ACTUARIAL STATUS OF THE TRUST FUNDS

Old-age, survivors, and disability insurance benefit payments will increase for many years--not only in dollars but also as a percentage of taxable payroll. Long-range estimates are needed, therefore, to show how much the cost is likely to increase and to indicate whether the scheduled tax rates are adequate.

The cost of benefits to aged persons, which constitute almost 85 percent of the total cost, will rise for several reasons. The U.S. population will almost certainly become relatively much older on the average. A relatively older population will result because the present aged population is made up of the survivors from past periods when death rates were much higher than they are now. Also, after the turn of the century, the larger birth cohorts of the 1940's and 1950's will be attaining retirement age. Thus, in the future, relatively more persons, both in total and in each cohort, will attain age 65 and older ages.

The cost of the program is closely related to the ratio of the population aged 65 and over (potential beneficiaries) to the population aged 20-64 (potential contributors). On June 30, 1963, this ratio was 17.9 percent. In a stationary population that would result if present death rates were applied to a constant annual number of births the ratio would be 25.2 percent, but such a situation is not likely to occur within the next century. Ultimately this ratio may become even greater than 25 percent because decreases in mortality below present rates would, in a stationary population, have the effect of increasing the proportion at the oldest ages.

Another reason for the increasing cost is that the proportion of the aged population eligible for and receiving benefits will increase.

Some of the present persons aged 65 and over were not in covered employment long enough to obtain benefits, or, in the case of widows, their husbands were not sufficiently long in covered employment. Although the system began in 1937, many jobs were not covered until 1951 or 1955. It is estimated that the proportion of the aged population eligible for some type of benefit under the system will increase from the present level of about 80 percent to between 95 and 98 percent by the end of the century.

Since the long-term future cost of the old-age, survivors, and disability insurance program will be affected by many factors that are difficult to determine, the assumptions used in the actuarial cost estimates may differ widely and yet be reasonable. The long-term cost estimates for the program as it was changed by the 1961 amendments (shown for 1970 and thereafter) are presented here on a range basis to indicate the plausible variation in future costs depending on the actual trends that develop for the various cost factors. Both the low- and high-cost estimates are based on assumptions that represent close to full employment, with the average annual earnings remaining at about the level that prevailed in 1963. Each estimate provides data on taxable payroll and contributions and on beneficiaries and benefit payments for every future year. The data are presented here for selected future years. All figures are assumed to remain constant after 2050.

It is considered likely, although by no means certain, that actual costs as a percentage of taxable payroll will lie between the low-cost and high-cost figures. Also, a single estimate of costs is needed as a guide in considering proposed legislation and developing tax schedules intended to make the system self-supporting. For these reasons, an intermediate-cost estimate is prepared, in which numbers of beneficiaries,

amount of benefit payments, and taxable payrolls are taken halfway between the low-cost and high-cost figures. The intermediate percentage-of-payroll figures are obtained by dividing total benefit payments by taxable payroll, each on the intermediate basis, and are therefore not exactly equal to the average of low-cost and high-cost percentage-of-payroll figures.

Table 18 shows benefit-payment costs for selected years and the corresponding level-costs, all expressed as percentages of taxable payroll, under each of the three estimates. The level-cost of the program is the constant combined employer-employee tax rate that, together with a tax on the self-employed at 75 percent of such combined rate, would exactly pay for all future benefits and administrative expenses, after making allowance for the effect of the future interest earnings of the existing trust fund and for all other future interest earnings. It should be noted that these level-cost computations are based on estimated experience for the rising benefit costs into perpetuity (but assuming that the system reaches maturity in about 75 years and that the expenditures, in terms of dollars, level off after the year 2050). Obviously, if a level-cost were obtained for a period of, say, 75 years into the future, it would be somewhat lower than on a perpetuity basis. All percentage-of-payroll figures are adjusted so that they represent the tax rate that employees and employers combined, and the self-employed at three-quarters of the combined rate, would have to pay in any given year to meet exactly the disbursements in that year.

Tables 19 and 20 show, for each set of estimates, the contributions, benefit payments, administrative expenses, amount paid to or received from the railroad retirement system, and the balance in the trust funds for selected years.

Table 18.--Estimated costs of old-age, survivors, and disability insurance system as percent of payroll[a], 1963 level-earnings assumptions, 1970-2050

(In percent)

Calendar year	Low-cost estimate	High-cost estimate	Intermediate-cost estimate[b]
Old-Age and survivors insurance benefits			
1970	7.24	7.74	7.49
1980	7.84	8.98	8.39
1990	8.05	10.27	9.08
2000	7.28	10.16	8.58
2025	8.16	13.14	10.21
2050	10.17	14.86	11.98
Level-cost[c]	7.63	10.09	8.71
Disability insurance benefits			
1970	.60	.73	.67
1980	.59	.73	.66
1990	.54	.73	.63
2000	.54	.75	.63
2025	.61	.82	.70
2050	.66	.86	.74
Level-cost[c]	.57	.74	.64

[a] Taking into account the lower contribution rate for the self-employed, as compared with the combined employer-employee rate.

Based on the averages of the dollar contributions and dollar costs under the low-cost and high-cost estimates.

[c] Level contribution rate, at an interest rate of 3.25 percent for high-cost, 3.50 percent for intermediate-cost, and 3.75 percent for low-cost, for benefits after 1963, taking into account interest on the trust fund on December 31, 1963, future administrative expenses, the railroad retirement financial interchange provisions, reimbursement for additional cost of noncontributory credit for military service, and the lower contribution rates payable by the self-employed.

Table 19.--Estimated progress of old-age and survivors insurance trust fund, 1963 level earnings assumption[a]
(In millions)

Calendar year	Contribubutions	Benefit payments	Administrative expenses	Financial interchange[c]	Interest on fund	Fund at end of year[d]
			Actual data			
1955	$ 5,713	$ 4,968	$119	$7	$ 454	$ 21,663
1956	6,172	5,715	132[b]	5	526	22,519
1957	6,825	7,347	162[b]	2	556	22,393
1958	7,566	8,327	194[b]	-124	552	21,864
1959	8,052	9,842	184·	-282	532	20,141
1960	10,866	10,677	203	-318	516	20,324
1961	11,285	11,862	239	-332	549	19,725
1962	12,059	13,356	256	-361	526	18,337
			Low-cost estimate			
1970	$22,764	$18,125	$323	-$385	$ 1,248	$ 40,269
1980	27,340	23,998	393	- 115	3,378	97,409
1990	32,354	29,330	469	30	6,023	170,867
2000	38,575	31,666	515	80	10,549	298,251
2025	51,374	47,268	731	110	38,272	1,065,318
			High-cost estimate			
1970	$22,241	$18,875	$374	-$445	$ 929	$ 31,823
1980	25,677	25.689	464	- 185	1,711	55,097
1990	28,324	32,621	550	- 50	1,249	40,491
2000	31,805	36,301	603	0	e/	e/
2025	35,953	53,222	807	30	e/	e/
			Intermediate-cost estimate			
1970	$22,502	$18,499	$348	-$415	$ 1,061	$ 35,984
1980	26,508	24,843	431	- 150	2,448	75,507
1990	30,339	30,974	510	- 10	3,410	103,363
2000	35,190	33,983	559	40	4,562	138,633
2025	43,664	50,246	769	70	10,236	304,076

a/ Interest rates of 3.25 percent for high-cost, 3.50 percent for intermediate-cost, and 3.75 percent for low-cost, were used in determining the level-cost, but in developing the progress of the trust fund, varying rates in the early years were used, which--when averaged over a long period of time--are equivalent to such fixed rates.

b/ These figures are artifically high because of the method of reimbursements between this trust fund and the disability insurance trust fund (and, likewise, the figure for 1959 is too low).

c/ A positive figure indicates payment to the trust fund from the railroad retirement account; a negative figure indicates the reverse.

d/ Not including amounts in the railroad retirement account to the credit of the old-age and survivors insurance trust fund. In millions of dollars, these amounted to $377 for 1953, $284 for 1954, and $163 for 1955, $60 for 1956, and nothing for 1957 and thereafter.

e/ Fund exhausted in 1999.

Note.--Contributions include reimbursement for additional cost of noncontributory credit for military service.

Table 20.--Estimated progress of disability insurance trust fund, 1963 level
earnings assumption[a]

(In millions)

Calendar year	Contributions	Benefit payments	Administrative expenses	Financial interchange[c]	Interest on fund	Fund at end of year
			Actual data			
1957	$ 702	$ 57	$ 3[b]	--	$ 7	$ 649
1958	966	249	12[b]	--	25	1,379
1959	891	457	50	$ 22	40	1,825
1960	1,010	568	36	5	53	2,289
1961	1,038	887	64	- 5	66	2,437
1962	1,046	1,105	66	- 11	68	2,368
			Low-cost estimate			
1970	$1,304	$1,467	$ 90	-$17	$ 30	$ 969
1980	1,565	1,739	94	2	d/	d/
1990	1,852	1,903	92	5	d/	d/
2000	2,207	2,269	102	5	d/	d/
2025	2,936	3,454	145	5	d/	d/
			High-cost estimate			
1970	$1,271	$1,733	$110	-$23	e/	e/
1980	1,467	2,024	116	- 8	e/	e/
1990	1,619	2,233	119	- 5	e/	e/
2000	1,818	2,591	136	- 5	e/	e/
2025	2,054	3,206	165	- 5	e/	e/
			Intermediate-cost estimate			
1970	$1,288	$1,601	$100	-$20	$ 6	$ 127
1980	1,516	1,881	105	- 3	f/	f/
1990	1,735	2,068	106	0	f/	f/
2000	2,013	2,429	119	0	f/	f/
2025	2,495	3,329	155	0	f/	f/

a/ Interest rates of 3.25 percent for high-cost, 3.50 percent for intermediate
cost, and 3.75 percent for low-cost were used in determining the level-cost,
but in developing the progress of the trust fund, varying rates in the early
years were used, which--when averaged over a long period of time--are equiva-
lent to such fixed rates.

b/ These figures are artificially low because of the method of reimbursements
between the trust fund and the old-age and survivors insurance trust fund
(and, likewise, the figure for 1959 is too high).

c/ A positive figure indicates payment to the trust fund from the railroad re-
tirement account; a negative figure indicates the reverse.

d/ Fund exhausted in 1974.

e/ Fund exhausted in 1969.

f/ Fund exhausted in 1971.

Note.--Contributions include reimbursement for additional cost of noncontributory
credit for military service.

It should be emphasized that dollar figures projected for so many years into the future have only limited significance because of changes that are likely to occur in the general economy, as well as in the system itself. What is really the most significant are relative figures such as those in table 18, showing the benefit costs as a percentage of taxable payroll.

For old-age and survivors insurance, annual benefit payments as a percentage of payroll are less than or close to the scheduled tax rates in the early future years, but they eventually rise well above the ultimate combined employer-employee rate of $8\frac{3}{4}$ percent. For disability insurance the benefit payments are higher than the present·level combined employer-employee tax rate of $\frac{1}{2}$ percent for every future year.

To measure the extent to which the financing arrangements of the system result in a surplus or deficiency, a level rate equivalent to the actual increasing contribution rates has been computed, taking into account future interest. The level-equivalent rate of contributions minus the level-cost of benefit payments and administrative costs expressed as a percentage of taxable payroll (after making allowance for the interest-earning effect of the existing trust fund), gives the amount by which the contribution rate in all years would have to be changed to put the system in exact long-range balance according to the estimate. A negative figure

would indicate that an increase in the tax rate is needed to make the system self-supporting. However, considering the variability of long-range cost estimates and certain elements of conservatism believed to be present in the estimates, small negative figures are not considered significant.

The long-range balance of the system is shown by the following level-equivalent costs and contributions, expressed in percentages of taxable payroll, which are computed as of the beginning of calendar year 1964, at interest rates of 3.25 percent for high-cost, 3.50 percent for intermediate-cost, and 3.75 percent for low-cost:

(In percent)

Item	Low-cost	High-cost	Intermediate-cost
Old-age and survivors insurance			
Contributions[1]	8.61	8.61	8.61
Benefit Cost[2]	7.63	10.09	8.71
Net difference	.98	- 1.48	- .10
Disability insurance			
Contributions[1]	.50	.50	.50
Benefit cost[2]	.57	.74	.64
Net difference	- .07	- .24	- .14

[1] Based on adjusted payroll that reflects the lower contribution rate for the self-employed as compared with the combined employer-employee rate.

[2] Including adjustments (a) to reflect lower contribution rate for the self-employed as compared with the combined employer-employee rate, (b) for interest on existing trust fund, (c) for administrative expenses, (d) for the railroad retirement financial interchange provisions, and (e) for reimbursement of military-wage-credits cost.

The lack of actuarial balance of the old-age and survivors insurance

program (0.10 percent of taxable payroll on the intermediate-cost basis)

is within the acceptable limit of variation of 0.25 percent of taxable

payroll that has been used frequently in the past by the congressional

committees which deal with this program. The disability insurance program

has a lack of actuarial balance of 0.14 percent of taxable payroll, which

is well above the corresponding acceptable limit of variation of 0.06 percent

of taxable payroll.

If the intermediate-cost estimate had been based on a higher in-
terest rate than 3.50 percent (which is somewhat above the current average

being earned by the total investments of the trust funds, although consider-

ably below the prevailing market rate of interest on long-term Government

obligations, which is currently about 4.0 percent), the lack of actuarial

balance of the combined program would have been considerably less than

0.24 percent of taxable payroll. In fact, if an interest rate of 4 percent

had been assumed, the combined actuarial deficit of both programs would

have been virtually eliminated.

If the experience exactly follows the assumptions, future compu-
tations would show a gradual increase in the actuarial lack of balance

under the intermediate-cost estimate for both the old-age and survivors

insurance system and the disability insurance system. The reason for this

is that interest accumulations increase any surplus in the system, but the

failure to accumulate all interest income that would have been earned in

an exactly-balanced system increases any deficit. In the case of a sur-

plus, the excess contributions actually earn interest, while a deficit

grows because of the absence of the annual interest that would have been

earned if the contributions required for balance had been paid. It is

estimated that because of this effect the present deficiency of 0.24 per-

cent of taxable payroll would increase to 0.28 percent by the year 1970

if all elements of the assumptions hold true.

Continuing study of the emerging experience under the program provides a basis for prompt changes in the tax rate or other changes that may be necessary to keep the system from growing excessively out of actuarial balance in either direction.

It is important to note that these estimates are made on the assumption that earnings will remain at about the level prevailing in 1963. If earnings levels rise, as they have in the past, the benefits and the taxable earnings base under the program will undoubtedly be modified. If such changes are made concurrently and proportionately with changes in general earnings levels, and if the experience follows all the other assumptions, the future year-by-year costs of the system as a percentage of taxable payroll would be the same as those shown. However, the existing trust fund accumulated in the past, and its interest earnings, will represent a smaller proportion of the future taxable payrolls than if earnings were not to increase in future years. As a result, since interest earnings of the trust fund will play a relatively smaller role in the financing of the system, the "net" level-cost--taking into account benefit payments, administrative expenses, and interest on the existing trust fund--would be somewhat higher. However, the level-cost might not rise this much, or might even decline, if benefit adjustments do not fully reflect rising earnings. Again, the effect of such events can be observed in ample time to make any needed changes in the contribution schedule or any other appropriate changes in the system.

This analysis includes the benefits and contributions in respect to all persons anticipated to be covered in the future under present statutory provisions and not merely (a) the benefits to be paid to workers who have been covered by the system in the past and to their dependents and survivors, (b) the future taxes to be paid by such workers, and (c) the existing trust

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funds. An insurance company must set up reserves equal to all currently accrued liabilities, since it cannot compel individuals to become new policyholders and must be in a position at any time so that in the future it can pay all benefits that will become due with respect to its present and past policyholders, using only its present assets and the future premiums to be paid by present policyholders. In analyzing the actuarial condition of a compulsory social insurance system that will continue indefinitely, the income and outgo with respect to new entrants should properly be included, thus obviating the need to set up reserves for all currently accrued liabilities.

A discussion of the assumptions under which these estimates have been made is presented in appendix I.

MEDIUM-RANGE COST ESTIMATES

The preceding sections have presented both short-range cost estimates (for the next 5 years) and long-range cost estimates (for many decades into the future) for the old-age, survivors, and disability insurance system. The 1957-58 Advisory Council on Social Security Financing indicated, among its recommendations, the desirability of a medium-range cost estimate covering a period of 15 to 20 years (the 19th Trustees Report contains the full text of the Advisory Council's Report). These estimates, it was suggested, should take into account possible variations in economic factors, such as level of earnings and level of employment, as well as variations in demographic factors.

Tables 21 and 22 present two medium-range projections based on different assumptions. For both projections, it is assumed that economic activity will have normal expansion throughout the period, with employment increasing steadily and with the average total earnings of each covered worker increasing at an annual rate of 3 percent. In the first one (Table 21), the maximum taxable earnings base is assumed to remain at its present level of $4,800 per year, while for the second one (Table 22), the base is assumed to be kept up-to-date, i.e., it is assumed that the base is changed periodically so as to cover about the same proportion of total earnings that was covered in 1963 by the $4,800 base. These assumptions imply that for the first projection, of the estimated 65-percent increase in average earnings that will occur in the 1963-80 period, only

19 percent, or close to 30 percent relatively, will be taxable under the program, due to the dampening effect of the fixed maximum taxable earnings base. For the second projection, the entire 65-percent increase will be taxable because of the constant updating of the earnings base.

It is assumed for the first projection that all provisions of the law would remain as they were at the end of 1963. This projection is based on dynamic earnings-level assumptions and static benefit-provision assumptions. **However,** over the 17-year period covered by the estimates, changes will undoubtedly b made. The purpose of this estimate is to indicate the size of th financial commitments of present law even though it is recognized that the law itself would undoubtedly be changed during the period. The extent and timing of these changes are, of course, unpredictable.

It is assumed for the second projection that the maximum taxable earn ings base and the benefit provisions of present law are amended periodically so that the relationships among total earnings, taxable earnings, and benefit expenditures during each of the years 1963-80 under the amended law are the same as those shown in the long-range intermediate-cost estimates prepared on level-earnings assumptions. The cost estimate shown in Table 22 is, therefore, very similar to the long-range cost estimate if costs are considered in terms of percentages of taxable payroll, but it has the advantage of presenting dollar

figures of a more realistic magnitude. This projection, accordingly, is based on dynamic earnings-level assumptions, combined with an assumption that the law is frequently amended to keep the system fully up-to-date.

As shown in Tables 21 and 22, according to the medium-range estimates, the old-age and survivors insurance trust fund grows more or less steadily through the period up to 1980--reaching in 1975 about $79 billion in the first projection and about $64 billion in the second one. For 1980, the corresponding figures for the balance in the trust fund are $120 billion and $89 billion. In 1980, estimated contribution income exceeds benefit outgo by about 20% under the assumptions of dynamic earnings-level conditions and static benefit provisions, but by only 7% under the "double dynamic" assumptions basis.

The disability insurance trust fund, according to the medium-range estimates, decreases continuously until it is finally exhausted in about 1970 to 1972. In 1980, estimated contribution income is about 10% lower than benefit outgo under the assumptions of dynamic earnings-level conditions and static benefit provisions, and by about 20% under the "double dynamic" assumptions basis. It is evident that the proportion of the total contribution income of the program that is now allocated to the disability insurance trust fund will support it for a decade at most.

Table 21. Estimated progress of trust funds, increasing earnings assumption, fixed earnings base and equivalent 3.50 percent interest rate basis[1]/
(in millions)

Calendar Year	Contributions[2]/	Benefit payments	Administra- tive expenses	Financial interchange[3]/	Interest on fund	Fund at year end
Old-age and survivors insurance trust fund						
1975	$28,048	$22,206	$445	-$315	$2,514	$ 79,177
1980	31,465	26,073	512	- 150	3,895	120,265
Disability insurance trust fund						
1975	1,605	1,811	116	- 10	4/	4/
1980	1,799	1,987	125	- 3	4/	4/

1/ On the same basis as used to develop the trust funds for the long-range intermediate cost estimates in Tables 19 and 20.
2/ Includes reimbursement for additional cost of noncontributory credits for military service.
3/ A positive figure indicates payment to the trust funds from the railroad retirement account; a negative figure indicates the reverse.
4/ Fund exhausted in year 1972.

Table 22. Estimated progress of trust funds, increasing earnings and benefits assumptions, variable earnings base and equivalent 3.50 percent interest rate basis[1]
(in millions)

Calendar Year	Contributions[2]	Benefit payments	Administrative expenses	Financial interchange[3]	Interest on Fund	Fund at year end
		Old-age and survivors insurance trust fund				
1975	$35,017	$30,798	$556	-$449	$2,012	$64,272
1980	43,814	41,062	712	- 248	2,831	88,821
		Disability insurance trust fund				
1975	2,003	2,483	145	- 14	4/	4/
1980	2,506	3,109	174	- 5	4/	4/

1/ On the same basis as used to develop the trust funds for the long-range intermediate cost estimates in Tables 19 and 20.

2/ Includes reimbursement for additional cost of noncontributory credits for military service.

3/ A positive figure indicates payment to the trust funds from the railroad retirement account; a negative figure indicates the reverse.

4/ Fund exhausted in year 1970.

CONCLUSION

Considering the old-age and survivors insurance and the disability insurance portions of the program together, the new cost estimates made recently show that the actuarial balance is substantially improved over what it was before the new estimates were prepared (i.e., as compared with what was shown in the previous report) so that the system as a whole continues in close actuarial balance. The balances of each of the two portions of the program, however, are differently affected. The balance of the old-age and survivors insurance program is shown to have improved--by 0.07 percent of taxable payroll on a level-cost basis-- but the balance of the disability insurance program is shown to have remained the same. According to the new intermediate-cost estimates, there is now a lack of actuarial balance of 0.10 percent of taxable payroll in the old-age and survivors insurance system (1 percent relatively, as compared with contribution income) and of 0.14 percent of taxable payroll in the disability insurance system (28 percent relatively, as compared with contribution income).

The Board of Trustees recommends that there be a small reallocation of future contribution income between the old-age and survivors insurance trust fund and the disability insurance trust fund. It is recommended that 0.1 percent of taxable wages and 0.075 percent of taxable self-employment income that now goes into the old-age and survivors insurance trust fund should be allocated to the disability insurance trust fund. Such a reallocation of the total contribution rate between the two portions of the progra

would, of course, not affect the overall actuarial balance, but it would make for a more reasonable subdivision between them.

After such a reallocation, the combined employer-employee contribution rate of $7\frac{1}{4}$ percent for calendar year 1965 would be subdivided 6.65 percent for the old-age and survivors insurance trust fund and .60 percent for the disability insurance trust fund. The subdivision for all future years and for the employer-employee rate and the self-employed rate would then be as follows:

Item	Calendar Year 1965	Calendar Years 1966-67	Calendar Years After 1967
Employer-employee, total	7.25	8.25	9.25
OASI	6.65	7.65	8.65
DI	.60	.60	.60
Self-employed, total	5.40	6.20	6.90
OASI	4.95	5.75	6.45
DI	.45	.45	.45

After such a reallocation is made, the lack of actuarial balance of the old-age and survivors insurance portion of the system would, according to the intermediate-cost estimate, be 0.20 percent of taxable payroll (2 percent relatively, as compared with contribution income), while that for the disability insurance portion would be 0.04 percent of taxable payroll (7 percent relatively, as compared with contribution income)--each being within the acceptable limit of variation mentioned previously. Thus, on the basis of the present long-range cost estimates, not only the program as a whole, but also each of the two subdivisions, would be in close actuarial balance. It may be noted that under conditions of actuarial balance, the system will have sufficient income from

contributions (based on the tax schedule now in the law) and from interest earned on investments to meet benefit payments and administrative expenses indefinitely into the long-range future.

Under section 217(g) of the Social Security Act, as amended, the trust funds are to be reimbursed from general revenues for the additional costs that were incurred after August 1950 with respect to benefits based on credits for military service performed at some time during the period from September 16, 1940, through December 31, 1956 (for which no contributions were paid). No reimbursements, however have been made to date for these costs. The Board of Trustees, therefore, strongly recommends enactment of proposed legislation that would result in a supplemental appropriation request of $60 million, as described in the 1965 Budget of the United States, submitted to Congress in January 1964.