THE SURVEY OF INCOME AND PROGRAM PARTICIPATION

RATIONALE FOR A SIPP-BASED MICROSIMULATION MODEL OF SSI AND OASDI

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I. Introduction

When two public programs have objectives which overlap to some degree, analysts must evaluate the most target efficient way to address a given policy issue.[1] For example, the Social Security Administration (SSA) administers both a broadly-based social insurance program (Old Age, Survivors, and Disability Insurance or OASDI) and a means-tested program for the aged and disabled (Supplemental Security Income or SSI). Both SSI and certain provisions of the OASDI program have income adequacy objectives and, for example, either program could serve as a vehicle to address the needs of low-income elderly widows.

Comparative analysis would be useful because the principles underlying the two programs differ and, consequently, their 'targeting" outcomes vary. There is a participation or 'coverage' issue associated with SSI: Some of those with incomes low enough to receive benefits do not apply. The social insurance program, OASDI, poses another issue--,even when specific provisions are intended to help those with low (past) earnings or low (current) income, some benefits due to the provision are likely to be received by those with moderate or high incomes.

These issues are well understood by analysts, but there has been no regularly-available source of data rich enough to support systematic distributional analysis. Neither program data nor survey data, taken alone, would suffice. However, as a result of two long-term development efforts, the required data now exist and the Social Security Administration is expanding its long-standing activities in the area of microsimulation modeling to exploit them.[2] The data sources

(t) The views expressed are the authors' and do not necessarily represent the position of the Social

[1]By target efficiency we mean two things: Ensuring that all intended recipients receive benefits and that *only* intended recipients receive benefits.

[2]Since the 1970's, SSA has used a microsimulation model, the STATS model, which uses data from the Current Population Survey. This effort is headed by David Pattison, under the general direction of Benjamin Bridges, Jr. For a nontechnical description, see Wixon, Bridges, and Pattison (1987).

Security Administration or the Department of Health and Human Services.

are the Survey of Income and Program Participation (SIPP), and matched SSA earnings and benefit data.[3]

This effort will enrich SSA's ability to address SSI and OASDI issues, taken alone, and permit comparative analysis. Within the federal government, no such model exists; indeed, because of the confidentiality issues surrounding the earnings and benefit data matched to the SIPP, in all likelihood an SSI/OASDI model of this type would only be developed at SSA.

This paper sets out the central ideas underlying the project in a nontechnical way. Section II describes the data sources. Section III discusses features of microsimulation modeling, the. principal analytic technique to be used. Section IV considers possible contributions of the model with respect to SSI, OASDI, and issues which relate to both programs. The final section provides a summary.

II. The Data

Background

Several years ago, Nelson McClung, a prominent microsimulator, wrote:

> Continued improvement in microsimulation depends mainly upon having better data. I do not want to discourage research on technique, but I suggest that research be more willing to conclude with specifications for a desirable data collection and less willing to press on to imaginative alternatives to better data .[4]

Any contribution made by the model outlined here will stem from two successful data development efforts. Each was designed to address a particular, well recognized information gap:

· *There was no ongoing survey designed to support analysis of income maintenance programs, including, for* exam*ple, the estimation of SSI participation rates.* The only regularly-available data used to estimate SSI participation rates were from the Current Population Survey (CPS), a survey designed to provide labor force statistics, not to support program analysis; it

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[3]The SIPP-related matching activity at SSA has been undertaken as part of a joint statistical project between SSA and the Bureau of the Census under age aegis of the agencies' 1967 Memorandum of Agreement on the Exchange of Statistical Information and Services. All work involving the development and analysis of the matched data sets at SSA is carried out, subject to the strictest confidentiality safeguards, by SSA employee acting as special sworn employees of the Bureau of the Census. A match file for 1984 has been created; efforts are under way to produce matched data for later years. The analytical effort described in this paper is critically dependent on continuing efforts to produce future SIPP match files for policy research at SSA.

[4]See McClung, pages 105-106, in Orcutt et al., editors (1986)

measured neither assets nor monthly income and had weak of disability.

To meet such needs, the Survey of Income and Program Participation (SIPP) was developed to support evaluations of a range of public programs, including means-tested programs. The survey, conducted by the Bureau of the Census, is nationally-representative, ongoing, and its data are now widely used.

· *Analysis using administrative data to evaluate changes in the OASDI program could not say to what extent the changes would affect those with low or high family income.* For example, administrative data do not tell us how proposed changes in OASDI affecting elderly widows would affect those with low family incomes, as opposed to those with higher incomes. While family income level is not relevant for all policy issues, for issues of income adequacy, it is.

In response, matching techniques have been used to combine survey data with earnings history data and benefit data from SSA administrative files. With match files, earnings data allow us to identify those affected by certain changes in OASDI, while survey data allow us to describe them in terms of their family income 'from all sources, assets, demographic traits, and household composition.

The Survey of Income and Program Participation

The SIPP is an ongoing, nationally-representative survey of the civilian noninstitutional population with information on income, assets, demographic traits, household characteristics, and participation in many programs. It was conceived in the seventies by experts who concluded that a survey specifically designed to support analysis of public programs was needed.

The Committee on National Statistics of the National Academy of Sciences recently released an interim assessment of the SIPP. Because of its reputation for objectivity and expertise, some of the Committee's findings are worth noting:

> Overall, the committee finds that SIPP is making a vital contribution to understanding the characteristics and dynamics of the population at economic risk, and the ways in which federal programs meet-or fail to meet-economic needs...
> One of the primary goals of SIPP is to meet the needs of policy analysts for information on families eligible for government income maintenance programs: how much use is being made of them; how well or poorly they are meeting their objectives; and what factors appear to influence entry and departure from them.[5]

These findings suggest the SIPP's multi-purpose rationale. First of all, information is collected on various dimensions of economic well-being. By comparison to the CPS, the SIPP has improved income measures and comprehensive measures of assets, both of which are important for SSA

[5]See page six and 1, Committee on National Statistics (1989).

policy research.[6] In addition, it collects the information needed to determine eligibility and benefits for many public programs, including monthly income (SSI and other programs use a monthly accounting period) and more detailed measures of disability than those in the CPS. The SIPP's monthly reference period, in contrast to the annual reference period of the CPS, offers analysts an opportunity to consider the dynamics of program participation, income flows, work behavior, and household composition. Furthermore, the data will support both cross-sectional and longitudinal analysis. On the one hand, the volume of information collected and the SIPP's multi-purpose design make it difficult to use and suggest the importance of developing expertise. On the other hand, we take the view that the acknowledged difficulty of using the SIPP is not an accident of poor design but rather an inevitable byproduct of the SIPP's rich content and multi-purpose rationale.

As the SIPP is designed, a new sample panel is introduced each year. Because sample members are interviewed every four months for two and a half years, the panels overlap. Panels can be combined to increase the precision of estimates. The original panel size was 720,000 households, but this was reduced to 12,000 due to cuts in the Census Bureau's SIPP budget; however, the sample size has been restored to 20,000, beginning in 1990.

The SIPP also has limitations with respect to SSA policy research. For some applications, the sample size will limit the amount of subgroup analysis which can be reliably undertaken. Furthermore, while the questions on health are extensive, using the responses to those questions to decide whether someone would be considered disabled in qualifying for public programs may be problematic.

Matched Earnings and Benefit Data

As part of an ongoing data development effort of the Bureau of the Census and SSA, SIPP data are matched to SSA data on earnings and benefits for the same individual. The earnings data are taken from SSA's Summary Earnings Record which is based on employers' reports of covered earnings from 1951 onward. OASDI data are extracted from the Master Beneficiary Record. Data on SSI benefits from the Supplemental Security Record will be included in future matching efforts. The use of these matched data is highly restricted due to confidentiality considerations.

The Three-Part Focus of the Data

The analytical effort outlined here will exploit three focal categories inherent in the matched SIPP data:

(1) evaluative variables, giving demographic characteristics and the dimensions of economic well-being;

[6]See Vaughan (1989).

(2) the elements of eligibility and benefit determination for major means-tested programs; and

(3) information on earnings histories and benefits--the elements of eligibility and benefit determination for OASDI.

While variables may fall in more than one category, the three categories, combined in a single analytical file, are central to the effort described here. They will permit analysis of some OASDI issues from an income adequacy perspective, as well as comparisons of SSI and OASDI alternatives with respect to issues of income adequacy.

III. Aspects of Microsimulation

A procedure for determining current law eligibility or the effects of an alternative benefit structure on eligibility, benefits, or behavior would have to be added to any data collection effort intended for rigorous program analysis. As the term is used here, a microsimulation model provides a way of relating data on individuals and households to program provisions for such purposes.

From a historical perspective, microsimulation models have provided a framework for incorporating data on individual persons and households into the distributional analysis of benefits and taxes. The enabling developments have been advances in hardware speed and software techniques (e.g., parameterization and modularity). As a result, microsimulation offers the promise of state of the art analysis in time frames once associated with 'quick and dirty' estimates. What are some of the central features of microsimulation?

· *Microsimulation prevents the loss of information .frequently associated with efforts to model program eligibility or the behavior of individuals with aggregated data.* The relationships that are modeled stem from program provisions (e.g., eligibility for benefits) and behavioral responses to policy changes (e.g., decisions to apply for benefits).[7] The real world processes simulated, such as the determination of SSI eligibility, depend on *combinations* of traits of particular persons or families. Nonetheless, because disaggregated data are sometimes not available or because of the tight deadlines associated with policy discussions, estimates based on aggregated or group data are often used. But when only highly aggregated data are available, information on combinations of traits or joint distributions is often lost and assumptions must play a greater role.

The microsimulation approach is intended to avoid this loss of information. Under

[7]Our initial efforts have involved modeling program provisions for SSI; se Vaughan and Wixon (1991). Relating data from a multi-purpose survey to these provisions involve many steps and the SIPP data are rich enough that the model simulates most of the steps. Second, seldom do survey data exactly replicate the data collected during the benefit application process. The eligibility and benefit modules can serve as a platform for later work on program participation decisions, labor force responses, and projection.

microsimulation the analytical process is designed to mirror the *mA* world process. This begins with the design of the underlying data; the SIPP, for example, collects information at the level of persons and households and the information collected is determined, in part, by reference to the eligibility criteria of major public programs. The model then uses information on individuals and families on a case-by-me basis, taking each through an eligibility determination process which mimics the claims process itself.

· *Survey-based microsimulation models give policymakers an effective means of considering hypotheticals, such as: (1) the program eligibility of individuals who have never applied or (2) the eligibility, benefits, and behavioral responses associated with benefit structures which have been proposed, but not enacted.* One criterion for evaluating a means-tested program is how well it reaches its targeted population. The main complication is that nonparticipants within the targeted (or eligible) population are not represented in the program data. To address this issue, eligibility models are used in conjunction with surveys representing the general population, allowing analysts to estimate the number of eligibles and their hypothetical benefits.

In addition, the model's step by step representation of the eligibility and benefit determination procedures is analytically powerful. It allows us to consider "what if" alternatives to the current structure, including the effects of *particular* structural features (for example, the SSI asset test or the progressive design of the OASDI primary insurance amount or PIA) or parameters (such as SSI benefit standards).

· Disaggregated data and microsimulation *techniques permit flexibility in grouping persons within households and defining population subgroups. This* flexibility is central to the way such models evaluate *programs and program options-in terms of the current economic status of population subgroups.* Microsimulation models define units within households according to program statutes and economic relationships among household members. Public programs will often use different units in determining eligibility (for example, a person's SSI benefits would be affected if he or she were living rent-free in the household of an adult child, but OASDI benefits would not be affected). Moreover, since family members share income to meet their common needs, an individual's economic status depends on the composition and re-sources of the family as a whole. Hence, economic status is typically evaluated in terms of the family unit. Detailed survey information on household composition permits such statutory and economic relationships to be incorporated into estimates.

Because of differences in resources and ability to work, changes in benefit policies are often targeted for particular groups. The groups of interest to policymakers may be defined by income and asset levels, demographic traits, family composition, health, or work status, all of which are included in the SIPP. In a typical application, a program alternative would be considered in the light of its effects on the current economic status of such population subgroups.

IV. Issues and Goals

Data from surveys such as the SIPP enhance what is known about programs in two ways. First, the SIPP represents the general population, a broader universe than that of program data. This allows analysts to estimate the number and traits of nonparticipating eligibles and to consider proposals which increase -,program eligibility or participation. This feature will be advantageous for analysis of both OASDI and SSI.

Second, the SIPP will provide a richer characterization of recipients than program data; program data are restricted in that the only information collected is that necessary to the determination of eligibility and benefits. This advantage will prove particularly valuable for OASDI analysis; analysts win be able to characterize beneficiaries (or those affected by a specific benefit provision) in terms of additional dimensions of current financial status, family composition, and demographic traits.

The SSI Model

In the context of a means-tested program, a microsimulation model which uses data representing the general population allows us to consider the issue of program participation. Measuring the extent to which SSI reaches its target population implies estimating both the eligible population (some of whom have never applied and, hence, are not represented in the administrative data) and the participant population. Finding SSI participants is less problematic; both surveys and administrative data have information on participants.[8] Determining which non-participants are eligible presents more obstacles. In general, they are not represented in program data. Furthermore, they cannot simply be asked if they are eligible for-SSI as part of the survey process; many non-participants will not know if they are eligible.

One main purpose of the model, then, is to determine SSI eligibility.[9] In simple terms, the computer procedures which constitute the model take all survey respondents through an SSI eligibility determination and benefit calculation process. Their survey responses to questions on income, "sets, household composition, and so on provide the basis for the estimates.

Some areas which may be considered using the SSI model include:

- Estimating SSI participation rates.
- Characterizing nonparticipating eligibles.
- Increasing the income guarantee levels.
- Liberalizing or eliminating the SSI asset test.
- Increasing SSI disregards.
- Effects of the SSI accounting period and other issues relating to program

[8]Identifying current recipients in surveys does pose some problems. The SIPP appears to have some advantages over the CPS in this area, but access to matched data will resolve problems of accurately identifying all current recipients in the survey context.

[9]There have been four recent simulation studies of the SSI program. See Leavitt and Schulz (1988), Zedlewski and Meyer (1989), Sheils et al. (1990), Doyle et al. (1990).

dynamics.

The OASDI Model

The report of the 1979 Advisory Council on Social Security included a statement of the principles underlying the OASDI benefit structure:

> From its beginning those responsible for the design of social security have sought to assure, on the one hand, a reasonable relationship between the social security taxes paid by individuals and the benefits they receive and, on the other hand, at least a minimally adequate income for long-term low-wage workers. Maintaining a reasonable relationship between taxes and benefits has been described as the goal of individual equity. Assuring a basic level of income has been called the goal of adequacy.[10]

A number of provisions, some in force and others proposed, are motivated by the adequacy goal. These include the 'progressive' structure of the PIA, the spouse benefit, other dependent benefits, the minimum benefit (now repealed), and a special benefit for those over the age of 85 (proposed). Because of the scale of the OASDI program, some of these adequacy-related provisions have major effects. For example, over three million persons receive spouse benefits.[11]

Distributional analysis of such provisions has been impeded because no single data source contained the necessary elements. Both current and historical information are required. By design, recurring household surveys, such as the SIPP or the CPS, have information on current economic status, but their information on social security benefits and earnings is not sufficiently detailed for systematic program analysis. Analysis of OASDI does not merely require information on benefits received (which is reported on the surveys), and the type of benefit, e.g., worker, spouse, survivor (which can sometimes be inferred from survey information).[12] What is needed are the details of earnings histories required to calculate OASDI benefits and identify those affected by a specific provision. Yet due to respondents' limited recall, it is not feasible to collect earnings history data that are sufficiently detailed and reliable in surveys.

By contrast, administrative data have detailed information on earnings and benefits. However, since data on income other than earnings and information on all members of the family are not used to determine benefits, they are not available in the administrative data for the program. As a result, analysts often use the size of the OASDI benefit to suggest the financial circumstances of beneficiaries-a measure that does not take into account considerable differences

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[10]See Page 55, Advisory Council on Social Security (1979).

[11]See Table 5.A1, Social Security Administration (1990).

[12]See Vaughan (1988).

in pension income, property income, and income received by other family members. The OASDI model will enhance analysts' capability to consider adequacy issues primarily by providing better information on the current financial circumstances, household, composition, and demographic traits of those affected. Some issues for analysis include:

- Income distributional effects of the spouse benefit and proposals such as providing dropout years for caregivers.[13]

- The effects of specific OASDI provisions in educing the rate of poverty or the poverty gap. For example, it has been suggested that an increase in the worker's benefit, intended to reduce inequities between one- and two-worker families, would have important effects as well on the poverty rates of widows.[14]

- Distributional effects of the 'progressive' PIA structure, in terms of the family incomes of those affected.

OASDI/SSI Comparisons

OASDI, combined with income from other sources, is intended to provide adequate income for most of those with regular covered employment. However, OASDI benefits and other income are less likely to meet the needs of those who have neither worked regularly in covered employment, nor are dependents of someone who has. Hence a means-tested program such as SSI can be viewed as a necessary adjunct to a broadly-based contributory system.[15]

Not only SSI, but certain provisions of the OASDI program are motivated by adequacy concerns. Due to structural differences, however, the programs “target" benefits in distinctly different ways. Although SSI can be thought of as a residual program for those without sufficient resources from OASDI and other so , the evidence indicates there is a problem of SSI nonparticipation. By contrast, under OASDI even when a benefit provision has an income adequacy objective, some benefits due to the provision are likely to be received by middle and high income groups.

For these reasons, when the policy objective is one of income adequacy, comparing OASDI options with SSI alternatives would be a promising analytical approach. Using the microsimulation approach, this suggests that the data source must have sufficient historical data on covered earnings to support an OASDI model and sufficient information on current resources and characteristics to determine SSI eligibility and to give a richer description of those affected,

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[13]Such proposals are under investigation at the Social Security Administration. The SIPP matched data have been used in some early analysis of the implications of one approach; see Iams (forthcoming).

[14]See pp. 261-262, Ball (1978).

[15]For example, see p. 349, Ball (1978).

in terms of the dimensions of current economic status.

The model development we have undertaken, in combination with the SIPP match file we have described, should allow us to make such OASDI/SSI comparisons. Some topics which may be considered include:

- An empirical analysis of basic structural alternatives. A broadly-based contributory system combined with a means-tested supplementary program (such as we have in the United States) could be compared with double decker systems used in other countries.

- Policy options with respect to the high rates of poverty among nonmarried aged women.

- Policy options with respect to the special needs of very elderly recipients--those 85 or older. [16]

V. Summary

The undertaking sketched in this paper builds on two long term data development efforts. First, a survey, the SIPP, was designed specifically to support analysis of public programs. Second, SSA earnings and benefit data have been matched to the SIPP. However, rigorous program analysis requires not only data that meet certain specifications, but an analytical tool--a capability to estimate eligibility, benefits, and the effect of behavioral responses from the underlying data. SSA is now developing this capability; because of the confidential nature of the matched data, an OASDI/SSI model such as this would probably be developed only at SSA. This effort will support research on SSI participation rates and other SSI policy issues. In terms of OASDI research, analysts will be able to consider those affected by particular provisions in terms of the SIPP's rich data on current financial circumstances, demographic traits, and family composition.

Finally, this effort will allow policymakers to compare OASDI proposals with SSI alternatives. This should prove useful because although provisions of both programs are motivated by concerns about income adequacy, the programs have very different 'targeting' outcomes.

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[16] In the SIPP context, the small size of this group would require combining panels in order to increase the effective size of the sample.

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