

the liberalized insured-status provisions and the extension of coverage to new areas of employment.

The estimates presented above result in a net increase in the trust fund during the 5-year period of about \$13.5 billion under alternative I and about \$10.8 billion under alternative II. It is entirely possible under alternative I that the amount of contribution income may be greater and benefit payments lower than has been estimated. The total result would be an even greater growth in the trust fund than is indicated under this alternative. On the other hand, lower contribution and interest income, together with higher benefit payments than shown under alternative II, would lead to smaller net increases in the trust fund.

#### ACTUARIAL STATUS OF THE TRUST FUND

Section 201 (b) of the Social Security Act requires the Board of Trustees to present each year a statement of the actuarial status of the trust fund. In the seventh annual report of the Board, new cost illustrations were presented taking into account the foreseeable effects of World War II and the brief postwar period to the date of that report. In the eighth to tenth reports no essential changes were made in these cost estimates other than to allow for the new contribution schedule introduced in the Social Security Act Amendments of 1947.

In view of the striking economic changes due to the war, many of which have been discussed in some length in previous reports, two sets of cost illustrations were prepared, one based on "high" economic assumptions (intended to represent close to full employment with average annual wages at about the level prevailing in 1944-46), and the other based on "low" economic assumptions (intended to represent, on the average, employment conditions similar to those prevailing in 1940-41, combined with the annual wage level prevailing in 1941-42). In view of the postwar level of wage and business activity and the established national policy of maintaining conditions conducive to full employment (as embodied in the Employment Act of 1946), it seemed probable that the actual future experience, on the average, would be closer to the high economic assumptions than to the low ones and very likely even above the high economic assumptions.

In 1949-50, the Congress conducted extensive consideration of social security legislation, resulting in the enactment of the Social Security Act Amendments of 1950 (Public Law 734, 81st Cong.), which was approved by the President on August 28, 1950. The various actuarial cost estimates which were made for this legislation were, in general, based on the same assumptions and methodology as the cost illustrations in the previous four reports of the Board, except that only the "high" economic assumptions were used for the reasons indicated in the previous paragraph and except that a slightly higher wage assumption was made. However, just as in the previous reports, the cost estimates were subdivided into a low cost example and a high cost example, which indicate the range present due to possible variations in such factors as mortality, fertility, retirement rates, and movement between covered and noncovered employment. Assumptions as to each of these factors were combined so as to yield cost illustrations which indicate both low and high costs possible under reason-

able assumptions. For instance, low mortality produces higher costs for the program as a whole.

If all other cost factors were maintained constant, costs expressed relative to payroll would be lower under high economic assumptions than under low economic assumptions. However, the absolute dollar cost of benefits would very likely be higher under high economic assumptions than under low economic assumptions.

In this report the long-range cost illustrations presented are the same as those finally developed for the congressional committee concerned with the legislation (see Actuarial Cost Estimates for the Old-Age and Survivors Insurance System as Modified by the Social Security Act Amendments of 1950, July 27, 1950, prepared for the use of the Committee on Ways and Means by Robert J. Myers, actuary to the committee). As mentioned previously, these estimates are on essentially the same basis as those which had been developed for the previous law over the past 5 years. Since there has been a considerable change in economic conditions and since much additional actuarial and statistical data are available, such as from operating experience and from the 1950 census, completely new long-range cost estimates are now being developed for the new program, and it is anticipated that they will be completed in time for the next report of the Board. In this report, while use is made of the cost estimates prepared in 1950 for the Committee on Ways and Means, there will be considered the general effect of assumptions based on recent experience.

There are a number of basic cost factors which must be continuously recognized in analysis of the costs of this program.

(a) *Population.*—The future trend of the population depends on the size and age distribution of the existing population, on future births and immigration, and on future deaths and emigration. As a basis for making such estimates, there are available a great quantity of census and vital statistics data. There are various types of error and bias in such data, as has been recognized by the Bureau of the Census in its many comprehensive reports on this subject. For instance, the 1940 census showed about 600,000 more persons aged 65 and over than had been indicated as likely by data in the 1930 census and the deaths and migration between the two censuses. Likewise, a tabulation of a sample from the 1950 census shows about 800,000 more persons age 65 and over than are indicated by a projection of the 1940 census.

Crude birth rates declined for many years until the middle thirties, due in part to the increasing percentages of the female population past the child-bearing ages and in the middle ages where child bearing is less frequent, and in part to a decline in the age specific birth rates. However, since 1937 the long decline of the birth rate has been reversed. During the war years quite high rates were reported, the wartime peak having been reached in 1943. Although the birth rate declined somewhat in 1944-45, it remained higher than at any time during the thirties despite the effect of the war in removing from this country many young potential fathers. Beginning in the middle of 1946, the birth rate again rose very rapidly, and for the 12-month period ending June 1947 was higher than at any time since before the beginning of the First World War. Since that time there has been some decline, but the rate has been well above the prewar level.

The increase in birth rates in recent years seems to be largely concentrated in the rates for first and second births. The increase in first births tends to increase the proportion of the insured population with dependents as well as the number of such dependents. As a result, the cost of survivor benefits is increased despite the counteracting effect of fewer large families; in regard to the latter factor there is only a limited effect upon benefits because aggregate benefits for a family are not increased for children in excess of three where the mother is also receiving benefits.

Immigration had been very heavy prior to 1915 and moderate in the early twenties, but was quite negligible thereafter. Most population forecasts have assumed that no return to high immigration rates may be expected although some refugees or displaced persons are currently being admitted.

As a basis for the cost illustrations, two population estimates were developed. These do not reflect the maximum possible range in population which might develop in the future, but rather embody factors which produce either low cost or high cost in regard to old-age and survivors insurance; for example, unfavorable mortality assumptions versus favorable ones. The 12 estimates prepared by the National Resources Planning Board in its report of August 1943, entitled "Estimates of Future Population of the United States, 1940-2000," are useful in indicating the possible range of future population, but it was considered desirable not to use any specific one of these estimates, although following closely their methodology. A revision of this 1943 report starting with a different population base and short-range demographic factors but using in general the same long-range assumptions with respect to future trends in mortality and fertility was released in 1948 by the Bureau of the Census (Forecasts of the Population of the United States, 1945-75). However, the results were not available at the time the cost bases for the estimates presented here were developed, and in addition data showing a range in population were needed for a longer period than 30 years.

One reason that the National Resources Planning Board estimates were not used is that these estimates do not reflect war deaths, civilian mortality in 1940-45, and births in 1940-45. The official estimates of the Bureau of the Census for 1945 indicate that births in 1940-45 were about 10 percent higher than the National Resources Planning Board high estimate. Another reason for developing new estimates was to use a somewhat wider range in mortality assumptions (as will be discussed later), and in fertility assumptions (allowing for somewhat higher fertility, as evidenced by the 1940-45 experience).

The population used for the low-cost assumptions is based on high mortality (level into the future at 1939-41 rates) and high fertility (approximately 10 percent above the National Resources Planning Board high rates). On the other hand, the population projection used for the high-cost assumptions is based on low mortality (same as National Resources Planning Board low rates up to age 65, but with greater improvement for the older ages) and medium fertility (same as National Resources Planning Board medium rates). Neither estimate provides for migration, either in or out.

Table 11 indicates the alternative trends of population growth resulting for the total population, for the group aged 20 to 64, and for the group aged 65 and over. The high-cost projection shows a larger aged population than the low-cost projection because of the assumed lower mortality, but a somewhat lower population in age groups under 65, because of the assumed declining fertility which more than offsets the improved mortality. Actual data for 1950 (based on a sample tabulation) indicate a somewhat larger population aged 65 and over than had been estimated in either projection and also a materially larger population under age 10 (as a result of the high birth rates in the past decade).

(b) *Mortality.*—Mortality rates by age have been improving steadily since the turn of the century for both sexes and for virtually all ages up to age 60, with relatively little change above that age, except for the past decade when there has been significant improvement. The National Resources Committee study of 1938, the National Resources Planning Board study of 1943, and the Bureau of the Census report of 1948, all make assumptions of a future improvement in mortality, as plausibly indicated by past history.

TABLE 11.—*Estimated population of the United States in selected years, 1960-2000*

[In millions]

Calendar year	All ages			Ages 20-64			Ages 65 and over		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Sample tabulation from 1950 census									
1950.....	151	75	76	87	43	44	12.3	5.7	6.6
Projection for low-cost assumptions									
1960.....	159	79	80	89	44	45	14.0	6.5	7.5
1980.....	179	89	90	100	50	50	17.9	7.8	10.1
2000.....	199	99	100	113	57	56	19.0	8.3	10.7
Projection for high-cost assumptions									
1960.....	155	77	78	91	45	46	14.9	7.0	7.9
1980.....	170	85	85	100	50	50	22.8	10.4	12.4
2000.....	173	87	86	102	62	50	28.5	13.3	15.2

In the low-cost assumptions, as mentioned previously, no improvement in mortality rates at any age is assumed. However, in the high-cost assumptions, considerable improvement is assumed, with even more at the older ages than the most optimistic assumption of the National Resources Planning Board for the ultimate condition, the year 2000. Although both sets of assumptions are arbitrary, they may reasonably bound, for the purposes of this report, the range within which mortality rates will fall. If the range between them seems wide, it should be recalled that no allowance has been made for the effects of such diverse factors as: The application of new discoveries to the prevention of disease and to the impairments

caused by disease; the possibilities of increasing the survival of impaired lives for only temporary periods and the effects of future uses of atomic energy.

Mortality rates are of major importance for estimates of future benefits for the aged and of importance also in determining potential deaths among the younger parents which will give rise to widowed mother's and child's survivor benefits and ultimately to aged widow's benefits. Continuous study must be given to this important element.

(c) *Marital and family composition.*—Marital relationships by age have great significance for old-age and survivors insurance costs because the system provides benefits for aged wives and widows (and also for aged dependent husbands and widowers). A woman over 65 cannot draw both the old-age benefit based on her own earnings and a full wife's or widow's benefit based on her husband's earnings. Hence, it is necessary to consider both the marital status of the female covered workers and also the exits from this group because of marriage. There will be a relatively large cost offset on account of this provision which prohibits duplication of benefits. The experience to date is extremely limited in this respect, since this factor will not be of major importance until some 30 or 40 years hence when the vast bulk of the current female workers, those in their twenties and thirties, have attained the minimum retirement age.

Family composition data indicating the proportion of individuals with children and the average number of children in such cases also has great significance because the system provides benefits for orphaned children and their widowed mothers. The future birth rate has an important role in this connection since it determines not only the total number of children, but also how they are divided up into families. The actual claims experience is valuable as a guide.

There must also be considered the various factors affecting termination of married status, chiefly divorce and mortality. The distribution of ages of husbands and wives also affects the cost illustrations. Various studies have indicated that at almost all ages women have lower mortality rates than men, and that the mortality rates of married persons are lower than those for all persons combined. In the cost illustrations, differential mortality by marital status has been considered in determining costs for the various types of survivors benefits.

Insurance beneficiaries age 65 and over are composed of a number of different categories. Table 12 shows the various illustrative trends in the number of beneficiaries, distinguishing between old-age beneficiaries (retired workers), wives of old-age beneficiaries, children of beneficiaries, aged widows of deceased insured individuals, and dependent parents of deceased insured workers who left no widow or child under 18.

Although beneficiaries age 65 and over make up the bulk of the prospective recipients under the program, the young survivors, composed of orphaned children and widowed mothers, will receive a considerable amount of benefits. Table 13 lists these two groups separately.

The high-cost assumptions show, as expected, a larger number of aged beneficiaries than the low-cost assumptions (table 12); this is in part because of the lower mortality rates assumed which result in a

greater number and proportion of aged persons, and in part because of the higher retirement rates assumed and the greater proportion of the population assumed to be insured as a result of the in-and-out movement between covered and noncovered employment. On the other hand, the lower mortality, despite the somewhat higher birth rate, tends to have the opposite effect in regard to young survivors (table 13); a smaller number of child and widowed-mother beneficiaries under the high-cost assumptions than under the low-cost assumptions is indicated.

(d) *Proportion of time in covered employment prior to qualification for benefits.*—The number of persons who gain protection through becoming either “fully insured” or “currently insured” under old-age and survivors insurance depends upon the volume and pattern of their work in covered employment and upon the amount of taxable wages earned in such work. A discussion of the latter factor is presented subsequently under item (g).

TABLE 12.—Estimated monthly benefit recipients<sup>1</sup> age 65 and over in selected years, 1960–2000

[In thousands]

Calendar year	Old-age beneficiaries <sup>2</sup>	Wives of old-age beneficiaries <sup>3</sup>	Children of old-age beneficiaries	Aged widows <sup>4</sup>	Aged dependent parents
Actual data for December 1950					
1950.....	1,771	508	43	314	15
Low cost estimate					
1960.....	2,727	836	65	1,101	37
1980.....	5,635	1,320	115	2,709	42
2000.....	8,910	1,270	129	3,008	34
High cost estimate					
1960.....	4,404	1,257	101	1,133	69
1980.....	10,332	2,240	130	2,788	97
2000.....	17,456	2,652	86	3,083	90

<sup>1</sup> Persons qualifying, both for old-age benefits and for wife's, widow's, husband's, widower's, or parent's benefits are shown as old-age beneficiaries.

<sup>2</sup> I. e., retired insured workers.

<sup>3</sup> Including dependent husbands.

<sup>4</sup> Including dependent widowers.

TABLE 13.—Estimated younger survivor insurance recipients of monthly benefits in selected years, 1960–2000

[In thousands]

Calendar year	Low cost estimate		High cost estimate	
	Orphaned children	Widowed mothers	Orphaned children	Widowed mothers
1960.....	1,135	304	901	320
1980.....	1,446	385	718	280
2000.....	1,714	454	602	255

NOTE.—Actual data for December 1950: 657,000 orphaned children and 169,000 widowed mothers.

Illustrations are presented in table 14, showing for the future the percentages of the population insured by reason of current or previous work experience, subdivided by sex and by age groups above and below 65. The percentages for age 65 and over include old-age beneficiaries. Table 15 relates the old-age beneficiaries actually drawing benefits to the total aged population. It has been assumed in these cost illustrations that all persons eligible to receive old-age benefits based on their own earnings would apply for and receive such benefits even though they might be entitled to larger wife's, widow's, or parents' benefits, which instead they would receive as reduced supplementary amounts. This assumption has been made because it is always to the individual's advantage to receive old-age benefits and reduced supplementary benefits of another category, rather than to receive solely the full benefits of the other category.

TABLE 14.—*Estimated proportion of the population insured under old-age and survivors insurance in selected years, 1960-2000*

[In percent]

Calendar year	Low cost estimate		High cost estimate	
	Ages 20-64	Ages 65 and over <sup>1</sup>	Ages 20-64	Ages 65 and over <sup>1</sup>
	Men			
1960.....	72	56	82	64
1980.....	77	73	87	83
2000.....	78	81	89	90
	Women <sup>2</sup>			
1960.....	31	10	39	14
1980.....	44	20	52	27
2000.....	50	39	59	47

<sup>1</sup> Including old-age beneficiaries.

<sup>2</sup> Excludes wives and widows of fully insured men except such wives and widows who are insured on the basis of their own employment.

TABLE 15.—*Estimated proportion of population aged 65 and over receiving primary benefits,<sup>1</sup> 1960-2000*

[In percent]

Calendar year	Low cost estimate		High cost estimate	
	Men	Women	Men	Women
1960.....	34	7	50	12
1980.....	52	16	69	25
2000.....	61	36	79	46

<sup>1</sup> Women qualified both for old-age and for wife's, widow's, or parent's benefits are shown as primary beneficiaries.

In tables 12 to 15 only potential long-range trends have been set down, without recognition of cyclical or periodic irregularities. Bearing this in mind, certain trends may be observed in these illustrative tables of number of beneficiaries:

(1) An over-all uptrend in beneficiaries under all types of old-age benefits—except in the relatively minor category of dependent parents;

(2) After 1960, a relatively small increase under some assumptions and a decline in others in the numbers of orphan-child and widowed-mother beneficiaries;

(3) The relatively small, and increasingly smaller, proportion that younger survivor benefits are of all benefits;

(4) A relatively rapid advance in the percent of insured persons aged 65 and over (including those drawing benefits) as compared with the percent insured at ages 20 to 64; and

(5) A rapid rise in the percent of aged men drawing old-age benefits up to 1980, and a slowing down of the increase in the following 20 years.

(e) *Remarriage rates.*—Remarriage of “young widows” is a rather important cost factor. The greatest possible duration of benefits occurs among the younger widows, who can receive benefits for many years as mothers of young children and later as aged widows. These, however, are also the women with the greatest chance of remarriage. Among the older mothers with fewer prospective years of benefit receipt (their youngest child being nearer age 18), the probability of remarriage is lower.

Remarriage rates are affected both by age of widow and duration of widowhood. Recognition of the remarriage factor results in considerable reduction in the prospective cost of benefits to young widows. It also results in considerable reduction in the deferred portion of benefits otherwise payable to widows upon reaching age 65. This factor produces a tangible reduction in the volume of “life insurance” afforded by the program when such “life insurance” is interpreted as the present value, in case of the worker’s death, of prospective benefit payments to his surviving dependents. It is estimated that at the present time the program is providing about \$190 billion of “life insurance” protection for survivors.

(f) *Employment of beneficiaries.*—Since monthly benefits for all categories of beneficiaries are, in effect, suspended in any month in which the beneficiary earns more than \$50 in covered employment, assumptions as to the employment of beneficiaries rank high among the various cost elements. As of December 1950, about 60 percent of those age 65 and over who were fully insured were actually receiving benefits. This low proportion is due to the apparently abnormal work opportunities for the aged now prevailing. In the future this proportion is bound to increase, if for no other reason than the aging of the insured population.

Then, too, a large demand for labor draws into employment and away from benefit receipt many widowed mothers and older children. There is assumed to be more employment of beneficiaries, and thus savings in cost, in the low-cost assumptions than in the high-cost ones.

(g) *Income in covered employment.*—One of the most striking changes in earned income on record has taken place since 1940. Not only have there been further rises in the hourly rate of earnings since the end of the war, but also there has tended to be relatively little unemployment, including partial unemployment, so that most workers have had a full workweek.

The resulting change in wage income gives workers relatively more chance of obtaining credit for quarters of coverage (at \$50 per quarter) than had been the case in the prewar years, and as a result produces an increase in number of persons with insured status and in the average



wage used for benefit computations. This increase is assumed to be more or less permanent.

Assumptions as to future covered wages are essential in developing illustrative actuarial projections. The trend of wages in the past has been unquestionably of an upward character. The level of earnings at the end of the reconversion period and their movement thereafter, of course, affect contributions and benefits under the program, since both are geared to covered earnings.

The data derived from old-age and survivors insurance records are not yet fully useful for long-range cost purposes. Average reported wages were much lower in the early years of the system than they are currently. The increase which has occurred is indicated in table 16.

The cost assumptions for the 1950 amendments use an average annual creditable wage (here and subsequently, the term "wage" includes self-employment income) throughout the period up to 2000 of \$2,550 for men working in four quarters of a year and, correspondingly, \$1,625 for women. For both men and women the average wage used for three-quarter workers is about 50 percent of that for four-quarter workers (i. e., at a lower rate per quarter), while the corresponding proportions for two and one-quarter workers are about 20 and 10 percent, respectively. As used here, the reference to four-quarter workers, three-quarter workers, etc., relates only to the status in a particular year; the estimates allow for the fact that over the course of a working lifetime an individual would be in covered employment all four quarters of some years, three quarters of other years, etc. (and, in fact, not in covered employment at all in some years). These ratios of the part-time average covered wage to the four-quarter average parallel very closely the actual ratios observed in the old-age and survivors insurance wage data. The four-quarter wage assumptions may be compared with the actual experience for such workers in the past years as shown by the last two columns of table 16 but allowance must be made for the change in wage base. The wage assumptions are, on the whole, about 10 percent below the experience in 1950 and are on about the level prevailing in 1947. This seems to indicate a need for revision of the basic wage assumptions which were made when the postwar trend was not at all clear.

In determining the number of covered persons, percentages by age were developed through analysis of wage data for the previous coverage modified by census and other data in regard to the newly covered groups. The level of employment assumed was roughly that of 1947, which is somewhat below that prevailing in 1950. It was assumed that in the future the proportion of women who would be in covered employment would gradually rise for each age group, since in recent years they have been participating more and more in the covered labor force.

Because the coverage of the system excludes several large categories of employment (all railroad employment, considerable portions of agricultural, domestic, nonprofit, and public employment, and agricultural and most professional self-employment), there is a flow of workers between covered and noncovered employments in addition to that between covered employment and unemployment. The restricted coverage necessarily will result in large numbers of workers who have not had sufficient contact with the program to establish or

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maintain the insured status necessary for benefit qualification. The extent of contact is a function both of stability of covered jobs and of age; older persons are somewhat more settled in their work than younger persons.

TABLE 16.—Average wage credits of workers under old-age and survivors insurance by year, 1937-50

Calendar year	Workers with any wages in year			Workers with wages in all 4 calendar quarters		
	Total	Male	Female	Total	Male	Female
Actual, for \$3,000 maximum wage base						
1937.....	\$899	\$1,037	\$539	(1) \$1,211	(1) \$1,359	(1) \$783
1938.....	832	958	508	1,246	1,400	800
1939.....	881	1,014	536	1,305	1,465	831
1940.....	926	1,070	553	1,305	1,465	831
1941.....	1,014	1,188	574	1,466	1,646	910
1942.....	1,127	1,364	609	1,703	1,939	1,047
1943.....	1,289	1,581	787	1,913	2,205	1,271
1944.....	1,369	1,681	887	1,996	2,300	1,402
1944 <sup>2</sup> .....	1,328	1,591	895	1,982	2,293	1,384
1945.....	1,394	1,635	929	2,031	2,269	1,481
1946.....	1,571	1,831	1,044	2,173	2,369	1,611
1947.....	1,676	1,939	1,137	2,283	2,494	1,739
1948 <sup>2</sup> .....	1,701	1,950	1,178	2,298	2,513	1,747
1949 <sup>2</sup> .....	1,701	1,950	1,178	2,298	2,513	1,747
1950 <sup>2</sup> .....	1,780	2,030	1,250	2,390	2,630	1,800
Estimate, for \$3,600 maximum wage base						
1950 <sup>2</sup> .....	\$1,910	\$2,210	\$1,260	\$2,580	\$2,880	\$1,820

<sup>1</sup> Data not available.  
<sup>2</sup> Preliminary.

The carrying through of the prospective cost progress of the program using the various elements discussed above furnishes reasonable illustrations of future beneficiaries and costs, though neither the lowest nor the highest conceivable, the values derived being within the outside boundaries of possibility. Experience to date is limited, the payment of monthly benefits having begun only in 1940 and these were revised drastically in 1950. As payments got under way, the limitations of coverage and the insured-status requirement excluded large numbers of potential beneficiaries. Payments were further delayed by the lag with which any new program commences. In recent years, as the lag has lessened, payments among the relatively small number eligible to receive them have been limited by postponements in the claiming of benefits occasioned by the war and immediate postwar conditions. The long-range illustrations look beyond these various limitations and furnish some indication of the trend in the costs of the old-age and survivors insurance program.

An important element affecting old-age and survivors insurance costs arose through amendments made to the Railroad Retirement Act in 1946, which provide for a coordination of railroad retirement and old-age and survivors insurance covered wages in determining survivor benefits. In some instances such survivor benefits based on the combined wage credits will be paid by the railroad retirement system, whereas in other cases the benefits will be paid by the old-age and survivors insurance system regardless of the fact that each specific individual worker contributed in part under one system and in part

under the other. In the long-range cost illustrations developed here it is assumed that eventually the impact of the costs of the coordinated benefits between the two systems will be properly allocated, and that there will be such a small net effect on the long-range costs that this coordination provision does not have to be taken into account for cost purposes here. Even if it were desirable to consider this element, there are no available data for making any reasonable long-run estimates at this time.

Table 17 summarizes the previous discussion by showing illustrative numbers of beneficiaries. The category "younger survivors" comprises orphaned children and their widowed mothers. Widows, widowers, and parents aged 65 and over are included under the old-age category, as are also spouses and dependent children of old-age beneficiaries.

TABLE 17.—*Estimated old-age and survivors insurance beneficiaries in receipt of benefits as of middle of selected years, 1960-2000*

[In thousands]

Calendar year	Low cost estimate			High cost estimate		
	Aged beneficiaries	Younger survivors	Lump sum <sup>1</sup>	Aged beneficiaries	Younger survivors	Lump sum <sup>1</sup>
1960.....	4,800	1,450	690	7,000	1,200	630
1980.....	9,930	1,850	1,090	15,600	1,000	1,000
2000.....	13,400	2,150	1,470	23,400	850	1,470

<sup>1</sup> Number of deaths during the year resulting in lump-sum payments.

NOTE.—Actual data for December 1950: 2,651,000 old-age beneficiaries and 826,000 younger survivors.

It is to be noted that in addition to the assumptions already discussed, the long-range cost illustrations include assumptions relating to retirement rates, interest rate, and various miscellaneous administrative factors. Since the earlier cost illustrations were developed, sufficient actual experience under the operation of the program is available to permit various modifications to be introduced to allow for such factors as the minimum and maximum provisions as to benefits, and the provision that the lump-sum death payment, in certain instances, may not exceed the actual burial expenses. Also taken into account in the cost illustrations here presented are such miscellaneous factors as differential retirement rates by marital status and the effect on the size of survivor benefits of lowered earning capacity during last illness.

*Illustrative long-range costs*

There now follows a presentation of the illustrative cost results of combining values for the various elements discussed earlier in this section. The long-range cost illustrations, which are subject to continual testing, refinement, and readjustment, are presented in table 18.

In addition to the figures for the low cost and high cost estimates, there have been developed intermediate cost estimates which are merely an average of the low cost and high cost estimates and are not intended to represent "most probable" figures. Rather, they have been set down as a convenient and readily available single set of figures to be used for comparative purposes.

TABLE 18.—Illustrations of benefit payments, contribution income, and size of the old-age and survivors insurance trust fund in selected years, 1960–2000

Calendar year	Benefit payments (in billions)	Contribution income (in billions)	Trust fund at end of year (in billions)	Benefits as percent of payroll
Actual data <sup>1</sup>				
1950.....	\$0.96	\$2.67	\$13.7	1.1
Low-cost estimate				
1960.....	\$3.2	\$5.4	\$32	2.8
1970.....	5.0	7.8	64	4.0
1980.....	6.6	8.5	103	4.9
1990.....	8.1	9.0	138	5.7
2000.....	8.8	9.6	175	5.8
Level premium in perpetuity <sup>2</sup> .....				4.8
High-cost estimate				
1960.....	\$4.3	\$5.4	\$25	3.7
1970.....	6.7	7.9	40	5.3
1980.....	9.3	8.3	48	7.1
1990.....	12.1	8.4	29	9.0
2000.....	13.7	8.5	( <sup>3</sup> )	10.2
Level premium in perpetuity <sup>2</sup> .....				7.5
Intermediate cost estimate <sup>4</sup>				
1960.....	\$3.8	\$5.4	\$29	3.3
1970.....	5.9	7.9	52	4.7
1980.....	8.0	8.4	75	6.0
1990.....	10.1	8.7	83	7.3
2000.....	11.3	9.1	78	7.9
Level premium in perpetuity <sup>2</sup> .....				6.1

<sup>1</sup> Based on Daily Statement of the U. S. Treasury and on benefit payments of old law for 9 months and contribution income of old law for entire year.

<sup>2</sup> Level premium contribution rate (based on 2 percent interest) for benefit payments after 1950 and into perpetuity, not taking into account the accumulated funds at the end of 1950 or administrative expenses.

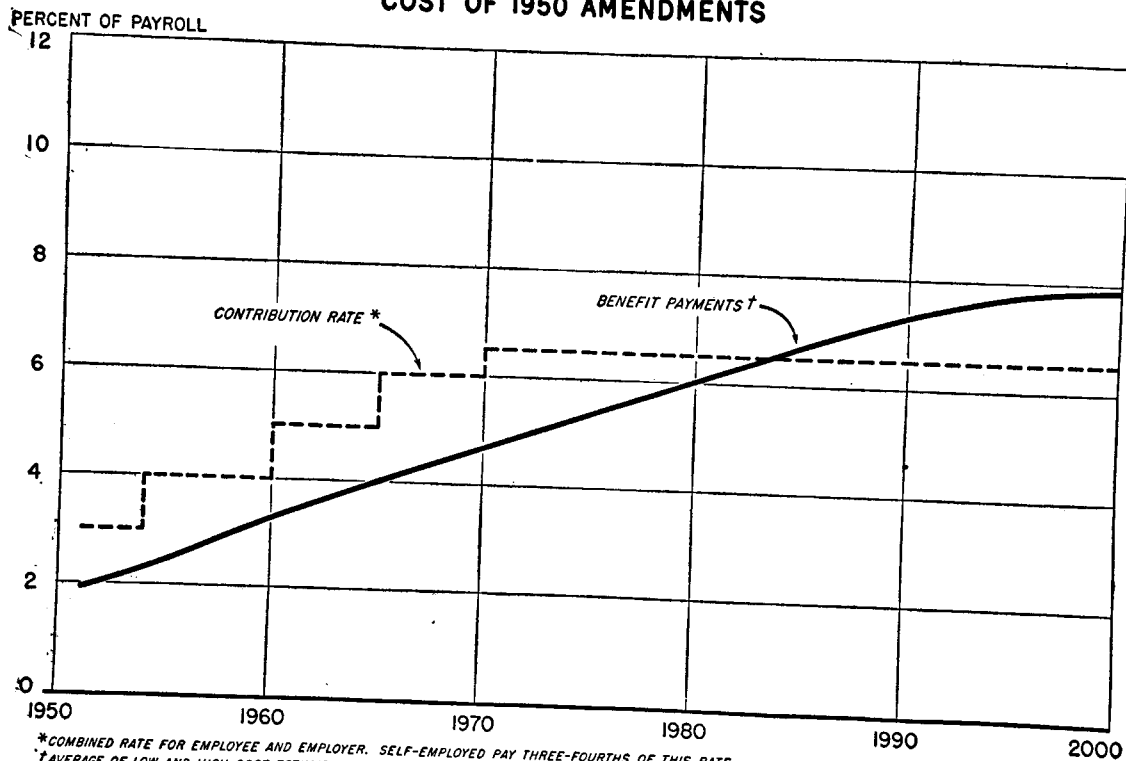
<sup>3</sup> Fund exhausted in 1997.

<sup>4</sup> Based on an average of the dollar costs under the low-cost and high-cost estimates.

Furthermore, since Congress adopted the principle of establishing in the law a contribution schedule designed to make the system self-supporting, it was necessary to select a single set of estimates as a basis for this contribution schedule. The intermediate estimate was used for this purpose. Quite obviously any specific schedule may require modification in the light of experience but the establishment of the schedule in the law does make clear the congressional intent that the system be self-supporting. Further, exact self-support cannot be obtained from a specific set of integral or rounded fractional rates, but rather this principle of self-support was aimed at as closely as possible by the Congress when it developed the tax schedule in the law.

Chart 1 shows the year-by-year cost of the benefit payments relative to payroll according to the intermediate cost estimate, along with the applicable contribution rates. Table 18 shows the steady rise in benefit payments under the widely different sets of conditions discussed earlier in this section, and demonstrates the larger increases, relatively and in absolute quantities, which would occur even after 1980, particularly within the framework of the high cost assumptions.

CHART 1  
**COST OF 1950 AMENDMENTS**



\*COMBINED RATE FOR EMPLOYEE AND EMPLOYER. SELF-EMPLOYED PAY THREE-FOURTHS OF THIS RATE.  
 †AVERAGE OF LOW AND HIGH COST ESTIMATES. THIS IS NOT NECESSARILY THE "MOST PROBABLE" ESTIMATE.

Because of the nature of the assumptions, the chart shows only smooth curves and hence does not show the irregularities and periodic cyclical variations which may develop. These irregularities are expected to be far more pronounced in the curves pertaining to contributions than in those representing benefits, because the dollar amount of the benefit roll, after the system is well established, will contain a large proportion of fixed payments to permanently retired persons. However, the payroll of covered workers from which the contribution income is derived is quite sensitive to current fluctuations, through increases or decreases in job opportunities, changes in the length of the workweek, and changes in unit rates of pay. Thus, the chart indicates more smoothness of income and disbursements, especially the former, and more stability in the percentage relationship of the two than actually is likely to occur. In fact, for demographic reasons alone, as discussed earlier in this section, it is unlikely that the system even eventually would level out to a completely fixed relationship between contributions and benefits.

In the low cost estimate, contribution income exceeds benefit disbursements in all years over the next half-century; accordingly, the trust fund builds up quite rapidly and even some 50 years hence is growing at a rate of \$4 billion per year (and at that time is about \$175 billion in magnitude). On the other hand, under the high cost estimate, the benefit disbursements exceed contribution income after 1975, and the trust fund after building up to a maximum of nearly \$50 billion shortly before 1980 decreases thereafter until being exhausted shortly before the year 2000.

These results are consistent and reasonable since the system on an intermediate cost estimate is intended to be approximately self-supporting. Accordingly, a low cost estimate should show that the system is more than self-supporting and a high cost estimate should show that a deficiency will arise in later years. In actual practice under the financing basis established by the Congress, the tax schedule undoubtedly would be adjusted in future years so that neither of the developments of the trust fund under the low cost and high cost estimates shown in table 18 would ever eventuate. Thus, if actual experience followed the low cost estimate, the contribution rates would probably be adjusted downward, or perhaps would not be increased as scheduled. On the other hand, if the experience followed the high cost estimate, the contribution rates would have to be raised above those scheduled. At any rate, considering the high cost estimate, it appears likely that under any reasonable circumstances there will be ample funds for several decades even under relatively unfavorable experience.

According to the intermediate cost estimate, contribution income exceeds benefit disbursements until somewhat after 1980. Accordingly, the trust fund grows steadily, reaching a maximum of \$83 billion in 1990, and then declines slowly. This decrease indicates that the tax schedule in the law is not quite self-supporting according to this intermediate cost estimate, but it is sufficiently close for all practical purposes considering the uncertainties and variations possible in the cost estimates.

Previously, it was mentioned that current wage levels are about 10 percent in excess of those used in the cost estimates. While this

factor will be taken into account in the new cost estimates now being prepared, its general effect may be briefly considered. Because of the weighted nature of the benefit formula, an increase in wage assumption raises the absolute dollar amount of contribution income more than benefit disbursements. Accordingly, under these circumstances, the cost of the program relative to payroll is decreased. Roughly, if the assumed wage level were 10 percent higher, this would result in a reduction in cost of about one-fourth of 1 percent of payroll on a level premium basis according to the intermediate-cost estimate. On the basis of such a lower cost, the system would be just about self-supporting under the intermediate cost estimate, rather than being not quite self-supporting, as indicated in table 18.

Another factor mentioned earlier, but not used in the actuarial projections is the trend, exhibited in the past, of an irregular but upward movement in earnings, both on a dollar basis and in the form of real wages. If this secular trend continues, then—other things being equal—the curves of benefits and contributions would both be more steeply ascending than shown. The upward changes in the contribution curves, however, would be far more accentuated than would be such change in the benefit curves. There are several reasons for this, the important one being that the benefit increase would be dampened because—

(1) The benefits are determined by the average monthly wage up to the maximum of \$300; 50 percent is applied to the first \$100 thereof and 15 percent to that part above \$100. As average wages increase and as more persons approach or reach the \$300 maximum, a larger portion of such wages falls in that portion of the benefit formula to which the 15-percent rather than the 50-percent rate applies. Thus benefits are smaller in relation to wages, and consequently in relation to contributions.

(2) Any year's contributions are substantially based on the covered wages of that year, while any year's benefits in force are based on weighted composite wages of all previous years in which the insured persons on whose account the benefits are paid worked in covered employment, thus including—in far-distant future years—wages of as much as 60, 70, or more years previously.

Under the assumptions of a 1-percent compound annual rate of increase in wage level and of a static benefit formula unchanging from the present provisions, benefit disbursements in the year 2000 would be only about 10 percent higher than under a level-wage assumption as in table 16 and chart 1). At the same time, contributions would be increased by about 30 percent under the high-employment assumptions. On this basis, the annual benefits related to annual payroll for the year 2000 would be as follows:

	Rising wage	Level wage
Low-cost assumptions.....	<i>Percent</i> 4.7	<i>Percent</i> 5.8
High-cost assumptions.....	8.3	10.2

Thus, the cost of benefits relative to contributions in a year half a century hence would be decreased by about 20 percent under an increasing wage, static benefit, formula assumption. Under such a

wage assumption, the cost expressed as a level premium into perpetuity, taking into account discounting at 2 percent interest, would show a range of from 4½ to 6½ percent, as contrasted with the range of from 5 to 7½ percent as shown in table 16. Quite obviously, if the increase assumed had been 2 percent rather than 1 percent—which some economists feel would be a rather conservative assumption over the long-range future—the differences indicated above would be almost doubled.

The assumption of steadily rising average wages in conjunction with an unamended benefit formula has an important bearing in consideration of the long-range cost of the program. With such an assumption, the future rise in wages would seem to offer significant financial help in the financing of benefits because payroll contributions at a fixed percentage rate would increase steadily relative to benefit disbursements; but the benefits paid to beneficiaries would steadily diminish in relation to current wage levels. In such a case, offsetting this apparent savings in cost, it is likely that the present benefit formula would not be maintained; rather, revisions would probably be adopted by Congress (perhaps with some delay) which would make average benefits as adequate relative to the then-existing wage level as average benefits under the present formula are in relation to the 1949-50 level. In revising the benefit schedule to conform with the altered wage level, the changed cost and contribution picture would have to be considered, especially as to changes resulting from the fact that benefits would be based on wages prevailing at the time of such change, while contributions and the interest accumulated thereon would be based on the lower wages prevailing during the past and as to the normal time lag between a rise in wage levels and the amendment of the benefits.

In addition to the excluding the assumption of increasing wages in the future, the cost examples given have avoided dealing with various other important secular trends with diverse effects on costs which cannot now be adequately extrapolated into the future. One illustration is the lengthening of the period of childhood or preparation for work. Another possibility is a drastic change in the average age of retirement either to a considerably lower effective age so that practically all persons would retire at the minimum age of 65, or conversely to a higher effective age under circumstances of greatly improved health conditions combined with good employment opportunities, such that few would retire before age 70 or even 75.

#### SUMMARY AND CONCLUSIONS

The period covered by this report ended just before enactment of the 1950 amendments to the Social Security Act which made major changes in the coverage, eligibility, and benefit provisions of the old-age and survivors insurance program. The Board of Trustees in its tenth annual report expressed the hope that the comprehensive reexamination of the program which Congress began in 1949 would lead to the development of a program in all respects more nearly in accord with current and prospective conditions. The Board of Trustees believes that the 1950 amendments, which were the result of this broad congressional review, are an important advance in social security protection.



The new amendments did not affect the operations of the trust fund during the fiscal year 1950, but they will have significant effects on the fund's income and disbursements in both the immediate and more distant future. During the first year of the expanded program—fiscal year 1951—benefit disbursements are expected to be about \$1.6 billion, or about twice the amount in fiscal 1950. In the last of the five fiscal years ahead, annual payments are expected to total between \$2.8 and \$3.1 billion. The trend of benefit payments will be upward throughout the remainder of the century; by 1970 benefit disbursements are expected to increase to  $3\frac{1}{2}$  to  $4\frac{1}{2}$  times their level in fiscal year 1951.

Despite the large increase in benefit disbursements, contributions paid by employers, employees, and self-employed persons in each of the five fiscal years immediately ahead are expected to be wholly sufficient to meet the disbursements of the old-age and survivors insurance program in each of those years.

The Nation's commitment to a long-range military and economic defense program has far-reaching implications for the old-age and survivors insurance program; some of them are immediately apparent while others relate to the long-run financing of the program and are more difficult to assess. For example, the transfer of large numbers of persons from civilian employment to the armed services again raises the question as to the extent and type of old-age and survivors insurance protection to be provided to veterans and how such protection should be financed. The benefits provided to survivors of World War II veterans under the 1946 amendments were financed by special appropriations and not charged to the trust fund. The 1950 amendments, which provided additional benefits for World War II veterans, charged to the trust fund not only these additional benefits but also those payable under the 1946 amendments. In any consideration of legislative proposals to provide similar benefits for members of the Armed Forces called into service on account of the present emergency, Congress will need to consider again whether the cost of these benefits are a proper charge against the trust fund or whether they should be met by funds specially provided for this purpose.

Another problem aggravated by recent developments is how to maintain an adequate level of benefits in the face of a changing price level. The recent upturn in prices may prove, of course, to be temporary. As pointed out by the Board in previous reports, however, the evidence from historical experience and from the past development of our economic system indicates that, aside from any temporary fluctuations, there is likely to be a long-time rise in the level of income and earnings in the Nation. This upward trend, affecting real wages as well as money wages, has been somewhat uneven in the past, but it has been persistent. If the benefit formula provided by the present act were to remain unchanged, the effect of an increased level of wages would be a lower level-premium cost in terms of percentage of payroll as compared with the figures shown in table 18 of this report. The estimates in this table are based on the assumption that the benefit formula will be adjusted upward to reflect the rise in wage rates, national income, and living standards.

With the substantial changes in the insurance program brought about by the 1950 amendments and the economic adjustments result-

ing from the preparedness program, study of the financial aspects of old-age and survivors insurance remains an urgent need. This fact was recognized in the Eighty-first Congress by the adoption of Senate Resolution 300 which provides, among other things, for a study of the financing of the program. The Board is convinced that, in the future as in the past, prudent management of the finances of the old-age and survivors insurance trust fund will require that special emphasis be given to the long-range relationships between the income and disbursements of the fund.

