband's oversimplifies the husband's retirement problem, since women in these cohorts are increasingly working and entitled to higher benefits. As an alternative, we use the wives' social security earnings records to compute the benefit that would be owed them if they were to stop working in the sample year, or at age 61, whichever comes first. We use the higher of this value or one-half of the man's benefit to recompute the total social security retirement benefit for couples. We cut off the computation for wives at age 61 out of the same concerns about endogeneity and SSER/SSI participation which led us to cut off the husbands' earnings computation at age 61. The sample statistics in the first column of Table 4 indicate that the percentage of men classified as having a net government old-age transfer that is prospectively determined by SSI policy is reduced from 49.4% to 39.9% of the sample when the information on wives' earnings records is exploited to compute their benefits.

The findings using spouse's benefit computations in M are presented in the fourth column of the table. The coefficient of the position on the SSI-SSER budget constraint is positive, but cut in half in magnitude and no longer significant. It appears that men with relatively high-earning spouses are more inclined to take up SSER, and some of these men–precisely because they have high-earning spouses–are incorrectly classified as having M equal to one when M is based on wives' benefits equal to one-half of their husbands' benefits. One explanation is that there is potential downward endogeneity bias stemming from using actual wives' earnings to

compute the benefit. If the husband is planning on going on SSER, the wife may work more near the age of retirement, which would lead to a negative correlation between SSER and M.

VI. Conclusion

This paper has described the potential interactions of SSI and SSER and presented evidence of two kinds. First, when SSER is treated like any other measure of work activity in difference specifications relating work activity to state SSI generosity and prospective future SSI receipt, little evidence supporting an interaction between the two programs is found. On the other hand, in an analysis of direct links between SSI and SSER, we do find some empirical evidence that SSI and SSER interact through a unified budget constraint determining post-age-64 government transfer payments, but only when we make simplifying assumptions about the computation of the hypothetical "family" (i.e., husband-wife) social security benefit. When we use information from the wives' earnings histories to estimate their age-61 (or younger) benefit more precisely, we do not find statistically significant evidence of the hypothesized response of increased SSER participation when individuals face a government old-age transfer that is marginally determined by SSI policy, although the sign of the estimate is still in the hypothesized direction. If endogeneity of wives' work decisions and husbands' SSER participation plans is important, this lends more credence to the results using the simplified computation.

In the case of the findings from the differences analyses, it may be that there is no *indirect* effect of SSI on SSER use, even if a direct effect is present. As noted at the outset, individuals responding to work disincentives may simply draw on resources that we cannot observe to support current consumption. However, the differences results certainly do not preclude the possibility that SSER and work activity are related as expected. We have shown that the evidence we have previously gathered on SSI and work activity is reasonably robust to sample and specification changes and to the use of administrative information on SSI use (information that constitutes a substantial improvement over available public-use data). It is also apparent that our significant results for labor market activity variables generally hinge critically on inter-cohort comparisons. The infeasibility of estimating SSER specifications that use younger sample members as a control group could account for the lack of strong support for a

positive association between SSI generosity and SSER use by those likely to turn to SSI in old age in this particular empirical framework.

The fact that we find positive effects on SSER use of an individual's prospective location on the part of the government old-age transfer schedule where the transfer is determined by SSI–thus eliminating the penalty for using early retirement–provides some evidence that SSI and SSER may interact in the ways proposed. When the influence of wives' benefits in determining the place on the budget constraint is minimized (by assuming their benefit is always one-half of the husbands'), we find evidence for the hypothesis that is robust to including such powerful explanatory factors as the man's entire earnings history and current health status.

This simplifying assumption may be justified if husbands have imperfect information about wives' benefits (and use half their own benefit as a "rule of thumb" measure), simply ignore their wives' benefits, or if endogeneity of wives' work patterns with respect to SSER decisions plays a role. However, taken at face value, if our computations of wives' benefits are fairly accurate, then a critical group of the husbands following a unilateral decision making rule (a group that appears relatively more responsive to the value of M) could not actually carry through with their SSI participation plans as part of a couple. This fact makes the argument that it is SSI policy that is driving SSER participation less compelling on its face, although it is a reasonable consideration that retirement planning involving multiple programs could well be subject to considerable error on the part of individuals.

Acknowledgments: This research was supported by the Center for Retirement Research at Boston College pursuant to a grant from the U.S. Social Security Administration, funded as part of the Retirement Research Consortium. The opinions and conclusion are solely ours and do not represent the opinions or policy of the Social Security Administration or any agency of the Federal Government, or the Center for Retirement Research at Boston College. Linda Bailey and Parker Yi provided research assistance with the public-use data. We are grateful to Howard Iams and Minh Huynh of the Social Security Administration and Claudia Sahm of the University of Michigan for help accessing and interpreting administrative records. We also thank Roger Gordon of the University of Michigan for initially stimulating our thinking on SSI-SSER interactions.

References

Blank, Rebecca M., 1989, "The Effect of Medical Need and Medicaid on AFDC Participation." Journal of Human Resources 24(1), 54-87.

Garrett, Bowen, and Glied, Sherry, 2000, "Does State AFDC Generosity Affect Child SSI Participation?" Journal of Public Policy Analysis and Management 19(2), 275-95.

Gruber, Jonathan, and Orszag, Peter, 1999, "What to do about the Social Security Earnings Test?" *Issue in Brief,* Center for Retirement Research at Boston College, No. 1 (July).

Killingsworth, M.R., 1983, Labor Supply (New York, NY: Cambridge University Press).

Kubik, Jeffrey D., 1999, "Incentives for the Identification and Treatment of Children with Disabilities: The Supplemental Security Income Program." Journal of Public Economics 73(2), 187-215.

Lundberg, Shelly, 1988, "Labor Supply of Husbands and Wives: A Simultaneous Equations Approach." Review of Economics and Statistics LXX(2), 224-35.

McGarry, Kathleen, 1996, "Factors Determining Participation of the Elderly in SSI." Journal of Human Resources Vol. 31(2), Spring, 331-58.

Neumark, David, and Powers, Elizabeth T., 1998, "The Effect of Means-Tested Income Support for the Elderly on Pre-Retirement Saving: Evidence from the SSI Program in the U.S." Journal of Public Economics 68(1), 181-206.

Neumark, David, and Powers, Elizabeth T., 1999, "Means Testing Social Security," in O.S. Mitchell, R.J. Myers, and H. Young, editors, Wharton Pension Research Council Series: Prospects for Social Security Reform (Philadelphia: The University of Pennsylvania Press), pp. 243-67.

Neumark, David, and Powers, Elizabeth T., 2000, "Welfare for the Elderly: The Effects of SSI on Pre-Retirement Labor Supply." Journal of Public Economics 78(1&2), 51-80.

Social Security Administration, 1994, State Assistance Programs for SSI Recipients: January 1994, SSA Publication No. 17-002 (Washington, DC: U.S. Government Printing Office).

Social Security Administration, 1999, Social Security Bulletin: Annual Statistical Supplement, (U.S. Government Printing Office).

Social Security Administration, 2001, State Assistance Programs for SSI Recipients: January 2001, SSA Publication Number 13-11975 (Washington, DC: U.S. Government Printing Office).

U.S. Committee on Ways and Means, selected years, Green Book (Washington, DC: US Government Printing Office).

Yelowitz, Aaron, 1995, "The Medicaid Notch, Labor Supply, and Welfare Participation: Evidence from Eligibility Expansions." Quarterly Journal of Economics 110(4), 909-39.

Yelowitz, Aaron, 1998, "Why Did the SSI-Disabled Program Grow so Much? Disentangling the Effect of Medicaid." Journal of Health Economics 17(3), 321-49.

Zedlewski, Sheila R., and Meyer, Jack A., 1989, Toward Ending Poverty Among the Elderly and Disabled through SSI Reform (Washington DC: The Urban Institute Press).

Appendix A: Theoretical Model

Model with SSI Participation

Let Y_0 be the amount of old-age pension income that is predetermined at the beginning of period 1. To simplify, assume $Y_0 < D$ (otherwise the worker is automatically ineligible for SSI). In the basic no-saving model, the worker's problem is to choose first-period work (h) and consumption (c_1) to maximize:

$$u(c_1, 1 - h) + \delta v(c_2) \quad .$$

The budget constraint for period 1 is:

(1) $\quad c_1 = wh \quad ,$

where w is the wage in period 1. The pension is given by B(wh), with a positive first derivative. The budget constraint for period 2 depends on whether the individual participates in SSI, and if so whether or not unearned income is below the disregard. The possible old-age budget constraints are:

(2a) $\quad c_2 = Y_0 + G + B(wh)$ if SSI participant and $Y_0 + B(wh) < D$
(2b) $\quad c_2 = G + D$ if SSI participant and $Y_0 + B(wh) > D$
(2c) $\quad c_2 = Y_0 + B(wh)$ if SSI nonparticipant.

Denoting the derivatives of u with respect to its first and second arguments as u_1 and u_2, and the derivative of v as v' (and similarly for second derivatives), the interior local optima corresponding to (2a) and (2c) are characterized by:

(3a) $\quad u_1(wh, 1 - h)w - u_2(wh, 1 - h) + \delta v'(Y_0 + G + B(wh))B'(wh)w = 0$
(3c) $\quad u_1(wh, 1 - h)w - u_2(wh, 1 - h) + \delta v'(Y_0 + B(wh))B'(wh)w = 0 \quad .$

The budget constraint (2b) is horizontal, so that there is no possibility of an interior solution along it. The effects of an increase in G on h along each segment of the budget constraint are obtained by applying the implicit function theorem to the local first-order conditions for the local optima in h:

(4a) $\quad \partial h/\partial G = \{-\delta v''B'(wh)w\}/\{u_{11}w^2 - u_{12}w - u_{21}w + u_{22}$
$\qquad + \delta v''[B'(wh)]^2w^2 + \delta v'B''(wh)w^2\}^{-1} < 0$

(4c) $\quad \partial h/\partial G = 0.$

The first case, while unlikely to arise in practice (because it requires unearned income below the very small $20 disregard), can be easily signed. The numerator is clearly positive under the assumption that pension income increases in earnings and strict concavity of second-period utility, while the denominator is negative under the additional assumption that the first-order condition of the local optimization problem is downward sloping in h, a standard

assumption. Therefore, along each segment of the budget constraint an increase in G either has no effect on hours or causes a decrease in hours.

The global solution is found by choosing the level of h that maximizes utility across the three choices. Optimal SSI participation status is then revealed by the global optimum selected. The budget constraint (2a) is upward sloping, the budget constraint (2b) is horizontal at G + D, and the budget constraint (2c) is upward sloping with the same slope as (2a). An increase in G shifts the budget constraints (2a) and (2b) vertically. This makes it more likely that someone initially on (2c) relocates to the kink point between (2a) and (2b). No one should ever locate on (2b), as it is horizontal. Someone initially at the kink point between (2a) and (2b) may reduce labor supply to the segment (2a). Thus, labor supply is clearly decreasing in G, and it is straightforward but tedious to show, exploiting the first-order conditions and the above information about the change in work hours with respect to G, that the relative value of participation versus nonparticipation is increasing in G.

Model with SSI and SSER Participation

We introduce an SSER policy, characterized by a full retirement benefit B_0, the actuarial reduction β for early retirement, and τ, the implicit tax rate on labor earnings while retired. We assume that the worker must begin receiving social security in the second period, if he has not elected SSER. There are two possible budget constraints for period 1, depending on SSER participation:

(1a) $c_1 = wh$, if no SSER participation
(1b) $c_1 = \beta B_0 + (1 - \tau)wh$, if SSER participation.

In the second period, the possible budget constraints for SSI nonparticipants are:

(2a') $c_2 = Y_0 + B(wh) + B_0$, if SSER nonparticipant
(2b') $c_2 = Y_0 + B(wh) + \beta B_0$, if SSER participant.

Under SSI participation, there are two additional cases, depending on whether income is below the disregard ((2c') and (2d')) or above ((2e') and (2f')):

(2c') $c_2 = Y_0 + G + B(wh) + B_0$, if SSI participant, SSER nonparticipant, and $Y_0 + B(wh) + B_0 < D$
(2d') $c_2 = Y_0 + G + B(wh) + \beta B_0$, if SSI participant, SSER participant, and $Y_0 + B(wh) + \beta B_0 < D$
(2e') $c_2 = G + D$, if SSI participant, SSER nonparticipant, and $Y_0 + B(wh) + B_0 > D$
(2f') $c_2 = G + D$, if SSI participant, SSER participant, and $Y_0 + B(wh) + \beta B_0 > D$.

Since the cases involving being on SSI but below the disregard rarely apply, we ignore them in the following discussion for simplicity.

First, it is evident from the budget constraints that in common situations it will be advantageous to participate in SSER for local optima associated with SSI participation. When a person participates in SSI, the net government transfer is determined at the margin by SSI program rules, so consumption in the second period is G + D regardless of SSER participation. Therefore, SSER participation depends entirely on whether the worker obtains a higher period 1 indifference curve as a consequence. If the worker in the SSER program is not subject to a wage

tax (i.e., the reduction in benefits for earnings above a particular threshold), clearly he is always better off by participating in SSER prior to SSI. This case is highly relevant for the population we study, since given a reasonably generous earnings level before the SSER wage tax sets in, many likely SSI recipients will not be subject to the SSER wage tax. Even for those subject to the 50% wage tax, all those with hypothetical earnings in the absence of policy that are below the value of *twice* the SSER benefit *plus* the entire untaxed earnings allowance in SSER would unambiguously choose to participate in SSER prior to participating in SSI.[16]

In the case where the worker is subject to a wage tax, only for workers who would optimally choose to earn an amount above their SSER benefit in the absence of the SSER program could it possibly be utility-reducing to participate in SSER. But given the disutility of work, this would be the case only for relatively high earners who are unlikely candidates for choosing SSI participation as their global maximum.

[16] To see this, note that accounting for SSER only, income in the absence of SSER is wh, while income with SSER is $\beta B_0 + wh - .5(wh - 9600)$. (This assumes a wage tax of 50%, and that the threshold at which this kicks in is \$9600.) As long as the latter budget constraint is above the former, SSER participation will be chosen. This holds up to the point at which the budget constraints intersect, which is at income of $2 \cdot \beta B_0 + 9{,}600$.

Table 1: Sample statistics, by age

	40-64 year-olds				62-64 year-olds	65 and older
Work activity	1984	1990	1991	1993	1984-1993	1984-1993
Covered quarters	96.18	98.96	99.70	103.87	115.99	100.76
	(31.08)	(35.38)	(35.95)	(7.74)	(41.57)	(40.12)
Change in covered quarters over past 5 years	12.93	12.95	12.96	12.80	10.49	4.20
	(5.69)	(5.61)	(5.63)	(5.74)	(6.69)	(5.63)
Employed, wave 4	0.839	0.831	0.818	0.829	0.484	0.174
	(0.367)	(0.375)	(0.386)	(0.377)	(0.494)	(0.358)
Hours, wave 4	37.44	37.12	36.79	37.00	18.87	5.36
	(19.40)	(20.32)	(20.68)	(19.86)	(21.72)	(12.67)
Characteristics of respondents and spouses						
Aged 60-64	0.183	0.156	0.145	0.142	1	0
	(0.387)	(0.363)	(0.352)	(0.349)		
Highest grade completed x high school education or less	6.21	5.49	5.28	5.04	6.43	6.79
	(5.43)	(5.54)	(5.56)	(5.60)	(5.23)	(5.25)
More than high school education	0.407	0.477	0.501	0.534	0.358	0.281
	(0.491)	(0.500)	(0.500)	(0.500)	(0.479)	(0.447)
Black	0.075	0.101	0.071	0.072	0.072	0.084
	(0.264)	(0.301)	(0.256)	(0.258)	(0.259)	(0.276)
Never married	0.033	0.048	0.047	0.045	0.039	0.038
	(0.178)	(0.214)	0.211	(0.208)	(0.192)	(0.189)
Divorced, widowed, or separated (and not currently married)	0.106	0.141	0.138	0.124	0.130	0.192
	(0.307)	(0.348)	(0.345)	(0.330)	(0.335)	(0.384)
Ever authorized for food stamps	0.134	0.135	0.130	0.151	0.075	0.059
	(0.341)	(0.342)	(0.336)	(0.358)	(0.263)	(0.232)
Spouse age	41.24	37.15	37.52	37.57	48.53	51.84
	(18.99)	(20.71)	(20.50)	(20.45)	(23.32)	(29.39)
Spouse highest grade completed x high school or less	6.36	5.02	4.95	4.61	6.22	5.87
	(5.62)	(5.66)	(5.68)	(5.63)	(5.58)	(5.41)
Spouse has more than high school education	0.27	0.33	0.35	0.38	0.239	0.194
	(0.44)	(0.47)	(0.48)	(0.49)	(0.427)	(0.394)

	40-64 year-olds				62-64 year-olds	65 and older
	1984	1990	1991	1993	1984-1993	1984-1993
State-level characteristics						
State unemployment rate	7.59	5.51	6.71	6.93	6.74	6.91
	(1.71)	(0.87)	(1.24)	(1.36)	(1.62)	(1.55)
Maximum state SSI supplement exceeds 20% of federal benefit	0.196	0.321	0.319	0.288	0.264	0.275
	(0.397)	(0.467)	(0.466)	(0.453)	(0.441)	(0.447)
Program receipt						
SSER receipt	0.090	0.088	0.093	0.088	0.546	0.921
	(0.287)	(0.284)	(0.291)	(0.276)	(0.498)	(0.254)
SSI receipt (SIPP)						0.034
						(0.179)
Current SSI payee (administrative record)						0.049
						(0.215)
First SSI payment after age 64 (administrative record)					0.011	0.030
					(0.106)	(0.163)
Panel dummies						
1990 panel	0	1	0	0	0.269	0.276
					(0.444)	(0.447)
1991 panel	0	0	1	0	0.169	0.173
					(0.374)	(0.378)
1993 panel	0	0	0	1	0.264	0.296
					(0.441)	(0.435)
N	4,753	4,795	3,140	5,389	1,687	7,352

Notes: Sample means reported with standard deviations in parentheses beneath.

Table 2: SSI participation probits from pooled 1984-1993 SIPP samples of men born before 1932

	Men over 64, public-use information	Men under 65, SSA longitudinal information
Maximum state SSI supplement exceeds 20% of federal benefit	0.011***	0.010***
	(0.003)	(0.003)
Highest grade completed x high school education or less	-0.004***	-0.002***
	(0.001)	(0.001)
More than high school education	-0.053***	-0.019***
	(0.006)	(0.005)
Black	0.011***	0.004
	(0.003)	(0.003)
Divorced, widowed, or separated (and not currently married)	-0.015***	-0.002
	(0.004)	(0.004)
Ever authorized for food stamps	0.012***	0.003
	(0.004)	(0.005)
Spouse highest grade completed X high school or less	-0.002***	-0.001**
	(0.0005)	(0.0005)
Spouse has more than high school education	-0.029***	-0.011**
	(0.006)	(0.006)
State unemployment rate	0.003***	0.0009
	(0.001)	(0.0006)
1990 panel	-0.001	-0.0005
	(0.004)	(0.004)
1991 panel	-0.002	-0.003
	(0.003)	(0.004)
1993 panel	0.001	-0.002
	(0.003)	(0.004)
N	7,352	4,427

Notes: Spouse age is also included in all specifications but is not reported (close to zero and insignificant in every case). Standard errors are reported in parentheses. ***significant at 1% level; **significant at 5% level; *significant at 10% level.

Table 3: Analysis of work activity and indirect test of effects of SSI on SSER participation

	Employment	Hours	5 year change in covered quarters	SSER participation, (men with 40+ quarters)
A. Simple-difference estimates				
60-64 year-old likely participants				
"Likely participant" imputed from cross-section (n=262)	-0.035 (0.075)	0.889 (2.99)	1.42 (1.04)	
"Likely participant" based on longitudinal information (n=231)	0.000 (0.103)	2.73 (4.09)	1.74 (1.47)	
62-64 year-old likely participants				
"Likely participant" imputed from cross-section (n=160; n=134 with 40+ quarters)	-0.001 (0.008)	2.11 (3.15)	1.818 (1.285)	-0.106 (0.098)
"Likely participant" based on longitudinal information (n=155; n=89 with 40+ quarters)				0.574** (0.237)
B. Difference-in-difference estimates				
(60-64 year-old likely participants) - (40-59 year-old likely participants)				
"Likely participant" imputed from cross-section (n=1,420)	-0.121* (0.072)	-4.20 (3.04)	-0.095 (0.966)	
"Likely participant" based on longitudinal information (n=379)	-0.232* (0.124)	-10.23** (4.77)	-2.90* (1.63)	
C. Difference-in-difference estimates				
(60-64 year-old likely participants) - (60-64 year-old unlikely participants)				
"Likely participant" imputed from cross-section (n=2,057)	0.079 (0.079)	-0.524 (3.35)	0.871 (0.99)	
"Likely participant" based on longitudinal information (n=1,908)	-0.127 (0.083)	-2.87 (3.66)	-0.162 (1.08)	
(62-64 year-old likely participants) - (62-64 year-old unlikely participants)				
"Likely participant" imputed from cross-section (n=1,227; n=1,103 with 40+ quarters)	-0.081 (0.100)	-0.284 (4.004)	0.643 (1.228)	-0.026 (0.107)
"Likely participant" based on longitudinal information (n=1,219; n=804 with 40+ quarters)				0.092 (0.151)
D. Difference-in-difference-in-difference estimates				
(60-64 - 40-59 year-old likely participants) - (60-64 - 40-59 year-old unlikely participants)				
"Likely participant" imputed from cross-section (n=13,309)	-0.097** (0.049)	-5.14* (2.99)	0.038 (0.908)	
"Likely participant" based on longitudinal information (n=3,121)	-0.244** (0.117)	-10.95*** (5.16)	-2.63* (1.56)	

Notes: Panel dummy variables for 1990, 1991, and 1993 also included in every specification. Standard errors are reported in parentheses. ***significant at 1% level; **significant at 5% level; *significant at 10% level.

Table 4: Direct test of effects of SSI on SSER participation

	Sample statistics	SSER Probit	SSER Probit	SSER Probit
M - assuming spouse benefit is ½ of husband's	0.494 (0.500)	0.107*** (0.028)	0.097** (0.038)	
M - spouse benefit computed from earnings record	0.399 (0.490)			0.049 (0.039)
State unemployment rate	6.72 (1.60)	0.015 (0.010)	0.006 (0.011)	0.006 (0.010)
Age 63	0.337 (0.473)	0.134*** (0.032)	0.087** (0.038)	0.103*** (0.035)
Age 64	0.326 (0.469)	0.261*** (0.034)	0.179*** (0.042)	0.223*** (0.038)
More than high school	0.358 (0.480)	-0.176** (0.080)	-0.152* (0.089)	-0.167* (0.087)
Less than high school x number of years	6.47 (5.24)	-0.006 (0.007)	-0.008 (0.008)	-0.007 (0.008)
Black	0.065 (0.246)	-0.089 (0.056)	-0.048 (0.061)	-0.079 (0.059)
Divorced, widowed, or separated	0.120 (0.324)	0.027 (0.093)	-0.006 (0.103)	-0.068 (0.101)
Never married	0.034 (0.181)	0.063 (0.112)	0.063 (0.122)	0.115 (0.120)
In poor health	0.308 (0.461)		0.262*** (0.034)	0.281*** (0.033)
Spouse characteristics included		Yes	Yes	Yes
Social security earnings history included		No	Yes	Yes
Psuedo-R^2		0.07	0.18	0.16
Number of observations	1,502	1,502	1,502	1,502

Notes: M is an indicator for whether on the margin the post-64 government transfer is determined by the SSI program. Panel dummy variables for 1990, 1991, and 1993 also included in every specification. Spouse characteristics include dummy variable for spouse's age categories and spouse's educational attainment. Standard errors are reported in parentheses. ***significant at 1% level; **significant at 5% level; *significant at 10% level.

Figure 1: Social Security Beneficiary Rates, by Age (Pooled SIPP Samples)

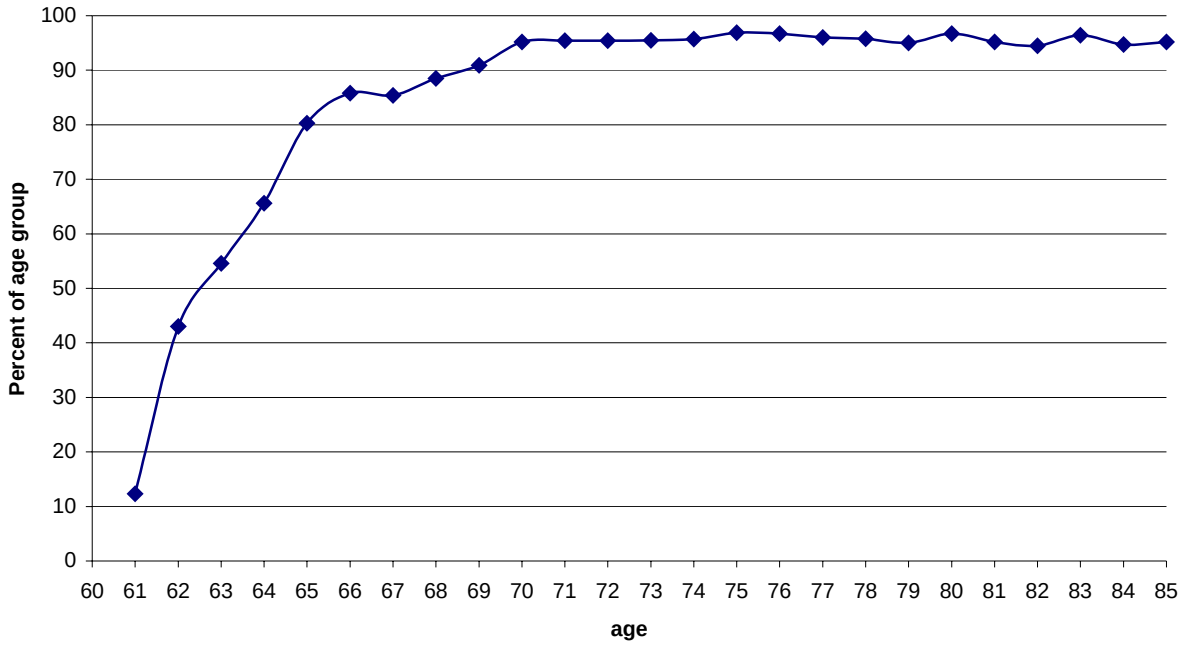

Figure 2: Frequency of First SSI Payment, by Age