

Discussion of "Population Projections
for Social Security Cost Estimates," John Wilkins

by Karen C. Holden, University of
Wisconsin-Madison

Projections of future OASI outlays and payroll tax rates are essential for program planners charged with ensuring the financial soundness of the program and, rightly, the Office of the Actuary places primary emphasis on fulfilling this obligation. In addition, however, there are numerous groups of users outside the Social Security Administration for whom the published cost estimates are an important ingredient in their own research or in their policy planning for other programs. For example, pension administrators, personnel officers, state and local welfare agencies, and tax offices at all levels are responsible for programs whose structure and costs depend directly on OASDI benefit and tax levels and upon the population's behavioral response to changes in that program. We all know that Social Security taxes and benefits have an important, though not well understood effect on the distribution of income, the demand for retirement income from other pensions and transfer programs, on private pension structure, on the relative tax burden, and on work and retirement behavior (Aaron, 1982). Hence, the Office of the Actuary has an obligation in making these projections to meet the needs of this audience of technical users.

At the same time, as John Wilkin notes OASDI projections can't include the preferred assumptions of all users. Assumptions must be limited in number in order to produce timely and meaningful results and those few chosen are unlikely to meet with unanimous acceptance. Nor is it likely

that projections will be published in forms useful to all users. Nevertheless, the Office of the Actuary, in recognizing these difficulties, should regularly attempt to make the assumptions and methodology adopted well understood by all users and in a form which makes these projections amenable to the multiple uses to which they in practice are put. While a "wide audience" of non-professionals might require a report that is "necessarily simplified" (Wilkins, 1983 p.1), the large number of technical users of OASI projections can do high quality research and develop informed policy statements only on the basis of well-understood data. In addition, it is these users, among them gerontologists, demographers, actuaries and economists, who are most often responsible for the interpretation to the general public of the published projections. Only if these interpreters of data are well-informed can there be a well-informed public discussion about the future of the Social Security program.

In suggesting ways in which the Trustees' Reports and both the Actuarial Report and Notes series can more usefully serve other users, I will review past OASDI projections, and raise some issues about the use and meaning of these data. Table 1 shows benefits as a percentage of taxable payroll as projected for 1980 and 2000 in various Actuarial Studies beginning in 1938.¹ For each year, projections based on relatively optimistic and pessimistic assumptions are given. (These eventually became identified as series I and III, respectively, in more recent reports as the number of projections reported increased).

It is startling how close the 1938 optimistic projection of payroll cost in 1980 was to the actual 1980 cost (9.35 and 9.36 respectively). In part this can be attributed to the 1938 long-run fertility assumptions

that reflected the relatively low fertility prevailing then and again in recent years, but not assumed in cost projections made between those two years. The "accuracy" of the 1938 long-run projections for 1980 is interesting to note. More importantly, this comparison raises important issues about the meaning and usefulness of long-run projections for illuminating the future financial concerns of the OASI system. Between 1938 and 1980 the program changed dramatically, economic and demographic variables moved away from the levels assumed in 1938, and the projection techniques and data base improved. In fact, in 1938 the Office of the Actuary had no more better foresight in picking key assumptions than was the case in subsequent years. And I suspect foresight will not improve, even though projection methods and data will. What then do current projections tell us, and how can the usefulness of these projections be enhanced?

It is important to note that the three projection series now standard in the annual reports of the Trustees of the OASI system are based on a set of assumptions about long-term trends in demographic and economic variables and about the speed of the transition from the current levels of those variables to their long-run stable values. Differences among projections made in any given year are due to different assumptions about long-term stable levels of key variables and the speed of the approach to stability. In estimating that adjustment short-term fluctuations are explicitly eliminated through a smoothing process. From year to year, projections will differ as both the known initial levels of key variables fluctuate and assumptions about long-term trends are altered. However, projections are consistently based on an assumption of eventual long-term stability and a relatively speedy attainment of an assumed path to stability. Short-term

cyclical changes will influence initial values, but are not explicitly incorporated in the short-term projections. Thus, long-term trend projections, based upon assumptions of economic stability, provide limited information of the future financial status of OASI, as do the short-term projections that include the effect of past cyclical changes but do not consider future, wide fluctuations that might be possible.

The projections currently provided by the Office of the Actuary indicate what would happen if all assumptions embodied in a particular series were realized in the long-run. If not realized, both the long-run projections and short-run projections would diverge from the fact. The projections give us an idea about the level of program costs that would result from the attainment of a set of economic and demographic conditions. The optimistic assumptions (Series I), for example, would each enhance the financial health of the program; together the pessimistic assumptions suggest a near economic catastrophe as each would alone increase program costs. What is lacking from the published series is a sense of what the OASI financial status would be if at least in the short-term the economy fluctuated between periods of booms and busts and if there were a more realistic relationship among key variables, with some leading to increased program costs and others in the other direction towards financial health.

The Office of the Actuary should enhance their efforts to incorporate known interactions among economic and demographic variables in their projection models. The emphasis on consistently optimistic or pessimistic assumptions reduces the usefulness of projections in indicating to their users the probable course of OASI financing problems. For example, Series III assumes

both lower fertility and lower female labor force growth than recently experienced and both relatively low wage growth and more rapid trends towards early retirement among male workers. These assumptions seem to be sharp departures from what we know about work behavior. Recently, the Office of the Actuary has explored including explicitly the relationship between female labor force participation, marital status and presence-of children in selecting assumptions. This is an important innovation since changes in marital status and fertility alone accounted for about one-third of the change in the labor force participation of women between 1964 and 1977 (Smith, 1979). While these demographic components account for a minority of the total change in paid work rate by women, this finding points to the necessity of incorporating ^{other} important interactions into the projection model in order to obtain a more accurate projection of what indeed would be the cost effects in the presence of assumed demographic changes.

In looking at Table 1 one might wonder if we might have been better prepared for the recent "crisis" in OASDI if we had stuck by the 1938 projections. Probably not. The 1938 projection was based on assumed long-term trends; the recent financial crisis has been due in

large part to unexpected short-run changes. Throughout the history of the OASDI program it has been the short-run events that have raised concerns about the financial viability of the system. Indeed, because OASDI projections assume a relatively smooth movement over time in key variables with an assumed convergence to long-run values, the short-run changes that probably will take place in the future, as they have in the past, are assumed away. The emphasis in the various Trustees' Reports on long-run projections has diverted attention from the short-run problems and particularly from the issue of how well the system is guarded financially against short-run shocks. Simulations of various short-run scenerios of cyclical changes would be extremely useful. Even now, after recent experience with the effects of unemployment and inflation on OASDI financing, we know little about how the system would respond to similar short-run events in the future. Simulations of periodic system shocks would complicate the simulation exercise but would prepare us better for future changes which are a guaranteed part of the OASDI future.

The usefulness of the long-run projections is not entirely obvious. Yet much of the recent public debate has focused on the greater likelihood of one series being realized over the long-run compared to the others (see for example the published debate between Munnell (1983) and Petersen (1982 a,b)). It may be that political leaders demand the simplicity reflected in the projection limit to four series (the optimistic, pessimistic and two intermediate) and that these must be straightforward and reported without a large number of cautionary "ifs" and "buts." Yet those who view an individual assumption as being unlikely, must reject the entire series in which it is included. Many fail to realize the emphasis

in selecting assumptions on almost total "bads" in the case of alternative III and on total "goods" in alternative I. The world is not likely to be so consistent in the long-run and if it were, especially with regard to alternative III, the OASI system would be among the least of our economic concerns.

In short, the method of selecting and presenting projections based on assumption sets forces most users--and I suspect policy planners as well--to rely on the intermediate projections for a view of likely OASDI costs and benefit levels. Public comprehension of future trends would be enhanced tremendously by sensitivity analyses of changes in any given variable becoming a standard component of all projection reports. Actuarial Study No. 91 (Goss, 1984) does this for selected assumptions.² With this study one can evaluate the effect on the intermediate series of changing only mortality or fertility, for example, from that assumed in that series. With regular reports on a wider range of variables, students of the system could evaluate better the importance of changes in particular assumptions and estimate roughly how the system would behave if their own preferred set of assumptions were realized.³ This, incidentally, would ^{also} aid our understanding of how the system would respond to changes in the existing relationship among variables included in the projection model.

Finally, I would like to recommend a more complete explanation of why particular values are not only assumed, but the assumptions changed. Table 2 shows the assumptions made about long-run variable values in the 1982, 1983 and 1984 Trustees' Reports. Clearly, current economic events should cause alterations in assumptions when short-run changes are expected to represent long-run changes in behavior. Yet, we are not told

what relationships were taken into account in changing assumptions and what difference it made in the ultimate projected values. The most volatile series given in Table 2 is the ultimate change in the labor force participation rate of females. Between 1982 and 1983 the range of assumed ultimate changes widened--was this due to greater uncertainty about trends or the result of more informed guesses? To what extent do these changes in work rates take into account the higher assumed rate of fertility in 1983 in series I and the lower fertility assumed in series III? The economic assumptions are more stable from report to report, changing at most by .1 percentage points. Do these small changes have a large effect on the final projected system costs? We are not told, though such questions are important in understanding whether and to what extent we should base policy prescriptions on any given series of projections.

I have tried to suggest ways in which the Office of the Actuary could better educate the wider technical community of users about the projection methods and the sensitivity of projections to changes in individual variables. This would increase the quality of research on the OASI system, the accuracy of the interpretation of projections to the general public and the quality of the public debate over OASI policy. A more complete explanation of assumptions would enhance the credibility of the estimates, even though it would also make this larger community aware of the limitations of each projection. Respect for projections can be enhanced only with a thorough understanding of their weaknesses as well as of their strengths. Particularly important are further attempts on a regular basis and greatly expanded level to provide sensitivity analyses in order to see how economic conditions

that depart from assumed values will affect the financial status of the program. In addition, short-term projections that include cyclical changes and levels of key variables that are feasible in the short-run though not consistent with a long-run trend towards stability should be included in each annual report. For it is the short-run cyclical changes that have led us into recent financial crises. Past reports have perhaps prepared us for long-run crises, but not those developing in the short-term.

I want to end by expressing my admiration for the quality of the work done by the Office of the Actuary. The projections are required annually by the Board of Trustees and often must be produced only shortly after legislative changes or recently noted variations in work behavior, fertility, employment or in other important variables. In effect, projecting social security costs requires a projection of the performance of the entire U.S. economy--a formidable task and one which must be simplified in order not to lose sight of the ultimate goal--the projection of OASDI costs. It is easy to suggest changes in methodology and reporting when one does not have to effect these changes. But because OASDI touches the lives of all U.S. residents and determines the quality of all of our retired years, the Office of the Actuary must look beyond the requirements of OASDI policy planners

towards the education of the larger research community which is already using the projected figures, sometimes in misinformed ways, to argue about the future of OASDI, the course of events that will affect the outcomes of related social programs and about the economic future of us all. Through those of us working on the social security program from outside the Social Security Administration, the general public hears about the program and has its fears fanned or laid to rest. We must be well-informed. John Wilkins has contributed to that educational process in this paper. Actuarial Reports and Notes should receive greater attention and include more detailed analyses of the projection methods and of single changes in assumptions. Continued feedback between those responsible for the projections and the research community and input by the latter into the projection method can only lead to more useful projections for all and a more informed population.

Table 1

Projected OASI Costs for 1980 and
2000 as a Percent of Projected Payroll

Actuarial Study: No. and Year	1980		2000	
	Optimistic	Pessimistic	Optimistic	Pessimistic
#12(1938)	9.35	13.36	n.a.	
#17(1942)	6.13	9.55	7.55	12.66
#48(1958)	7.38	8.63	6.96	10.11
#58(1963)	7.70	8.22	7.19	8.47
#69(1969)	7.01	7.29	7.63	8.45
#83(1980)	9.43	9.50	8.30	10.21
#91(1984)	-	-	7.31	10.08

Actual 1980 Costs and Percentage of Payroll: 9.36

Sources:

Goss(1984), McKay (1980), Myers (1938, 1942, 1958), Myers and Bayo (1963, 1969).

n.a.: not available

Table 2

Long Range Assumptions in 1982,
1983 and 1984 Board of Trustees' Report

I- Ultimate Age-adjusted Labor Force Participation Rate Change from base year.

Trustees' Report	Male			Female		
	1982	1983	1984	1982	1983	1984
Actual LFPR in base year ¹	77.7	76.7	76.5	52.0	52.7	53.1
Series I	+1.9	+3.3	+2.0	+9.4	+10.4	+9.0
Series II-A	+0.3	+1.7	+0.8	+8.9	+9.2	+8.1
Series II-B	-0.3	+0.6	+0.2	+7.7	+7.4	+6.3
Series III	-2.1	-0.9	-1.2	+7.4	+6.5	+5.6

II- Total Fertility Rate

Trustees' Report	Series I			Series II A and B			Series III		
	1982	1983	1984	1982	1983	1984	1982	1983	1984
Year	(Actual in 1982: 1.86)								
1984	1.93	1.89	1.89	1.89	1.86	1.87	1.82	1.82	1.83
2000	2.18	2.29	2.17	2.05	1.96	1.96	1.73	1.66	1.67
2020	2.30	2.40	2.30	2.10	2.00	2.00	1.70	1.60	1.67

III- Economic Assumptions for the year 2000

Trustees' Report	Average Annual Increase in GNP (%)			Real Wage Difference			Unemployment Rate		
	1982	1983	1984	1982	1983	1984	1982	1983	1984
Series									
Series I	3.5	3.6	3.7	2.5	2.5	2.6	4.0	4.0	5.0
Series II-A	3.1	3.1	3.1	2.0	2.0	2.1	5.0	5.0	5.5
Series II-B	2.6	2.6	2.6	1.5	1.5	1.6	5.0	5.0	6.0
Series III	2.1	2.1	2.0	1.0	1.0	1.1	6.0	6.5	7.0
(Actual)	-1.9	3.3	n.a.	-0.2	1.2	n.a.	9.7	9.6	n.a.

1. In year prior to year of Report's publication. I.e. 1981, 1982 and 1983

Sources: Board of Trustees (1982, 1983, 1984)

FOOTNOTES

1. Robert J. Myers, Chief Actuary, Social Security Administration from 1947 to 1970 makes similar comparisons in Myers (1982).
2. The Office of the Actuary has periodically published detailed reports on the methods of population projections. The most recent is Wade (1984). This report describes the assumptions and method used in making population projections in considerable detail.
3. The publication of Actuarial Study #91 is the second including some sensitivity analyses (the first being McKay (1980)). This may suggest the recognition that such reports need to be issued regularly through the Actuarial Studies series.

REFERENCES

Aaron, H. J. (1982). Economic Effects of Social Security. The Brookings Institution, Washington D.C.

Board of Trustees, Federal Old-Age and Survivors Insurance and Disability Insurance Trust Fund (1982). 1982 Annual Report. Government Printing Office, Washington, D.C.

_____ (1983). 1983 Annual Report. Government Printing Office, Washington D.C.

_____ (1984). 1984 Annual Report. Government Printing Office, Washington, D.C.

Goss, C.G. (1984). Long Range Cost Estimates of the Financial Status of the Old-Age, Survivors, and Disability Insurance, 1983. Actuarial Study No. 91. Social Security Administration, Washington, D.C.

McKay, S.C. (1980). Long Range Cost Estimates for Old-Age, Survivors, and Disability Insurance, 1980. Actuarial Study No. 83. Social Security Administration, Washington, D.C.

Myers, R. J. (1938). Revised Cost Estimates for Present Title II. Actuarial Study No. 12. Social Security Administration, Washington, D.C.

_____ (1942). New Cost Estimates for the OASI System, with the Assumption of a Static Future Wage Level. Actuarial Study No. 17. Social Security Administration, Washington, D.C.

_____ (1958). Long Range Cost Estimate for Old-Age, Survivors, and Disability Insurance under 1956 Amendments. Actuarial Study No. 48. Social Security Administration, Washington, D.C.

_____ (1982). Actual Costs of the Social Security System over the Years Compared with 1935 Estimates. Social Security Bulletin, 45, 3, 13-15.

_____ and Bayo, F. (1963). Long Range Cost Estimates for Old-Age, Survivors, and Disability Insurance System, 1963. Actuarial Study No. 58. Social Security Administration, Washington, D.C.

_____ and _____ (1969). Long-Range Cost Estimates for Old-Age, Survivors, and Disability Insurance System. Actuarial Study No. 69. Social Security Administration, Washington, D.C.

Munnell, A.H. (1983). A Calmer Look at Social Security. The New York Review March 17, 1983, 41-57.

Petersen, P.G. (1982a). Social Security: The Coming Crash. The New York Review, December 2, 34-39.

_____(1982b). The Salvation of Social Security. The New York Review. December 16, 50-57.

Wade, A.H. (1984). Social Security Area Populations Projections, 1984. Actuarial Study No. 92. Social Security Administration, Washington, D.C.

Wilkin, J.C. (1983) "Population Projections for Social Security Cost Estimation." Presented at the 1983 Actuarial Research Conference, Madison, WI.