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MEASURES OF ACTUARIAL STATUS FOR SOCIAL SECURITY: RETROSPECT AND PROSPECT

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Precedents deliberately established by wise men are entitled to great weight. They are evidence of truth, but only evidence.—HENRY CLAY, 1835

ABSTRACT

The paper reviews in detail the measures of actuarial status used for the social security program since the program was developed in the middle 1930s. It uses a number of sources for identifying these measures, such as the annual reports of the program's trustees, the Social Security Act, the various advisory councils on social security, and so on. It traces the evolution of these measures and attempts to relate changes in the measures to changes in the program itself as well as to the changing understanding of the program and its relationship to the political environment and the economy. Extensive tabular information is included, showing the actuarial status of the program as described in the annual reports of the trustees. The paper concludes with suggestions by the author concerning appropriate measures of actuarial status for social security in the future.

SINCE the social security program was first enacted in 1935, there has been continuing debate about how the program should be financed. That debate has been more vigorous and more public at certain times than at others. Views expressed about how the program should be financed reflect different views about the nature of the program as social insurance. This debate both influences and is influenced by the concepts that are used to measure the actuarial status of the program, the critical values of those measures, and how the results of the actuarial analyses are presented to the many and diverse interest groups. The purposes of this paper are (1) to describe the measures of actuarial status that have been used historically, their critical values, and how they have been interpreted to the public, and (2) to discuss possible future changes.

I. INTRODUCTION

Four separate insurance programs normally are embraced by the term "social security" as it is commonly used in the United States:

1. Old-age and survivors insurance (OASI), which pays monthly cash benefits after a worker retires or dies.
2. Disability insurance (DI), which pays monthly cash benefits after a worker becomes disabled. (OASI and DI together are referred to as OASDI.)
3. Hospital insurance (HI, or medicare Part A), which pays part of the cost of hospital care of the aged or long-term disabled.
4. Supplementary medical insurance (SMI, or medicare Part B), which pays part of the cost of doctor bills and certain other medical expenses of the aged or long-term disabled.

These programs presently are being financed on close to a pay-as-you-go basis, although this has not always been true, as will be described below. Most of the money collected is used immediately to pay benefits, although the social security system does maintain trust funds that provide a buffer against fluctuations in income or expenditures. The secretaries of health and human services, labor, and the Treasury serve as trustees of the social security trust funds. They report annually to Congress on the condition of each fund and on projected future operations.

Payroll taxes from employees, their employers, and the self-employed go into the trust funds to pay for OASI, DI, and HI. SMI, on the other hand, is financed on a pay-as-you-go incurred-cost basis by a combination of monthly premiums from SMI participants and payments from the general fund of the Treasury. This financing method is analogous to that used for employer-employee group term insurance.

Table 1 shows the future payroll tax rates for employers and employees, as established by present law. Also shown in Table 1 is the maximum amount

TABLE I

PAYROLL TAX SCHEDULE

CALENDAR YEAR	CONTRIBUTION AND BENEFIT BASE	CONTRIBUTION RATES (PERCENT OF TAXABLE EARNINGS) PAYABLE BY BOTH EMPLOYERS AND EMPLOYEES			
		OASI	DI	HI	Total
1981	$29,700	4.700%	0.650%	1.30%	6.65%
1982–84	*	4.575	0.825	1.30	6.70
1985	*	4.75	0.95	1.35	7.05
1986–89	*	4.75	0.95	1.45	7.15
1990 and later	*	5.10	1.10	1.45	7.65

* Subject to automatic wage-indexed increase each year.

of a worker's earnings that can be taxed and credited toward benefit calculations each year. For the self-employed the OASI and DI tax rates are one and a half times the rates payable by employees, and the HI tax rates are the same as those for employees.

Summary of Present Methodology

The Social Security Act requires the trustees of the social security program to report (1) an estimate of the expected future income to and disbursements from the trust funds during each of the next five fiscal years (three years for HI and SMI) and (2) a statement of the actuarial status of the trust funds. The definition of the actuarial status of each trust fund is determined by the trustees. At present the long-range actuarial statuses of the OASI and DI trust funds are determined on the basis of seventy-five-year projections of their expected income and expenditures, which are prepared on a year-by-year open-group basis. The long-range projection period is twenty-five years for HI. Long-range projections normally are not made for SMI.

The results are displayed in two basic ways. The projected expenditures in each year are divided by the projected taxable payroll in that year, and the result is expressed as a percentage of taxable payroll. This result then is compared with the scheduled payroll tax, year by year, on a twenty-five-year-average basis and on a seventy-five-year-average basis. Also, the projected expenditures and income are used to project the estimated trust fund balances year by year. The results are expressed by showing the ratio of the projected trust fund balance at the beginning of each year to estimated expenditures for that year.

Readers interested in more detail on the methodology of these projections are referred to references 17, 18, and 19.

II. HISTORICAL DEVELOPMENT

A number of policy issues related to social security financing and the actuarial projections have affected their methodology and presentation. These issues include (1) whether the system should be fully funded, funded on a limited reserve basis, or funded on a pay-as-you-go basis, with the trust funds filling essentially a contingency reserve role; (2) whether the system should be self-supporting through payroll taxes or whether there should be significant levels of financing from the general fund of the Treasury; (3) whether the social security trust funds should be set up distinct from one another or combined in some way; (4) whether the funds should be "protected" against economic cycles; (5) the extent to which the program should give primacy to individual equity as opposed to social adequacy in

its benefit structure; and (6) considerations of equity in the intergenerational distribution of costs and benefits. The following will attempt to trace some of the debate about these issues, associated legislative action, and related changes in the measures of actuarial status.

The Committee on Economic Security that was originally charged by President Roosevelt with the responsibility for developing a plan of old-age insurance attempted to meet two contradictory goals [1]. The first was to have a plan that would be self-sustaining, while providing benefits to each group of retirees that were financed by their contributions; that is, a fully funded plan. The second goal was to have a plan that would not result in large reserve-fund accumulations. Since a compromise between these two goals was necessary, the plan initially proposed was one that would pay larger benefits to the earlier retirees than would be financed by their own contributions and that would ultimately (by 1965) require a government subsidy. President Roosevelt objected to that plan on political grounds, so what was finally proposed was a plan on a self-sustaining basis, which was projected to result in a reserve accumulation reaching ultimately (1980) $47 billion, an enormous sum of money in that era.

The result was that the original Social Security Act of 1935 stated that the government appropriations for the reserve account would be "determined on a reserve basis in accordance with accepted actuarial principles and based upon such tables of mortality as the Secretary of Treasury should from time to time adopt and upon an interest rate of three percent per annum compounded annually." It also instructed the secretary of the Treasury to report annually on the actuarial status of the program. Initially, there was no separate trust fund to which the cash revenues would be credited and the expenditures charged, but rather an Old-Age Reserve Account in the general funds of the Treasury. The act did not specify that the appropriations to the account should be equal to the excess of net taxes (gross taxes less administrative expenses) over benefits, although that was the congressional intent.

It was stated [2] that the sole function of the reserve was to produce interest that would be used to meet a substantial part of the benefit payments provided by law, ultimately in the neighborhood of 40 percent. The statement quoted above was interpreted to mean that the cash revenues should be sufficient as an "annual premium" to provide for the projected benefits without government subsidy, although the law did not specifically state that.

The original projections for the program were made consistent with the foregoing, projections being made on a year-by-year basis from the first year of operation, 1937, through 1980, on an open-group basis. Projections were not made beyond 1980, since the fund was assumed to stabilize at

approximately $47 billion at that point in time. One "best estimate" projection was made, based on appropriate assumptions as to the population and employment levels, with average wage levels assumed to remain level over time.

The first Advisory Council on Social Security, which met during 1937–39, made a number of important recommendations concerning the financing of the program. It recommended the establishment of a separate trust fund that would change the legal status but not the financial operations of the program. The council envisioned an eventual government subsidy, of a size such that the cost of the program would be supported approximately equally by employees, employers, and the Treasury. It also stated that the prospect of a government subsidy would remove the necessity for the large reserve accumulation contemplated in the original act. The trust fund should fill essentially a contingency fund role to ensure the steady payment of benefits at all times while avoiding abrupt changes in taxes and contribution rates. The council did recognize that "sound presentation of the government's financial position required full recognition of the obligation implied in the entire old-age security program. Treasury's report should annually estimate the load of future benefits and the probable product of the associated tax program." In the 1939 Amendments to the Social Security Act, certain of these recommendations were adopted. A separate trust fund was created. The notion that there was a level beyond which the trust fund should not be allowed to accumulate was implicit in the provision that the trustees should be required to notify Congress whenever the trust fund ratio was expected to exceed 300 percent within the first five years of the projection.

The actuarial projections [4] made in connection with the 1939 amendments used methodology similar to the original projections, one central projection being made through 1980, complemented with some sensitivity testing of individual assumptions such as the interest rate. It also showed the cost of the program averaged for the forty-four-year period 1937–80.

In 1944, amendments were enacted that did authorize general revenue financing if the payroll tax should become insufficient, but no such government subsidy was ever actually provided. The view that the system should be self-supporting from the payroll tax continued to prevail throughout this period in practice, in spite of the recommendations of the first council. Finally, in 1950, the general revenue financing authorization was repealed.

The 1948–49 Advisory Council on Social Security renewed the recommendation of the earlier council for a government subsidy equal to half of the combined employee and employer amounts. It stated that "in our opinion the cost of financing the accrued liability should not be met solely from the payroll contribution of employers and employees. We believe that this

burden should more properly be borne at least in part by the general revenues of the government." It also stated that "we favor, however, keeping [the] excess of income over outgo as low as consistent with public understanding that in the long run there must be a close relationship between benefits and contributions."

The actuarial projections being made at this time were done somewhat differently than the earlier projections. The projections were made into perpetuity, with benefits and taxable payroll assumed to remain constant after the year 2000 (instead of 1980). Projected expenditures for benefits and administrative expenses and taxable payroll were discounted at an interest rate of 2 percent in order to produce a level-premium cost as a percentage of taxable payroll. Instead of showing only a central cost estimate, the actuarial report showed low-cost and high-cost estimates year by year as a percentage of payroll, as well as a level-premium percentage.

The 1948–49 Advisory Council stated that "the percentage of payroll figures are the most important measure of the financial effort required to support the system and as a basis for determining ultimate contribution rates." As a result of the inflationary experience of the economy in general, the council raised the question of the effect of rising earnings on cost estimates. It stated that

> should past trends continue, monthly wage earnings several decades hence will be considerably larger than those today and benefits will probably be revised to take these increased wages into account. The long-range estimates presented by the council, however, disregarded the possibility of increases in wage levels and state the costs of the proposed benefits as percentages of payroll based on continuation of the current wage levels. If increasing wage levels had been assumed, the cost of the benefits as percentages of payroll would be lower than those presented. Use of the level-wage assumption, therefore, has the effect of allowing future liberalization of benefits to keep pace with any increases in wages and payroll taxes which may occur. If wages continue to rise and liberalizations are not made, these estimates overstate the cost as a percentage of payroll, and a contribution rate based on them would be too high.

One should note, however, that the required five-year estimates of operations from 1940 on did implicitly assume that wage levels would rise, subject only to the constraint of the maximum-taxable-earnings limitation established in the law.

By the time of the next advisory council in 1959, there appeared to be more explicit recognition that the system was being financed not on a full reserve basis or on a pay-as-you-go basis but on an intermediate or limited reserve basis. This principle was endorsed by that advisory council. (One actuarial analysis [7] indicated that the system was a mixture of one-sixth

full reserve financing and five-sixths pay-as-you-go financing.) This council did not renew the recommendation of the predecessor council for a government subsidy but rather stated that the system should be kept in close actuarial balance on the basis of financing through the payroll tax. It defined close actuarial balance for OASI as being achieved when the "level premium equivalent of the contribution rate varies from the estimated level premium cost by no more than one quarter percent of covered payroll."[1] The level-premium cost continued to be determined on the basis of the average of the high and low cost estimates produced in essentially the same way as the cost estimates described previously for the 1949 Advisory Council. While affirming the previously described concept of long-range actuarial balance, the council also stated that "future decisions concerning the financing of the program should increasingly take into account estimates of trust fund income and outgo over the ensuing 15 or 20 years based on expected earnings and employment levels and on demographic development." These might be characterized as medium-range estimates.

The 1958 Amendments to the Social Security Act, perhaps as a result of the growing maturity of the program, reflected a shift from concern about excessive accumulation of funds to concern for insufficient funds. They provided that the trustees should report immediately to Congress when the trust funds are unduly small. The amendments did not define "unduly small." They left that determination to the trustees. The social security amendments of 1960 repealed the rule that the trustees should notify Congress whenever the trust fund ratios were expected to exceed 300 percent within a five-year period.

The 1959 Advisory Council noted that projections of that time indicated that there would be positive cash flow for the program in each and every year of the projections. It stated that such status was important in the early years of the system.

Questions about intergenerational equity were debated vigorously at this time. It was stated [7] that the political viability of the system depended upon a favorable relationship between the payroll tax rate and the normal cost for the entry-age cohorts. Subsequently, Public Law 89-809, enacted in 1966, required the federal government to prepare a statement of its liabilities and other financial commitments. For the social security program this required a determination of the liabilities of the program on a closed-group basis similar to what would be done for a private pension plan. The resulting size of the liability tends to be quite large and of the same order of magnitude as the gross national product. This report has been prepared

[1] While statements were made in the trustees' reports of earlier years that the program was (or was not) in "substantial actuarial balance," the term was not explicitly defined.

annually since that time (although it has not been widely distributed—or noted by the general public).

The 1963–64 Advisory Council recommended that the actuarial projection period for the long-range estimates should be reduced from perpetuity to seventy-five years, a period that would span the lifetime of virtually all covered persons living on the valuation date, and is as long a period as can be expected to have a realistic basis for estimating purposes. Because of the higher degree of certainty resulting from the shorter projection period, the council suggested redefining "close actuarial balance" for OASDI as being achieved when the level-premium equivalent of the contribution rate varies from the estimated level-premium cost of the benefits and administrative expenses by no more than 0.1 percent of covered payroll.

The council also reiterated the position of the 1959 council by saying that a public perception of positive cash flow each year is highly desirable. It retreated from supporting an intermediate reserve approach and moved toward pay-as-you-go financing, stating that "thus the role of the trust fund as interest-earning reserves is not very great even under the present schedule; the funds are even now to be thought of largely as a reserve to meet unexpected contingencies rather than as funds for the purpose of earning interest." The council viewed the high tax rates needed for large trust fund accumulations as having an inflationary effect on the economy.

The social security amendments of 1965 represented an important change, not only in terms of the benefit structure (with the addition of medicare to the program) but also in the philosophy of the financing of the program. For the first time, important elements of general revenue financing were added. The cost of providing the hospital insurance part of medicare for uninsured persons who attained age 65 prior to 1968 was to be funded by general revenues. Also, one-half the cost of the supplementary medical insurance part of medicare was to be financed out of general revenues, with the other half being financed by premiums from the participants.

The long-range projections for HI have differed since their inception in several significant respects from those for OASDI. First, the projection period was limited to twenty-five years. The first trustees' report for the Hospital Insurance Trust Fund stated that "it is believed that a 25-year projection period for the Hospital Insurance program is as far ahead as should be considered because of the uncertainties as to future hospital practices."

Second, dynamic economic assumptions were made with respect to increases in hospitalization costs and increases in average wages, although the effect of the latter was dampened by assuming no future increases in

the maximum taxable earnings base beyond those scheduled in present law. For OASDI, dynamic economic assumptions would have tended to produce lower long-range cost estimates as a percentage of taxable payroll, unless it was also assumed that benefit levels would be periodically liberalized beyond those provided by present law. The effect of the dynamic economic assumptions in the HI cost projections, however, was to produce higher cost estimates as percentages of taxable payroll than the static assumptions would have produced. Therefore, the use of static assumptions for OASDI and dynamic assumptions for the HI part of the program was, in each case, conservative.

Third, only one central set of projections was made for a valuation period, although ultimately the practice of making high and low cost estimates for HI was adopted, as is the practice for OASDI. Fourth, no explicit definition of "close actuarial balance" has ever been adopted for HI.

Fifth, as noted previously, the law requires that the HI short-range projections be only for the balance of the current fiscal year and the two following fiscal years, rather than the five years included in the OASDI projections. Last, beginning in 1972, specific provision is made in the twenty-five-year projections for HI for rebuilding the trust fund ratio to the 100 percent level recommended by the 1969–71 Advisory Council.[2]

The 1969–71 Advisory Council on Social Security recommended a number of major changes with respect to the actuarial projections. It recommended that the actuarial estimates for OASDI be based on the assumptions that earnings levels will rise, that the contribution and benefit base will be increased as earnings levels rise, and that benefit payments will be increased as prices rise.

The council criticized projections based on the use of static economic assumptions, on the grounds that (1) the projections led to misunderstanding, (2) the projections overestimated the role of trust fund interest in financing the program, and (3) the projections assumed that, as prices and earnings grew, Congress would enact increases in benefits. The change to dynamic assumptions was, in fact, adopted to be consistent with the 1972 Amendments to the Social Security Act, which introduced automatic indexing of the benefits and the maximum taxable earnings base.

The council also recommended that the contribution rate should be based on a single best estimate rather than an average of high and low cost estimates, with alternative high and low cost estimates continuing to be made. This change was also subsequently adopted. The council recommended full

[2] In 1972–75, similar provision was made in the OASDI seventy-five-year projections.

acceptance of the philosophy of pay-as-you-go financing, rather than the previously accepted intermediate reserve funding. Proper contingency reserve levels for the trust funds were suggested to be about 100 percent of annual outgo. The financing portions of the 1972 amendments implicitly represented an acceptance of this principle. To reinforce this principle, the council recommended that the law be changed to require the trustees to report to Congress immediately whenever the trust fund ratio was expected to fall outside the 75–125 percent range, and to propose changes to restore the trust fund to the recommended level. This last recommendation, however, was not adopted.

The 1969–71 council seemed to question how much importance should be attached to the long-range cost projections. It recommended that the long-range HI projections be limited to a ten-year period, a recommendation that was not adopted. The council also stated that the current use of level cost estimates for expenditures and level equivalent estimates for contribution rates should be continued for "limited" purposes. It recommended that tax schedules should follow the cost estimates closely for the first ten years, with subsequent changes several decades apart.

The consultant panel of actuaries and economists working with the 1969–71 Advisory Council made some interesting observations and recommendations that were not carried into the council's report. The panel stated its belief that accumulating large trust fund balances did not transfer the economic burden of social security benefits for future workers to present workers. It noted that securities in the trust fund are simply claims on future government revenue. The panel said that, to the extent that it was feasible to do so, measures of the likelihood of significant deviations from the assumptions should be given. It further stated that "it seems thus desirable that there be a statutory prescription of the tax fixing formula, operative annually in the absence of congressional interposition." Last, it recommended that the SMI projections should be for the full twenty-five-year period, in spite of the "group term insurance" type of financing of the program. The panel presumably felt that understanding the size of the long-term financial burden of the program is important.

In addition to the very important change in the dynamic economic assumptions described above, several other changes were made in the actuarial projections and their presentations coincident with the 1972 amendments. First, the practice of computing a level-premium equivalent of the year-by-year projected cost of the program as a percentage of taxable payroll, assuming a real interest rate, was discontinued in favor of computing a simple average of the projected expenditure as a percentage of taxable payroll for seventy-five years. It was noted that the effect of an interest rate

assumption was very much minimized by the adoption of dynamic economic assumptions. Second, the definition of the term "close actuarial balance" for the OASDI portion of the program was changed from 0.1 percent of taxable payroll to one in which the average scheduled tax rate for the seventy-five-year period fell within 5 percent of the average expenditures expressed as a percentage of taxable payroll (then about 0.6 percent of taxable payroll). This change was justified on the grounds that the use of dynamic economic assumptions introduced a higher degree of uncertainty in the projections, which required a broader range than was represented by 0.1 percent of taxable payroll.

The 1975 Advisory Council had relatively little to say about the actuarial projections. Its time was essentially consumed by the development of a "decoupled" benefit formula for OASDI that would reduce the instability in the cost of the program caused by the formulas in the 1972 amendments.

The 1979 Advisory Council and its consultative panel of actuaries and economists made comments and recommendations that tend to downplay the importance of the long-range projections and the concept of "close actuarial balance." The panel stated that setting tax rates for seventy-five years on the basis of the projections was unnecessary, although both it and the council recommended continuance of the practice of making seventy-five-year projections. Despite the panel's comments, the council did recommend that ultimate tax rates be increased to restore the OASDI program to close actuarial balance. It stated, however, that raising the tax rate would be for the purpose of allaying public fears about the ultimate viability of the program rather than for reasons of fiscal prudence. It said that, as a result of other changes in the program, the increase in tax rates probably never would go into effect.

The council also proposed that the financing of the HI part of the program be switched entirely to general revenues, on the grounds that there should be less reliance on payroll taxes for the financing of social security. The HI part of the program was thought to be the most plausible candidate for this change, since its benefits are not wage-related.

The council raised the question of individual equity in the program and, in fact, carried it one step further than had been traditional. For some time some have argued that, in order to engender broad public support for the program, each class of covered workers should expect benefits at least equal to the value of the employee taxes paid by that class. This has come to be known as the "money's worth" issue. The council's position was that the principle should not only be true for an employee's total taxes; it should be true on a marginal basis also. The council stated that "all current and future workers should be able to expect that social security benefits gen-

erated by increased earnings will provide a reasonable return on the increased employee tax payment on those earnings." The council used this line of reasoning to justify an increase in the marginal benefit rate at the upper end of the benefit formula for higher-paid workers. Although this is not, technically speaking, a measure of the actuarial status of the program on a fiscal basis, it is an actuarial measure of the political soundness of the program.

The 1975 and 1979 councils reiterated their support of the principle of current-cost financing of the social security program. The 1979 council recommended that the trustees should notify the appropriate committees of Congress whenever any trust fund is projected to fall below 75 percent of outlays within the following three years or is projected to go considerably above that level.

As of this writing, no legislative action has resulted from the recommendations of the 1979 Advisory Council. Legislative proposals of the past several years have focused on short-range financing problems. These include authority for borrowing among the various social security trust funds and for countercyclical general revenue financing to offset the drain on the trust funds caused by temporary high unemployment.

Summary of Trustees' Reports since 1941

The previous section has attempted to trace the development of the actuarial projections and their presentation principally by reference to the reports of the various advisory councils and related legislation. Another way to examine this history is to review the annual reports of the Board of Trustees. As described previously, while the financial operations of the social security program began in 1937, the trust fund was not established until 1940 and the initial trustees' report was not prepared until 1941. Tables 1A–1C, 2A, 2B, and 3 show the results of the projections,[3] as well as indicating some of the basic elements of the projections that have changed over the years.

III. QUESTIONS FOR THE FUTURE

Period for Long-Range Projections

As indicated previously, the projection period for the long-range cost estimates is seventy-five years for OASDI and twenty-five years for HI. At

[3] It should be noted that other reports and studies, particularly in the early years, differed significantly from the trustees' reports, for example, in the use of a projection period into perpetuity and in the calculation of a long-range actuarial balance before these were adopted by the trustees.

TABLE 1A

Summary of Selected Projections from the Annual Report of the Board of Trustees for the Old-Age and Survivors Insurance Program, 1941–56

Trustees Report	Projected (1-5 Yrs.) Trust Fund Balances At End of Fiscal Year (in millions)		Long-Range Cost Estimates								
			Low Cost Estimate			High Cost Estimate			Intermediate Cost Estimate		
	1st Year	5th Year	Expenditures	Contributions	Balance	Expenditures	Contributions	Balance	Expenditures	Contributions	Balance
			Valuation of Expenditures and Contributions Expressed As Percent of Taxable Payroll to Perpetuity under Level Assumptions								
1941	$ 2,363	$ 5,773	a/	a/	a/	a/	a/	a/	a/	a/	a/
1942	3,229	10,813	a/	a/	a/	a/	a/	a/	a/	a/	a/
1943	4,236	11,346	a/	a/	a/	a/	a/	a/	a/	a/	a/
1944	5,430	13,214	4.0%	a/	a/	7.0%	a/	a/	a/	a/	a/
1945	6,614	12,281	4.0	a/	a/	7.0	a/	a/	a/	a/	a/
1946	7,530	16,347	4.0	a/	a/	7.0	a/	a/	a/	a/	a/
1947	8,749	20,137	3.0-4.4	a/	a/	5.3-7.0	a/	a/	a/	a/	a/
1948	9,980	15,982	3.0-4.4	a/	a/	5.3-7.0	a/	a/	a/	a/	a/
1949	11,376	20,414	3.0-4.4	a/	a/	5.3-7.0	a/	a/	a/	a/	a/
1950	13,033	21,782	3.0-4.4	a/	a/	5.3-7.0	a/	a/	a/	a/	a/
1951	14,482	23,740	a/	a/	a/	a/	a/	a/	6.05%	a/	a/
1952	16,868	27,123	a/	a/	a/	a/	a/	a/	6.10	a/	a/
1953	18,351	24,850	a/	a/	a/	a/	a/	a/	6.09	a/	a/
1954	20,138	26,105	a/	a/	a/	a/	a/	a/	6.74	6.08%	-.66%
1955	21,281	22,331	a/	a/	a/	a/	a/	a/	7.70	7.1	-.60
1956	22,707	22,629	a/	a/	a/	a/	a/	a/	7.51	7.3	-.21

a/ Figure not shown in report.

TABLE 1B

SUMMARY OF SELECTED PROJECTIONS FROM THE ANNUAL REPORT OF THE BOARD OF TRUSTEES FOR THE OLD-AGE AND SURVIVORS INSURANCE PROGRAM, 1957–71

Trustees Report	Projected (1-5 Yrs.) Trust Fund Balances At End of Calendar Year (in millions)		Long-Range Cost Estimates								
			Low Cost Estimate			*High Cost Estimate*			*Intermediate Cost Estimate*		
	1st Year	5th Year	Expenditures	Contributions	Balance	Expenditures	Contributions	Balance	Expenditures	Contributions	Balance
			Valuation of Expenditures and Contributions Expressed As Percent of Taxable Payroll to Perpetuity under Level Assumptions								
1957	$23,465 a/	$21,643 a/	6.59%	7.27%	+.68%	8.4%	7.17%	-1.23%	7.43%	7.23%	-.20%
1958	22,601 a/	15,622 a/	6.97	7.38	+.41	8.99	7.28	-1.71	7.90	7.33	-.57
1959	20,882	24,433	7.29	8.05	+.76	9.42	7.98	-1.44	8.27	8.02	-.25
1960	20,203	23,218	7.35	8.20	+.85	9.61	8.14	-1.47	8.38	8.18	-.20
1961	20,343	24,155	7.40	8.20	+.80	9.65	8.14	-1.51	8.42	8.18	-.24
1962	18,713	26,113	7.71	8.56	+.85	10.08	8.53	-1.55	8.79	8.55	-.24
1963	18,426	22,281	7.71	8.54	+.83	9.89	8.50	-1.39	8.69	8.52	-.17
1964	18,615	25,822	7.63	8.61	+.98	10.09	8.61	-1.48	8.71	8.61	-.10
1965	19,370	32,723	7.63	8.61	+.98	10.09	8.61	-1.48	8.71	8.61	-.10
			Valuation of Expenditures and Contributions Expressed as Percent of Taxable Payroll for 75 Years under Level Assumptions								
1965	19,370	32,723	7.40	8.60	+1.20	9.82	8.60	-1.22	8.46	8.60	+.14
1966	18,787	30,765	7.74	8.72	+.98	10.23	8.72	-1.51	8.82	8.72	-.10
1967	24,005	51,456	7.42	8.79	+1.37	8.52	8.82	+.30	7.91	8.80	+.89
1968	25,639	52,014	8.26	8.77	+.51	9.40	8.79	-.61	8.77	8.78	+.01
1969	30,497	70,000	7.85	8.89	+1.04	8.92	8.92	0	8.34	8.90	+.56
1970	32,093	66,086	8.39	8.77	+.38	9.43	8.79	-.64	8.86	8.78	-.08
1971	34,582	78,170	8.64	9.07	+.43	9.72	9.09	-.63	9.13	9.07	-.06

a/ End of fiscal year figures.

TABLE 1C

Summary of Selected Projections from the Annual Report of the Board of Trustees for the Old-Age and Survivors Insurance Program, 1972–80

Trustees Report	Projected (1-5 Yrs.) Trust Fund Balances At End of Calendar Year (in millions) 1st Year	5th Year	Long-Range Cost Estimates: Expenditures High Cost	Expenditures Intermediate Cost	Expenditures Low Cost	Contributions	Balances High Cost	Balances Intermediate Cost	Balances Low Cost
			Valuation of Expenditures and Contributions As Percent of Payroll for 75 Years under Dynamic Assumptions (Average Current Cost) a/						
1972	$37,632	$86,685	b/	8.05%	b/	9.17%	b/	+1.12%	b/
1973	36,598	49,756	b/	9.41	b/	9.32	b/	-.09	b/
1974	36,546	37,266	b/	11.97	b/	9.39	b/	-2.58	b/
1975	35,614	18,173	b/	13.29	b/	9.41	b/	-3.88	b/
			Valuation of Expenditures and Contributions As Percent of Payroll for 75 Years under Dynamic Assumptions (Average Expenditures)						
1976	34,276	22,825	b/	15.42	b/	9.43%	b/	-5.99	b/
1977	32,237	12,657	b/	15.51	b/	9.45	b/	-6.06	b/
1978	26,826	36,221	12.96%	11.29	10.43%	10.03	-2.93%	-1.26	-.40%
1979	24,945	28,159	14.65	11.47	9.65	10.05	-4.59	-1.41	+.41
1980	18,892	-34,376	16.56	12.24	10.11	10.08	-6.48	-2.16	-.03

a/ Average current cost includes annual expenditure amounts necessary to build the trust fund to about one year's expenditure.
b/ Figure not shown in report.

TABLE 2A

Summary of Selected Projections from the Annual Report of the Board of Trustees for the Disability Insurance Program, 1957–71

Trustees Report	Projected (1-5 Yrs.) Trust Fund Balances At End of: (in millions) 1st Year	5th Year	Long-Range Cost Estimates: Low Cost Estimate Expenditures	Contributions	Balance	High Cost Estimate Expenditures	Contributions	Balance	Intermediate Cost Estimate Expenditures	Contributions	Balance
			Valuation of Expenditures and Contributions Expressed As Percent of Taxable Payroll to Perpetuity under Level Assumptions								
1957	$ 322 a/	$2,425 a/	.29%	.49%	+.20%	.58%	.49%	-.09%	.42%	.49%	+.07%
1958	1,062 a/	3,545 a/	.24	.50	+.26	.49	.50	+.01	.35	.50	+.15
1959	1,905	3,998	.33	.50	+.17	.67	.50	-.17	.49	.50	+.01
1960	2,303	4,219	.26	.50	+.24	.46	.50	+.04	.35	.50	+.15
1961	2,494	2,714	.42	.50	+.08	.73	.50	-.23	.56	.50	-.06
1962	2,466	2,490	.42	.50	+.08	.73	.50	-.23	.56	.50	-.06
1963	2,232	1,559	.57	.50	-.07	.72	.50	-.22	.64	.50	-.14
1964	2,038	885	.57	.50	-.07	.74	.50	-.24	.64	.50	-.14
1965	1,716	81	.57	.50	-.07	.74	.50	-.24	.64	.50	-.14
			Valuation of Expenditures and Contributions Expressed As Percent of Taxable Payroll for 75 Years under Level Assumptions								
1965	1,716	81	.57	.50	-.07	.73	.50	-.23	.63	.50	-.13
1966	1,617	2,413	.60	.70	+.10	.78	.70	-.08	.67	.70	+.03
1967	2,070	2,985	.76	.70	-.06	.96	.70	-.26	.85	.70	-.15
1968	2,907	7,271	.85	.95	+.10	1.06	.95	-.11	.95	.95	0
1969	4,161	9,356	.85	.95	+.10	1.12	.95	-.17	.98	.95	-.03
1970	5,547	12,867	.94	1.10	+.16	1.27	1.10	-.17	1.10	1.10	0
1971	6,844	14,945	.95	1.10	+.15	1.36	1.10	-.26	1.14	1.10	-.04

a/ End of fiscal year figures.

TABLE 2B

SUMMARY OF SELECTED PROJECTIONS FROM THE ANNUAL REPORT OF THE BOARD OF TRUSTEES FOR THE DISABILITY INSURANCE PROGRAM, 1972–80

Trustees Report	Projected (1-5 Yrs.) Trust Fund Balances At End of: (in millions) 1st Year	5th Year	Long-Range Cost Estimates: Expenditures High Cost	Expenditures Intermediate Cost	Expenditures Low Cost	Contributions	Balances High Cost	Balances Intermediate Cost	Balances Low Cost
			Valuation of Expenditures and Contributions As Percent of Payroll for 75 Years under Dynamic Assumptions (Average Current Cost) a/						
1972	$7,974	$14,868	b/	1.18%	b/	1.10%	b/	-.08%	b/
1973	7,748	8,541	b/	1.54	b/	1.31	b/	-.23	b/
1974	8,029	6,825	b/	1.92	b/	1.52	b/	-.40	b/
1975	7,295	421	b/	2.97	b/	1.53	b/	-1.44	b/
			Valuation of Expenditures and Contributions As Percent of Payroll for 75 Years under Dynamic Assumptions (Average Expenditures)						
1976	5,752	-5,048	b/	3.51	b/	1.54	b/	-1.97	b/
1977	3,259	-12,550	b/	3.68	b/	1.54	b/	-2.14	b/
1978	3,821	9,971	2.42	2.26	2.17%	2.12	-.30%	-.14	-.05%
1979	5,585	23,119	2.24	1.92	1.67	2.13	-.10	+.21	+.47
1980	7,880	35,474	1.83	1.50	1.22	2.13	+.31	+.64	+.92

a/ Average current cost includes annual expenditures and amounts necessary to build the trust fund to about one year's expenditure.
b/ Figure not shown in report.

TABLE 3

SUMMARY OF SELECTED PROJECTIONS FROM THE ANNUAL REPORT OF THE BOARD OF TRUSTEES FOR THE HOSPITAL INSURANCE PROGRAM, 1966–80

Trustees Report	Projected (1-3 Yrs.) Trust Fund Balances At End of Calendar Year (in millions) 1st Yr.	2nd Yr.	3rd Yr.	Long-Range Cost Estimates: Expenditures High Cost	Expenditures Intermediate Cost	Expenditures Low Cost	Contributions	Balances High Cost	Balances Intermediate Cost	Balances Low Cost
				Valuation of Expenditures and Contributions Expressed As Percent of Taxable Payroll for 25 Years under Dynamic Assumptions						
1966	$ 618	$1,123	$1,709	b/	1.23%	b/	1.23%	b/	0%	b/
1967	1,444 a/	2,447 a/	3,495 a/	b/	1.23	b/	1.23	b/	0	b/
1968	2,066	2,616	2,994	b/	1.38	b/	1.41	b/	+0.03	b/
1969	2,663	2,973	2,944	b/	1.79	b/	1.50	b/	-0.29	b/
1970	2,413	2,183	1,461	b/	2.04	b/	1.56	b/	-0.48	b/
1971	1,948	819	0	b/	2.20	b/	1.58	b/	-0.62	b/
				Valuation of Expenditures and Contributions As Percent of Payroll for 25 Years under Dynamic Assumptions (Average Current Cost) c/						
1972	2,670 a/	2,379 a/	1,816 a/	b/	2.21%	b/	1.60%	b/	-0.61%	b/
1973	6,302	9,580	12,408	b/	2.67	b/	2.63	b/	-0.04	b/
1974	9,210	11,683	14,100	b/	2.63	b/	2.65	b/	+0.02	b/
1975	10,646	11,006	11,868	b/	2.86	b/	2.70	b/	-0.16	b/
				Valuation of Expenditures and Contributions As Percent of Payroll for 25 Years under Dynamic Assumptions (Average Expenditures)						
1976	10,510	10,640	12,881	4.39%	3.39%	2.59%	2.75%	-1.64%	-0.64%	+.16%
1977	10,502	12,365	13,592	5.00	3.96	3.03	2.80	-2.20	-1.16	-0.23
1978	11,113	12,283	12,547	4.71	3.86	3.13	2.74	-1.97	-1.12	-.39
1979	13,171	14,642	21,262	4.88	3.82	3.11	2.78	-2.10	-1.04	-.33
1980	14,833	21,464	28,973	5.03	3.80	2.99	2.81	-2.22	-0.99	-.18

a/ End of fiscal year data.
b/ Figure not shown in report.
c/ Average current cost includes annual expenditure amounts necessary to build the trust fund to about one year's expenditure.

present, no long-range projections are made for SMI (see Appendix). Some have argued that longer projection periods for HI and SMI are appropriate on the grounds that they represent benefits promised and payable to covered persons in their old age and when they are disabled. Also, the demographic shift which will greatly increase the annual expenditures for OASDI after the turn of the century will have similar effects on HI and SMI. It seems reasonable that seventy-five-year projections for HI and SMI should be made and well publicized to engender broader public understanding of the ultimate cost of these benefits. At the same time, because of the higher degree of uncertainty in projecting hospital and medical expenses and because of the different nature of the financing of the SMI program, the present projection periods are appropriate as the basis for statements concerning the actuarial status of the financing of these programs.

Definition of Close Actuarial Balance

The OASDI portion of the program is presently described as being in close actuarial balance when the combined employer-employee payroll tax rates over seventy-five years are, on average, within 5 percent of the average expenditures over the same period of time (which currently means approximately 0.7 percent of taxable payroll).

Table 4 shows what the expenditures of OASDI under pessimistic, intermediate, and optimistic assumptions were estimated to be in the 1980 trustees' report. In view of the wide range of the cost estimates, it is suggested by the author that 5 percent is too demanding a criterion. Five percent for the first twenty-five years, 7½ percent for the first fifty years, and 10 percent for the first seventy-five years are more reasonable criteria to reflect the increasing uncertainty as the projection period stretches out.

TABLE 4

EXPENDITURES AS A PERCENTAGE OF TAXABLE PAYROLL

	Optimistic	Intermediate	Pessimistic
	OASDI		
25-year averages:			
1980–2004	9.91%	10.66%	11.73%
2005–29	11.48	13.57	16.84
2030–54	12.59	16.98	26.60
75-year average:			
1980–2054	11.33	13.74	18.39
	HI		
25-year average:			
1980–2004	2.99	3.80	5.03

In view of the greater degree of uncertainty in the HI long-range projections, a less demanding criterion for the twenty-five-year period, perhaps 10 percent, would be appropriate.

Trust Fund Ratios

After the enactment of the 1977 amendments, which made some badly needed changes in the benefit structure of the program and, accordingly, in the financing, many public statements were made to the effect that the social security program was now financially sound for the next fifty years. These statements were made in spite of the fact that the 1978 trustees' report showed that the trust fund ratio for the combined OASI and DI trust funds was 37 percent at the beginning of 1978 and was projected to decline to 21 percent at the beginning of 1981, after which the ratio would show a relatively rapid increase.

When adopting the 1977 amendments, Congress, for political or economic reasons, chose to defer the needed increases in the payroll taxes until after the 1980 elections. Clearly, the trust fund ratios were already at a dangerously low level. It was imprudent to characterize the program as actuarially sound. When the trust fund ratios are substantially below recommended levels such as 75 percent, the program should be considered adequately funded only if projections indicate on the basis of the intermediate assumptions that no further significant decline is anticipated and only if recovery to the minimum satisfactory figure (of perhaps 75 percent) is achieved within ten to fifteen years.

Another important question concerns the choice of pessimistic and optimistic assumptions, particularly the short-range economic assumptions. Traditionally, the intermediate economic assumptions used for the first several years of the projections have been consistent with those being used at the same time for federal government budgeting purposes. They are then extrapolated to provide for a smooth grading into the ultimate long-range assumptions. The optimistic and pessimistic assumptions are chosen to allow for appropriate deviations from the intermediate assumptions on a smooth year-by-year basis, rather than reflecting abrupt swings in the economy.

Recently some attempt has been made to reflect economic cycles in the projections. The results are still "expected value" projections. Whether they result in higher or lower trust fund ratios than the trend projections is determined by the point of the initial economic cycle at which the projection period is assumed to begin. If one assumes that the beginning of the downside of the economic cycle is coincident with the beginning of the projection period, trust fund ratios will, of necessity, be equal to or less

than the trust fund ratios resulting from smoothly graded trend assumptions with the same average values of the economic assumptions over the period of the projection.

Another suggested modification is to replace or supplement the short-range optimistic and pessimistic "expected value" projections with projections based on a stochastic model. Such a model would give a probability distribution of trust fund ratios based on assumed probability distributions of the key economic assumptions. While such an approach is theoretically appealing, substantial difficulty can be anticipated in determining the probability distributions for the economic assumptions. Clearly, substantial research would have to be done if any worthwhile results were to be obtained from such an approach.

In periods when the trust fund ratios are dangerously low, the description of the pessimistic projections states that they do not represent the worst conceivable case, but only a possible (if less likely) scenario more pessimistic than the intermediate projections. The traditional projections should also be supplemented with an analysis of the least favorable experience that would permit the continuation of the timely payment of benefits.

Measures of Actuarial Status under Alternative Financing Arrangements

Several changes in traditional payroll tax financing arrangements for OASDI-HI would require reconsideration of appropriate measures of actuarial status.

One suggestion is that the trustees should be given authority to borrow from the general fund of the Treasury to meet temporary financing problems. Clearly, the existence of such authority should not alter the definition of close actuarial balance, since such loans would have to be repaid. The minimum acceptable trust fund ratio, however, would be significantly changed—it would depend in part on the terms of the borrowing authority, such as when that authority would cease to exist.

Another recurring suggestion, described earlier, is that some portion of the program be financed from the general fund of the Treasury. Again, the specific details of such a provision would dictate what changes should be made in the measures of actuarial status. If such general revenue financing were set equal by law to one-half of the combined employer-employee and self-employed contributions, regardless of resulting surpluses or deficits, then the definition of close actuarial balance would not necessarily have to be changed. On the other hand, if the general revenue financing were open-ended without prescribed limits, then changes clearly would be in order, although a replacement for the traditional measures is difficult to define.

One reasonable assumption, however, is that costs projected as a percentage of taxable payroll would be less important, and costs projected as a percentage of gross national product or projected government general revenues would be more relevant.

What are appropriate measures of actuarial status for the social security program? They are likely to evolve in the future as they have in the past. This evolution will be partly in response to the changing financing provisions for the program and partly a reflection of the fact that the choice of such standards involves a considerable degree of judgment. One should also recognize that, even if there is a general consensus as to those measures and their critical values, there may be valid reasons, relating to the state of the economy or other concerns, why Congress may legislate financing provisions that may, for periods of time, fail to meet the generally accepted criteria. However, it is misleading to describe the program as actuarially sound for political purposes when students of the system generally would agree that it is not. The purpose of this section has been to state one view about what these measures should be in the future, in the belief that wider discussion of this subject is in the public interest.

APPENDIX[4]

ACTUARIAL SOUNDNESS OF THE SUPPLEMENTARY MEDICAL INSURANCE PROGRAM

The concept of actuarial soundness, as it applied to the supplementary medical insurance program, is closely related to the concept as it applies to private group insurance. The supplementary medical insurance program is essentially yearly renewable term insurance intended to be self-supporting from premium income paid by the enrollees and from income contributed from general revenue in proportion to premium payments. The law requires the secretary of health and human services to establish income on the basis of incurred costs. That is, the income to the program during a twelve-month period for which financing is being established must be sufficient to pay for services (including associated administrative costs) expected to be rendered during that period, even though payments for some of these services will not be made until after the close of the period. The portion of income required to cover those benefits not paid until after the close of the year is added to the trust fund until needed. Thus, the amount of assets in the trust fund at any time should be no less than the costs of the benefits and administration incurred but not yet paid. Since the income per enrollee (premium

[4] See [15], p. 11.

plus government contribution rate) is established prospectively, it is subject to projection error. As a result, the income to the program may not be equal to incurred cost; therefore, trust fund assets should be maintained at a level that is adequate to cover the impact of a moderate degree of projection error as well as the value of incurred but unpaid expenses.

In testing the actuarial soundness of the supplementary medical insurance program, it is not appropriate to look beyond the period for which the enrollee premium rate and the level of general revenue financing have been established. The primary tests of actuarial soundness, then, are (1) that income for years for which financing has been established be sufficient to meet the projected benefits and associated administrative expenses incurred for that period, (2) that assets be sufficient to cover projected liabilities that will have been incurred by the end of that time but will not have been paid yet, and (3) that assets be sufficient to protect against the possibility that cost increases under the program will be somewhat higher than assumed in the projection. Even if these tests of actuarial soundness are not met, the program can continue to operate if the trust fund remains at a level adequate to permit the payment of claims as presented.

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DISCUSSION OF PRECEDING PAPER

JAMES L. COWEN:

Mr. Bartlett's paper is a welcome addition to the actuarial literature concerning what constitutes actuarial soundness for the social security programs. It brings together in one place descriptions of how these definitions have changed over the years as the relationship between tax income and benefit payments has changed. There is no doubt that political considerations affect what the population, the Congress, and the administration think are important financial considerations.

Most of the past changes have stemmed from recommendations of the various advisory councils, and it must be remembered that these councils are made up of representatives of management, labor, and the general public appointed by the secretary of health and human resources (formerly the secretary of health, education, and welfare). Usually there has been one actuary on the council, and frequently the council has relied somewhat on a panel of actuaries and economists. However, the council (since its members represent various elements of the public) has been influenced by the current public perception of social security and has centered its deliberations on those areas concerning the public at the time.

Some of the advisory councils' pronouncements, such as the 1979 council's statement on the "money's worth" issue quoted in the paper, have created misunderstandings on the part of the public. Social security should not be looked at as an investment, where you receive back in benefits what you pay in. Social security is like casualty insurance, where you collect only if the event insured against occurs—in this case, loss of earned income. It is extremely important that we not look at social security as a retirement income policy, which is a combination of savings and insurance where the retirement benefit comes from the savings portion.

Until the 1950 amendments, many sectors of the population were not covered by social security. Only people who worked for wages were covered. Excluded were those sectors of the population most capable of taking care of themselves, that is, the self-employed, professional people, and farmers. Domestic help was also excluded, but I feel that this resulted from administrative problems rather than a belief that these people did not have a need for the coverage.

It must be remembered that in the original 1935 Social Security Act benefits were based much more closely on employee contributions (actually cumulative creditable earnings beginning with 1937) than they are now, and no survivor or dependent benefits were provided. No benefit credits were given for employment before 1937, but there was a money-back guarantee. Thus, the concept of actuarial reserve financing was more appropriate. No benefits were ever paid under this 1935 act.

The 1939 amendments completely changed the concept of the program. It was recognized that the 1935 act would not provide adequate benefits for people retiring in the early years of the program and that there were other areas where income was needed. Thus, survivor and dependent benefits were introduced, and benefit amounts were changed from amounts based on cumulative earnings (employee contributions) to amounts based on average earnings. The change to average earnings effectively introduced service credits for an entire working career. A change in financing philosophy followed as a matter of course.

It was recognized that if the fund grew too large, the social security system would become a political football, with the public asking for larger benefits. Thus, the idea of large actuarial reserves had to be abandoned, and contribution rates increasing over the years (which were also in the original 1935 act) were needed. Growth of the funds was a natural phenomenon because the program was in its infancy and people who retired before 1940 never received any benefits. (The 1965 amendments brought these people in, but by then most had died.) This is something that the general public does not understand, as can be seen when the news media compare current benefit outlays as a percentage of payroll, and the ratios of beneficiaries to workers, with corresponding figures from the 1940s.

Over the years, the needs concept for benefits has continued to prevail but has been expanded to include disability insurance benefits and medicare. However, the maturation of the system has required a change in the public's view as to the financing of the system.

In the early years, the concern was that the fund should not grow too large. Today the concern is whether the fund will have sufficient amounts to pay benefits. This a natural part of the maturing process. Since the social security program can be viewed as being permanent, the measure of actuarial soundness should be whether it will have the funds available to pay benefits as they fall due. A contingency reserve is necessary, no doubt, and I concur with the author of the paper that this should be at least three-fourths of a year's benefit payments. However, because of the demographic problems anticipated after the turn of the century, when the ratio of beneficiaries to active employees will be much larger than it is today, perhaps even a larger

contingency reserve should be built up, say, three years' benefits in the year 2015, dropping back to three-fourths of a year's benefits by 2050.

Mr. Bartlett feels that the definition of close actuarial balance now used (i.e., the expected tax income should be within 5 percent of expected benefit outlays) is too restrictive, and he proposes an alternative of 5 percent for the first twenty-five years, 7½ percent for the first fifty years, and 10 percent for the first seventy-five years. I would like to suggest a different view but one somewhat akin to Mr. Bartlett's. Since the OASDI projections are made for separate twenty-five-year periods, why not use the 5 percent criterion for the first twenty-five years, the 7½ percent criterion for the second twenty-five-year period, and the 10 percent criterion for the third twenty-five-year period. Mr. Bartlett's criteria imply 10 percent for the second twenty-five-year period and fifteen percent for the third twenty-five-year period.

Mr. Bartlett has suggested that the projection period for the HI and SMI trust funds be extended to seventy-five years instead of the current twenty-five years, and I strongly agree. However, I do not agree that the measure of actuarial soundness for the HI program continue to be the present twenty-five-year period. Using my criteria that actuarial soundness for social security means the ability to pay benefits as they fall due, the projections themselves will show whether this criterion is met, and there is no need to calculate what we know as level cost.

Mr. Bartlett states that "traditionally, the intermediate economic assumptions used for the first several years of the projections have been consistent with those being used at the same time for federal government budgeting purposes." For purposes of the federal budget, I agree that these assumptions must be used for the short-term projections, but I question whether they are appropriate in determining actuarial balance. Since the federal budget is an instrument of the administration, these short-range economic assumptions are influenced by political considerations. They are generally dictated by the Office of Management and Budget, which is part of the Executive Office of the President. I realize that it would be awkward to show two distinctly separate projections for the first five years, but I feel that something should indicate that the economic assumptions for those years may have been politically dictated. Perhaps a second five-year projection based on assumptions from the Congressional Budget Office (which is completely independent of the administration but still subject to political considerations because it is an arm of Congress) should also be made.

Actuaries are not economists and must rely on someone else for the short-range economic assumptions. Therefore, the question arises of to whom the actuary should turn for these. The two sources mentioned above are ob-

vious, but both would be subject to political motivation. I feel that the Congressional Budget Office may be somewhat more objective than the Office of Management and Budget because it is responsible to both Democratic and Republican congressmen and senators.

Mr. Bartlett's paper is meant to be factual, with some recommendations as to measures of actuarial soundness. However, some recognition must be given to the fact that social security is, and must be, dynamic and subject to change as the social and economic conditions of the nation change. The financing provisions must remain in harmony with the benefit provisions, and both must reflect the changing needs and concerns of the public.

Public support of the program is essential and can be obtained only by educating the people as to what social security is meant to be. At present, there are many different views of what social security is, and this scares me. Discussion and debate on this subject followed by a definitive statement should be put before the people. (Some actuaries are now getting involved in this.) I feel that social security's continued existence in some form is essential to the nation's well-being and that this is threatened by those people who support the "money's worth" concept.

The recognition of the future problems of the system caused by demographic factors is encouraging as long as it is used as a means of finding corrective measures. On the other hand, I am worried because these same considerations are being used by the people who push the money's worth concept as reasons to abolish the system, and these people are not putting forth any alternatives to the program except individual savings. These people view themselves as being typical and forget that most people who earn less than the social security maximum taxable wage find it difficult to save very much and that not everyone is covered by private pension plans. They also forget that before social security existed, the family was a much more cohesive unit than it is today and that then the elderly and disabled lived with, and were taken care of by, other members of the family unit.

Changing mores concerning marriage and divorce, and the current low birth rates, will, in the future, leave many individuals with no family to take care of them. Also, the increased mobility of the last thirty years has seriously eroded the cohesiveness of the family. Care for the elderly and disabled is also a much greater responsibility today than it was in the past, because of the increased longevity of the elderly and because of the effects of inflation. Thus, it would be almost impossible to return to where the responsibility for the elderly and disabled could be taken over by their relatives.

Another point that must be considered is that people need money for different purposes as different times in their lives. Young people save to

buy a home, middle-aged people to send their children to college, and only after age 50 do people start saving for their retirement. As actuaries, we know that costs for retirement benefits at ages 50 and over are very high. Also, young people are not in a position to tie their money up in IRAs with the risk of a substantial penalty if they should need to withdraw the money. We also must remember that we, as actuaries, are not typical of the general population.

In closing, I would like to reiterate that Mr. Bartlett's paper should help people understand the financing of social security. More of this is needed to help combat misconceptions as to what the program is and should be.

ROBERT J. MYERS:

Mr. Bartlett has presented a monumental paper that draws together very concisely the long and varying history of the measurement of the actuarial status of the social security program. I would like to add a few additional or clarifying points.

As to the financing basis of the original 1935 act, the language cited as to appropriations to the old-age reserve account being determined "on a reserve basis in accordance with accepted actuarial principles" based on mortality tables at 3 percent interest was purely "window dressing." As Mr. Bartlett states, the congressional intent was merely to appropriate the net tax receipts—and this was what was done in actual practice in 1937–40. The real reason for this fancy language was the question as to whether the program was constitutional. As a result, the benefits and taxes were separated by being placed into two different titles of the Social Security Act, and all connections between them were made very hazy, at best. For more information on this subject see page 291 of my book *Social Security* (2d ed., Homewood, Ill.: Richard D. Irwin, Inc., 1981).

Unfortunately, many people believe that this window-dressing language meant that the original program was intended to be on a full actuarial reserve basis, just as private pension plans should be, and that, accordingly, the benefit structure was completely on an individual equity basis, which was changed completely by the 1939 act. Of course, this was not at all the case. The 1939 act did not really affect the financing basis, but rather moved the philosophy of the program away from individual equity and more in the direction of current-cost financing, although still retaining the modified-reserve financing basis.

Mr. Bartlett correctly points out that, in the late 1950s and early 1960s, the measure of "close actuarial balance" for OASI was 0.25 percent of taxable payroll. It should be noted that, in addition, the corresponding figure for the DI program was 0.05 percent. Thus, the total "standard" for OASDI

was 0.30 percent of taxable payroll—and this was reduced to 0.10 percent of taxable payroll in 1965 when the valuation period was reduced from perpetuity to seventy-five years.

In describing the provision for rebuilding the fund ratio for the HI Trust Fund to 100 percent, beginning in 1972, it should have been pointed out that this was done by decision of the Executive Branch, and not by legislation. In noting the shift in computing the long-range cost measure from a "discounting at interest" basis as applied to future income and outgo, to a basis of averaging year-by-year income and outgo as percentages of taxable payroll, it might have been mentioned that the resulting figures under the two concepts were only slightly different, because of counterbalancing elements (for further discussion see p. 298 of my book *Social Security*).

Mr. Bartlett notes the 1979 Advisory Council proposal that HI should be financed entirely from general revenues. It might be mentioned that this was opposed by the three labor union representatives on the council, although they were in favor of partial funding of the entire OASDI-HI program (up to one-third of its total cost) in this manner, but not entirely (because they feared that full funding from general revenues would destroy the "insurance" or "benefits as a right" principle).

Mr. Bartlett points out quite correctly that, at the time of enactment of the 1977 act, it was stated that OASDI would be financially sound for the next fifty years. This was not really correct, because, according to the estimates made at that time, outgo would significantly exceed income in about forty years, and the trust funds would be completely exhausted in fifty years.

C. KEITH POWELL:

Mr. Bartlett's paper is an interesting and useful addition to actuarial literature on social security.

While the measures discussed are certainly of theoretical interest, it seems fair to ask whether they are of use to the people, who must allow either tax increases or benefit reductions. Mr. Bartlett says that "when trust fund ratios are substantially below recommended levels such as 75 percent, the program should be considered adequately funded only if projections indicate on the basis of the intermediate assumptions that no further significant decline is anticipated and only if recovery to the minimum satisfactory figure (of perhaps 75 percent) is achieved within ten or fifteen years." A major problem arises when these measures of actuarial status are applied in connection with the actuarial valuations of the social security program made periodically by the actuaries of the Department of Health and Human Services (HHS). During the past few years these valuations have given very

poor predictions of the financial positions of the components of the social security program even a few years into the future. (The OASDI predictions have been too optimistic, although the 1981 work was a step in the direction of conservatism. The medicare predictions have usually been too pessimistic.) Given this state of HHS valuation practice, the application of certain of Mr. Bartlett's concepts may require more accuracy in forecasting than HHS has delivered to date. Once the credibility of these valuations has been established, Mr. Bartlett's concepts may become a useful tool for policymakers.

In the appendix, Mr. Bartlett summarizes concisely the concept of actuarial soundness used for the supplementary medical insurance (SMI) program. He does not question, and in fact few have questioned, the reasonableness of this concept. With SMI the federal government is both the insurer and the principal source of money (over half of SMI income is federal general revenues). This situation is unlike the conventional private group insurance arrangement, where the absence of incurred but unpaid reserves leaves the insurer without recourse in the event of program termination. If the SMI program were terminated, the incurred but unpaid shortfall could be covered by a fraction of the federal government's annual general revenue payment to SMI. It is hard to understand why a large amount of scarce risk capital should be applied to SMI's fairly low risk position. In addition to constituting a questionable use of money, SMI's ultraconservative funding may do harm. Each year, this concept of actuarial soundness is used to "bill" the federal government for amounts greatly in excess of the difference between (1) expected cash needs, with a reasonable margin for error in the estimation of such needs, and (2) moneys available to SMI from other sources. I do not know of a good analysis of the macroeconomic effects (program expansion, inflation, and invisible funding of federal programs that cannot justify direct financing) of such extra moneys (assuming these extra moneys are real). While there may be some advantages in maintaining incurred but unpaid reserves (equity, for example), it is not clear that these advantages outweigh the disadvantages.

Regarding the problems in choosing a projection period for medicare estimates, one can certainly sympathize with the medicare actuaries for not wanting to imply more precision than can be delivered in trying to estimate costs decades into the future. Unfortunately, there is a great need for such estimates. Table 4 of Mr. Bartlett's paper shows that OASDI expenses as a percentage of taxable payroll may approach 17 percent for extended periods of time. This conclusion is reached under the "intermediate" scenario, which has been overly optimistic for short-term results over the recent past. Tax levels needed to support OASDI alone may be impossible to implement

in the face of tax revolts, large shifts to the black-market economy, and the effects of such taxes on cost-push inflation and, hence, on productivity. Basic issues about the affordability of the social security program cannot be analyzed while components that already account for over 20 percent of program disbursements are ignored.

Mr. Bartlett is to be congratulated on his excellent paper. It is to be hoped that he and others will continue work on this subject.

GREGORY J. SAVORD:

I commend the author on his presentation of the history of social security measures of actuarial status. This paper should prove to be a useful reference on a subject of interest to the actuarial profession.

In his discussion of the social security amendments of 1965, the author makes the erroneous statement that "the cost of providing the hospital insurance part of medicare for persons who attained age 65 prior to 1968 was to be funded from general revenue." Students of social security know that, even though general revenues finance the hospital insurance (HI) benefits of some of the beneficiaries who attained age 65 before 1968, the HI benefits for most beneficiaries who attained age 65 before 1968 are financed almost exclusively by payroll taxes. The general revenue provision applies only to beneficiaries uninsured for social security retirement benefits.

The importance of the concept of close actuarial balance requires further discussion. First, if the cash reserves of social security become inadequate at any time, the concept of "close actuarial balance" is purely academic, a topic for statistical discussion. For example, under the current financing schedule, social security will be unable to pay benefits during this decade. Even if the seventy-five-year estimates show a surplus, the concept of close actuarial balance is misleading.

Second, the appropriate level of the trust funds has been a continuing issue of discussion through the years. The recommended level of the trust funds was weakened for political reasons in the 1981 trustees' reports to 50 percent of outlays, down from the 100 percent ratio recommended by the 1971 Advisory Council. A lower fund level should require a more stringent definition of close actuarial balance, but this was not addressed by the author.

Third, the concept of close actuarial balance should be analyzed from a statistical viewpoint. It would be unreasonable to suggest that if the financing falls slightly above the minimum of the actuarial balance range, the system is actuarially sound but if the financing falls slightly below the minimum, the system is actuarially unsound.

Fourth, widening the tolerance for close actuarial balance may actually be a way to mislead the public. If the financing fits within the widened tolerance, the public will simply be told that there is no problem.

Fifth, the concept of close actuarial balance is meaningless if the economic assumptions underlying the estimates are unreasonable. Experience has shown that the economic assumptions used in the trustees' reports for the past several years have been consistently overly optimistic when compared with developing experience. For a discussion of the issue of short-range economic assumptions, refer to the paper by Messrs. King and Powell, "A Critical Analysis of the Assumptions in the 1980 Social Security Trustees' Reports," in this volume of the *Transactions*.

The issue of long-range economic assumptions for social security purposes has not been adequately discussed by the actuarial profession, but it is likely that these assumptions are also overly optimistic.

The following suggestions will help rectify the problems associated with the assumptions. The short-range economic assumptions need to be developed independently of the administration's economic assumptions. An independent committee of actuaries should study the development of long-range economic assumptions and make recommendations. If the trustees change the recommended assumptions, the burden of responsibility for the inappropriate assumptions can be rightfully placed upon the trustees.

In conclusion, the concept of close actuarial balance is not as important as other tests of the adequacy of financing, such as the strength of the assumptions underlying the projections. If the financial status of the social security system is determined on the basis of reasonable assumptions, the sensitivity of the financial status to deviations from the assumptions can be determined with respect to the alternative (optimistic and pessimistic) sets of projections. This is more useful than referring to an arbitrarily defined measure such as "close actuarial balance."

Again, I commend the author on the presentation of this informative paper.

WALTER SHUR:

The purpose of my discussion is simply to clarify two statements made in the paper concerning the panel of actuaries and economists (of which I served as chairman) appointed by the 1979 Advisory Council. The statements are as follows:

> The 1979 Advisory Council and its consultative panel of actuaries and economists made comments and recommendations that tend to downplay the importance of the

long-range projections and the concept of "close actuarial balance." The panel stated that setting tax rates for seventy-five years on the basis of the projections was unnecessary, although both it and the council recommended continuance of the practice of making seventy-five-year projections.

While one could certainly argue that the effect of not requiring the setting of tax rates to put the system in balance for seventy-five years tends to downplay the importance of long-range projections, the panel could not have been stronger in its position on the need for long-range projections. In fact, the panel considered the matter so important that it wrote a special preamble to its report, covering the subject of long-range projections. It is not very long, so I simply repeat it here and let it speak for itself:

REPORT OF THE PANEL OF CONSULTANTS

PREAMBLE

One question posed to us by the present advisory council on social security is so important that it merits discussion before we present our findings. The question concerns the validity and desirability of making long-range projections. We assume that the council's interest in this regard is primarily in the third 25-year period of the projection, that is, 50 to 75 years from the time of projection.

The long-range financial condition of the old-age, survivors', and disability insurance (OASDI) system will depend on future economic developments, such as the rate of real wage growth; on future social developments, such as the fertility rate; and on future actuarial developments, such as the rate of mortality improvement. Obviously, we can have very little confidence in any projection of such factors more than 50 years into the future. This lack of reliability is recognized in the long-range projections by choosing a range of assumptions for the most important factors. It is hoped that the range, at least, might bracket the truth. With so much uncertainty, then, why should we even bother to make such long-range projections?

We believe there are several important reasons which fully justify the use of projections that go 75 years into the future.

The OASDI system is, by its very nature, a long-range system. Many of those going on the retired rolls this year will still be receiving benefits more than 25 years from now. Young people entering the work force this year will have only recently begun to receive retirement benefits 50 years from now. Roughly half of those born this year will be alive and receiving retirement benefits 75 years from now—when they will have just about reached their expectation of life. In a system with such long-term commitments, we are obligated to take a long-term look into the future, even if the view is somewhat hazy.

Because we want to honor our commitments, long lead-times are required before making fundamental changes in the OASDI system. For example, the 1975 Advisory Council on Social Security recommended that serious consideration be given to gradually increasing the retirement age, starting in the 2005 and continuing until the

retirement age reached 68 in the year 2023. Thus, the change would not become fully effective until almost 50 years after the recommendation.

Major changes, such as the increase in retirement age just described, in a system as important socially and economically as OASDI, deserve a long period of full public discussion before being made. This, of course, further lengthens the lead time necessary to accomplish such changes.

Long-range projections help us to avoid making changes in the system that seem appropriate in the short run, but which run counter to long-range needs.

Finally, we believe that the long-range projections have contributed greatly to better public understanding of the OASDI system. Two particular examples we believe are directly attributable to the long-range projections are the extensive public discussions of the effects of the baby boom after World War II and the financial importance of increasing the retirement age.

While we believe that projections for the full 75-year period should continue to be calculated and displayed, it is not necessary to take immediate legislative action to raise present or future tax rates whenever a deficit appears. Rather, the deficit estimate simply serves as a warning calling attention to future problems. The purpose served is to identify the problems, their causes, and to stimulate public discussion of possible future corrective actions.

This panel is unanimous and strong in its recommendation that 75-year projections continue to be made.

THOMAS P. TIERNEY:

When President Carter signed the 1977 social security amendments into law, he was widely quoted as saying that the system "is now secure for the next 50 years." Less than two and a half years later, however, Mr. Carter's secretaries of labor and the Treasury were reporting to Congress that social security was heading for bankruptcy and would probably be out of money in 1982 or at best in 1983. Not only was this turn of events ironic, it was also interesting, since it involved an issue very close to the people's pocketbooks, and since it seemed to symbolize the long and continuing downhill slide of the Carter administration. Beyond this, however, I, as an actuary, had another interest; I wanted to know what went wrong. Mr. Bartlett briefly discusses the problems with the 1977 Social Security Administration (SSA) cost estimates, but they could use more elaboration. After all, with the exception of the 1972 double indexing, this was probably the most significant actuarial error in the history of the system.

The answer to what went wrong seems to be one or more of the following: the actuaries goofed; what has happened over the last five years could never have been foreseen; there was political interference. The first possibility is one that has been popularized by several economists. For instance, Walter Heller (the chairman of the Council of Economic Advisors under Presidents

Kennedy and Johnson) wrote in the July 24, 1981, *Wall Street Journal* that the Old-Age and Survivors Insurance (OASI) Trust Fund was almost depleted because its funding was determined by "actuarial projections"—the implication being that the actuarial assumptions underlying the 1977 amendments were not related to what might reasonably be expected to happen. This criticism would not seem to apply to the SSA short-term intermediate assumptions (since these are consistent with those being used by federal budget economists), but it is evidently right on target with respect to the SSA pessimistic assumptions. Mr. Bartlett's statement that the "pessimistic assumptions are chosen to allow for . . . smooth year-by-year [deviations from the intermediate] . . . rather than reflecting abrupt swings" is disturbing; it means that the pessimistic projections are practically worthless and, more important, that they are misleading, since most observers generally view them as indicating a fairly safe lower limit on the direction the system's financing may be taking. Mr. Bartlett goes on to say that at certain times the pessimistic projections "should also be supplemented with an analysis of the least favorable experience" would it not be better to substitute this "least favorable" scenario for the pessimistic one now being used? We might all be better informed and, at the very least, we would have a projection that would be what most people already believe it to be.

Besides examining the 1977 SSA short-term assumptions, we should also examine the long-term estimates. These, of course, have only a minimal effect on current financing, but their selection does give an indication of the quality of the entire forecasting process. Two situations immediately come to mind:

1. The 1977 optimistic, intermediate, and pessimistic inflation assumptions all ultimately grade into continuing, steady inflation levels of 3, 4, and 5 percent, respectively. Shouldn't they all, or at least the first two, eventually taper off to zero?
2. Has there been some careless extrapolation? The 1977 intermediate assumptions assume, for instance, that for the year 2000, the Consumer Price Index will be 286 percent of its 1976 level, while the corresponding average inpatient hospital cost will jump by 1,491 percent. What apparently has happened is that some present-day hospital cost increase aberrations were assumed to continue for a quarter of a century—a process that defies economic (and actuarial) reality. The 1977 SSA intermediate medicare cost estimates for the twenty-first century level off between 7½ and 8 percent of taxable payroll—this, of course, is absurd.

Perhaps the economists are right. If you think about it, actuaries and economists are really in the same profession—predicting the future. We both build mathematical representations of the future, then prime these models with occurrence probabilities (we are, in a sense, the modern professional progeny of the ancient augurs and prophets), and, when we are

studying the same phenomena, we can probably learn from each other. As actuaries, we could probably teach our economist kin something about conviction (one should not make definitive pronouncements about the inherently uncertain) and mathematics (we are much better model builders); but, on the other hand, they probably could teach us something about choosing forecast assumptions.

The second possible reason why the 1977 amendments blew up gives me cause to wonder. Did any actuary or economist express an opinion that the OASI pessimistic outlook was not being properly studied? How about immediately after the fact? In June, 1978, shortly after the 1977 SSA studies were published, I notified the SSA chief actuary responsible for this work that the hospital cost assumption seemed to be off (they never responded). Did anybody question the OASI assumptions? If no one did, then maybe what has happened over the last five years (about a 15 percent drop in real wages) was truly unforeseeable. Also, I would like to know more about what the professionals were saying in 1977 before I accept Mr. Bartlett's explanation that Congress is to blame.

The third possible reason is most intriguing. Did some political force contaminate the SSA costing process with bad assumptions? I do not know, but, if it did happen, I hope that Mr. Bartlett will so inform the profession. There have been several strong inferences in actuarial literature that there was some manipulation, and, if only to clear the air of all the innuendo now present, the whole truth on this matter should be told.

It seems clear that the reason the system is now in trouble is that the 1977 SSA cost studies were somewhat lacking. It probably would not serve any useful purpose to engage in a lot of public blame-laying, but, within the confines of the actuarial profession (perhaps by an author's review of this discussion), it would be helpful to receive an authoritative and exacting explanation of what went wrong in 1977.

(AUTHOR'S REVIEW OF DISCUSSION)
DWIGHT K. BARTLETT III

I would like to thank Messrs. Cowen, Myers, Powell, Savord, Shur, and Tierney for taking the time to discuss my paper and thereby adding substantially to its value.

Mr. Cowen observes that the greater emphasis on individual equity in the benefit formulas in the 1935 Social Security Act made the concept of actuarial reserve financing of the program more appropriate than was the case later on when the benefit formulas were changed to stress social adequacy. Mr. Myers observes, however, that, even under the original 1935 act, it was never intended that the program be financed on a full actuarial reserve basis.

Mr. Cowen states that with respect to the HI program there is no need to calculate what we know as "level costs." This seems inconsistent with his acceptance of the concept of "close actuarial balance" for OASDI, which is based on the comparison of average cost with average tax rates for a period of years. He states, as does Mr. Savord, his view that the fundamental criterion for actuarial soundess for social security is the ability, as projected, to pay benefits as they fall due. While I accept his criterion for short-range projections, I do not believe it is equally valid for long-range projections. Such a criterion tends to stress projected results year by year. The uncertainty of the assumptions' being realized year by year in the long range makes the year-by-year figures of less value in evaluating the long-range actuarial status of the program.

Mr. Cowen comments on the inappropriateness of the use of short-range economic assumptions dictated by the Office of Management and Budget, noting that these assumptions are influenced by political considerations. Since these assumptions are usually based on the notion that the current administration's economic programs are going to be efficacious, when in fact they frequently turn out not to be, they have a built-in bias toward optimism. In wholeheartedly agree with Mr. Cowen's notion that the assumptions should be determined in a way that leaves them as free from political bias as possible. For this reason, I endorse the recommendation of the American Academy of Actuaries and the National Commission on Social Security that the trustees' reports for the social security program should contain an opinion letter from the actuaries responsible for the actuarial projections in the reports. I believe that such a requirement would give the actuaries a little more independence in commenting on the appropriateness of the valuation assumptions. Whether it will ever be possible to put the actuaries in a position to set the assumptions with total independence is problematical, but I believe we should be working in that direction. Mr. Savord's suggestion of an independent board of actuaries that would recommend assumptions merits consideration.

I also subscribe completely to Mr. Cowen's statement that excessive concern with the "money's worth" concept will, in the long run, work to the detriment of the program. Such a concern flies in the face of the social insurance nature of the program. Such a program properly assigns primacy to adequacy of benefits as opposed to individual equity. Nevertheless, it remains true at present that for most covered workers the actuarial value of their expected benefits exceeds the actuarial value of their scheduled payroll taxes. This is not as true, of course, if one includes in the taxes the employer's share as if that share were also paid by the covered worker. The weight of opinion among economists is that such an attribution of employer

taxes to employees on a dollar-for-dollar matching basis is an oversimplification concerning who in the long run actually pays for the employer's share. My own view is that the employer's share is a burden on our total economy, capital and labor, and cannot be attributed to covered workers on a dollar-for-dollar matching basis.

If the paper is "monumental," to use Mr. Myers's too generous description, it is because it stands as a monument to Mr. Myers, himself, who, virtually single-handedly, created a good deal of the history recited by the paper. Our American society, and the actuarial profession, are deeply indebted to Mr. Myers, not only because of his past central role in efforts to maintain the financial integrity of the program, but for his continuing efforts nearly half a century after his involvement began.

Both Mr. Powell and Mr. Tierney raise serious questions about the quality of the actuarial work done in connection with the 1977 amendments, which constituted the last major effort to restore the social security program to an actuarially sound basis. Mr. Savord also touches on this subject. The actuarial projections made at that time were based on short-range economic assumptions, which, in hindsight, have turned out to be excessively optimistic. It was assumed at that time that average covered wages per worker would continue their historical pattern of increasing more rapidly than the Consumer Price Index. That is a critical assumption for the short-range projections, since in the short range the former is the primary determinant of revenue increases while the latter is the primary determinant of benefit increases. In fact, since 1977, wages have been lagging behind prices. However, it is also true that the pessimistic projections made in the 1978 trustees' report, for example, showed that the Old-Age and Survivors Insurance Trust Fund ratios would continue to decline until the mid-1980s, bottoming out at less than 20 percent. That projection provided substantial warning that there was a significant likelihood of further short-range financing difficulties. As part of the 1977 amendments, Congress adopted a phasing-in of the scheduled payroll tax increases, with the ultimate rate being reached only in 1990. Congress was undoubtedly motivated by the political and economic desirability of postponing needed tax increases without regard to the insufficient safety margins implicit in their decisions. I agree, in general, as I have stated earlier in this review, that the projections might be more credible (and more reliable) if the actuaries responsible for preparing the projections had the independence to set the assumptions as they saw fit. At the same time I do not believe that it is proper to state that the projections were misleading at the time. Rather, the politicians preferred to gamble on the hope that everything would be all right in spite of the warnings implicit in the pessimistic projections.

Clearly the present administration was motivated by its desire to avoid a repetition of the short-range financing problems that grew out of the 1977 amendments when, early in 1981, it prepared its recommendations about short-range financing based on what it characterized as "worst case" assumptions. This was a departure from the tradition of basing financing decisions on the intermediate assumptions. That tradition was unchallenged at a time when there was no question about the short-range solvency of the trust funds, but that is no longer the situation. My own preference would be to continue to use the intermediate assumptions, but to set short-range trust fund targets that would provide a high degree of assurance that short-range financing would be adequate. I did some analysis of the assumed and actual experience of the program in the 1970s with respect to the short-range economic assumptions. The results were included in a publication by Bartlett and Applebaum entitled *Economic Forecasting: Effects of Errors on OASDI Fund Ratios.* (Actuarial Note No. 109, Social Security Administration, September, 1981). The results of that study may be useful in setting short-range target trust fund ratios that would ensure continued integrity of the trust funds, even in periods when actual experience is worse than the intermediate assumptions.

One reason for my preference is that it would avoid the administration's political difficulty of using one set of assumptions for general federal budget purposes and another set of assumptions for social security financing purposes. The debate that has taken place since the administration put forth its proposals based on the worst-case assumptions shows how the existence of the two sets of assumptions can be exploited by those who are politically motivated.

Mr. Savord questions the arbitrariness of the present and proposed definitions of "close actuarial balance." From a technical point of view there obviously is no single right answer. Actuaries would understand that falling on one side of the line or the other is not decisive. In my opinion, the concept still serves a useful purpose in providing a degree of discipline to the policymakers for social security financing. Therefore, the search for a consensus on a definition is a worthwhile exercise.

I would like to add that several verbal comments I have received about my suggestions for changes in the definition of long-range close actuarial balance indicate some misunderstanding of the point. I suggested a widening of the acceptable range of the difference between the average payroll tax rates and the average expenditures. This has to do with setting limits for when corrective action should be initiated. It would not, however, be appropriate, when taking corrective action, to narrow the difference to the outside limit of the range. Rather, appropriate corrective action should re-

duce the difference virtually to zero. To do otherwise would increase the danger that the extent of the corrective action, when taken, will prove to be inadequate.

It is comforting to have Mr. Shur's assurance that the panel of actuaries and economists appointed by the 1979 Advisory Council, which panel he chaired, attached the greatest possible importance to the long-range projections. Nevertheless, in my opinion, the practical effect of the statements made by the panel and by the council in their reports was, for better or worse, to weaken their importance, since, for the first time, the tradition of setting tax rates into perpetuity on the basis of the long-range projections was brought into question. The population at large knows nothing of the seventy-five-year projections, but they can be relatively easily informed about scheduled present and future payroll tax rates. Policymaking for social security financing is, more than ever, largely a political exercise and not a technical exercise. Technically it may not be necessary to set tax rates into perpetuity on the basis of the seventy-five-year projections, but I believe that, politically, it is desirable.

In closing, I would like once again to express my appreciation for the foregoing discussions of my paper.