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 previous report of the Board, new cost illustrations were presented taking into account the foreseeable effects of the war and the brief postwar period to the date of that report. In the present report, no essential changes have been made in these cost estimates other than to allow for the new contribution schedule introduced in the Social Security Act Amendments of 1947. The past year's experience has not indicated any great need to modify these estimates, although the work of revision is necessarily a continuous process and new cost illustrations will no doubt be necessary within a few years.

In view of the striking economic changes due to the war, many of which have been discussed in previous reports, two sets of cost illustrations have been prepared, one being 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 being based on "low" economic assumptions (intended to represent crudely and 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 current level of business activity and the established national policy of maintaining conditions conducive to full employment (as embodied in the Employment Act of 1946), it seems probable that the actual future experience, on the average, will be closer to the high economic assumptions than to the low ones. Within each of the two sets of assumptions there is a further subdivision into a low-cost example and a high-cost example, which will indicate the range present as a result of possible variations in such factors as mortality, fertility, retirement rates, and movement between covered and noncovered employment. If all other cost factors were maintained constant, costs expressed relative to pay roll would be lower under high economic assumptions than under low economic assumptions. However, the absolute dollar cost of benefits might be higher under high economic assumptions than under low economic assumptions. The combination of assumptions which would show a significantly wide range in percent of pay roll costs would not necessarily yield a range of absolute dollar costs sufficiently wide to reflect the many uncertainties involved in the demographic and economic factors underlying the estimates. It was consilered desirable, therefore, to present in effect four cost examples, namely: low employment, low-cost assumptions; low employment, high-cost assumptions; high employment, low-cost assumptions; and high employment, high-cost assumptions.

Under the old-age and survivors insurance system benefits are available to the aged and to orphaned children and their widowed mothers. 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 upon the size and age distribution of the existing population as changed by

future births and immigration and by future deaths and emigration. There are many types of error and bias in census 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.

Crude birth rates declined for many years until the middle thirties, due in part to the increasing percentages of the female population past the childbearing 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 after 1943, 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 the birth rate was higher than at any time since before the beginning of the First World War.

The increase in birth rates in recent years seems to be largely concentrated in the rate 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 amount of insurance for survivors 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 entitled to 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 currently there are many war brides coming to this country, as well as discussions of admitting some refugees or displaced persons. Some emigration will occur in the postwar period as a result of ex-members of the armed forces remaining or returning overseas, and the spread of international organizations and cooperation. However, it is not believed that emigration will be a relatively large factor.

As a basis for the new cost illustrations, two new population estimates have been 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 based on different assumptions with respect to future trends in mortality, fertility, and

immigration is being prepared by the Bureau of the Census, but the results were not available at the time the cost analysis here presented was made.

One reason that the National Resources Planning Board estimates were not used is that these estimates do not reflect the 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 is 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 8 indicates the alternative trends of population growth assumed for the total population, for the group aged 20 to 64, and for the group aged 65 and over. The high-cost assumption 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 20 and 20–64, because of the assumed declining fertility which more than offsets the improved mortality.

TABLE 8.—*Estimated population of United States in selected years, 1955–2000*

[In millions]

Calendar year	All ages			Ages 20–64			Ages 65 and over		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Census estimate for 1946									
1946	141	70	71	83	41	42	10.4	5.0	5.4
Projection for low-cost assumptions									
1955	153	76	77	87	43	44	12.7	6.0	6.7
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									
1955	151	75	76	89	44	45	13.1	6.2	6.9
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	52	50	28.5	13.3	15.2

(b) *Mortality.*—Mortality rates by age have been improving since the turn of the century for both sexes and for virtually all ages up to 60, with very little change above that age. Both the National Resources Committee study of 1938 and the National Resources Planning Board study of 1943 make assumptions of a future improvement in mortality, as plausibly indicated by past history. The latter study allowed for appreciably less improvement in mortality at the older ages than did the former, especially beyond age 75.

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. 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, to the impairments caused by disease, and to premature deaths; 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 younger fathers which will give rise to widowed mothers' and children's survivor benefits and ultimately to aged widows' 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. A woman over 65 cannot draw both the primary 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. It is anticipated that there will be a relatively large 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 men 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 how they are divided up into families. The early claims experience, although valuable as a guide, does not yet furnish clear bases for the future because of the lag in getting under way.

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 10 to 20 percent lower than that for all persons combined. In the present cost illustrations, differential mortality by marital status has been considered in determining costs for the various types of survivors benefits.

Old-age-insurance beneficiaries are composed of a number of different categories. Table 9 shows the various illustrative trends in the number of beneficiaries, distinguishing between male and female primary beneficiaries, wives of primary beneficiaries, children of primary beneficiaries, aged widows of deceased insured individuals, and dependent parents of deceased insured workers who left no widow or child under 18.

TABLE 9.—*Estimated old-age insurance recipients of monthly benefits[1] in selected years, 1955–2000*

[In thousands]

Calendar year	Male primary beneficiaries	Female primary beneficiaries	Wives of primary beneficiaries	Children of primary beneficiaries	Aged widows	Aged dependent parents
	Actual data for June 1947					
1947	695	103	245	20	146	9
	Low-employment, low-cost assumptions					
1955	1,800	250	600	60	550	80
1960	2,200	400	750	70	900	110
1980	3,800	1,500	1,100	120	2,100	130
2000	4,200	2,900	1,100	120	2,500	100
	Low-employment, high-cost assumptions					
1955	2,300	400	800	80	600	140
1960	2,900	650	1,000	90	950	210
1980	6,300	2,500	1,900	120	2,300	290
2000	8,600	5,300	2,400	70	2,900	270
	High-employment, low-cost assumptions					
1955	1,400	250	500	40	600	80
1960	1,800	400	600	50	950	110
1980	3,700	1,500	1,100	110	2,300	130
2000	4,800	3,500	1,200	120	2,800	100
	High-employment, high-cost assumptions					
1955	2,300	450	800	70	600	140
1960	3,000	700	1,000	80	1,000	210
1980	6,900	2,600	2,100	130	2,500	290
2000	10,500	6,500	2,700	80	3,000	270

[1] Women qualified both for primary benefits and for wife's, widow's, or parent's benefits are shown as primary beneficiaries.

Although old-age beneficiaries make up the bulk of the prospective recipients under the program, the young survivors, composed of orphaned children and widowed mothers, will be responsible for a considerable amount of benefits. Table 10 lists these two groups separately.

TABLE 10.—*Estimated younger survivor insurance recipients of monthly benefits in selected years, 1955–2000*

[In thousands]

Calendar year	Low-employment assumptions				High-employment assumptions			
	Low cost		High cost		Low cost		High cost	
	Orphaned children	Widowed mothers	Orphaned children	Widowed mothers	Orphaned children	Widowed mothers	Orphaned children	Widowed mothers
1955_____	740	220	690	240	730	190	690	220
1960_____	790	240	650	240	810	210	670	220
1980_____	880	270	480	200	1,000	260	540	200
2000_____	990	310	410	190	1,160	310	480	190

NOTE.—Actual data for June 1947: 479,000 orphaned children and 135,000 widowed mothers.

In table 9 the high-cost assumptions for each of the two economic assumptions show, as expected, a larger number of beneficiaries than the low-cost assumptions; 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. On the other hand, the lower mortality, despite the somewhat higher birth rate, tends to have the opposite effect (table 10); a smaller number of child and widowed mother beneficiaries under the high cost assumptions than under the low cost assumptions are indicated for each of the two economic assumptions separately.

(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 11 indicates for men and women separately, the varying distributions according to number of years with some wage credits for the covered population after the first 9 years of operation of the system. As would be expected, those who are fully insured are concentrated at the longest period of employment, followed by those only currently insured, with those not insured having had employment in only 1 or 2 years in the bulk of the cases.

TABLE 11.—*Percentage distribution of workers in covered employment under old-age and survivors insurance at some time during 1937–45, by number of years with wage credits, and by insured status as of Jan. 1, 1946*

Number of years with wage credits	Male			Female		
	Fully insured	Currently insured only	Uninsured	Fully insured	Currently insured only	Uninsured
Total	100.0	100.0	100.0	100.0	100.0	100.0
1	(1)	(1)	31.4	(1)	(1)	35.9
2	1.7	5.1	26.0	2.9	9.4	28.5
3	6.3	17.0	17.6	11.4	30.5	16.6
4	6.7	28.5	11.2	14.0	29.6	9.0
5	7.3	23.1	6.9	12.0	15.3	5.1
6	10.1	13.2	4.1	11.1	7.5	2.7
7	11.1	7.3	1.8	10.4	4.2	1.3
8	10.9	3.9	.7	9.9	2.2	.6
9	46.0	1.9	.2	28.4	1.4	.2

1 Inapplicable under provisions of the Social Security Act.

Another indication of the relative proportions of the population having contact with the program is given in table 12. Here is shown for certain age and sex groups the proportions of the total population of the United States as of the beginning of 1945 who were insured, or who had some wage credits but not sufficient to be insured, or who never during the 8 years of operation considered had had any covered employment.

TABLE 12.—*Percentage distribution of total population aged 15 and over as of Jan. 1, 1945, according to insurance status, by age and sex*

Age 1	Men				Women			
	Total	Insured 2	With wage credits but not insured 3	With no wage credits	Total	Insured 2	With wage credits but not insured 3	With no wage credits
15 and over	100	51	32	17	100	23	30	47
15 to 19	100	16	56	28	100	14	54	32
20 to 29	100	55	42	3	100	42	41	17
30 to 39	100	69	26	5	100	27	33	40
40 to 49	100	61	27	12	100	22	25	53
50 to 59	100	51	27	22	100	13	18	69
60 to 64	100	43	28	29	100	8	11	81
65 to 69	100	35	23	42	100	5	6	89
70 to 74	100	25	13	62	100	2	2	96
75 and over	100	9	5	88	100	1	0	99

1 Age on birthday in 1944.
2 Includes persons either fully or currently insured.
3 Includes those with some wage credits during 1937–44 (although not necessarily in 1944), but not sufficient to be insured.

Illustrations are presented in table 13, 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 shown in table 13 for age 65 and over include primary beneficiaries. Table 14 relates the primary beneficiaries actually drawing benefits to the total aged population. It has been

assumed in these cost illustrations that all persons eligible to receive primary 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 parent's benefits, which instead they would receive as a reduced supplementary amount. This assumption has been made because it is always to the individual's advantage to receive primary benefits and reduced supplementary benefits of another category rather than solely the full benefits of the other category.

In tables 9, 10, and 13, 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:

TABLE 13.—*Estimated proportion of the population insured under old-age and survivors insurance in selected years, 1955–2000*

[In percent]

Calendar year	Low-employment assumptions				High-employment assumptions			
	Low cost		High cost		Low cost		High cost	
	Ages 20–64	Ages 65 and over [1]	Ages 20–64	Ages 65 and over [1]	Ages 20–64	Ages 65 and over [1]	Ages 20–64	Ages 65 and over [1]
	Man							
1955	55	37	64	42	63	39	73	44
1960	55	41	65	46	65	44	75	49
1980	57	56	67	65	71	64	81	73
2000	57	58	68	69	72	75	83	85
	Women [2]							
1955	21	4	28	6	24	6	31	7
1960	22	6	29	8	27	7	35	10
1980	28	15	36	21	39	16	48	22
2000	29	27	38	35	45	35	54	43

[1] Including primary beneficiaries.
[2] Excludes wives and widows of fully insured men except such wives and widows who are insured on the basis of their own employment.

TABLE 14.—*Estimated proportion of population aged 65 and over receiving primary benefits* [1]

[In percent]

Calendar year	Low-employment assumptions				High-employment assumptions			
	Low cost		High cost		Low cost		High cost	
	Men	Women	Men	Women	Men	Women	Men	Women
1955	30	4	37	6	23	4	37	7
1960	33	6	41	8	27	6	43	9
1980	48	14	61	20	47	14	66	21
2000	51	27	65	35	58	33	79	43

[1] Women qualified both for primary benefits and for wife's, widow's, or parent's benefits are shown as primary beneficiaries.

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

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

(3) The relatively, and increasingly, small proportion that younger survivor benefits bear to old-age benefits;

(4) A relatively rapid advance in the percent of insured persons at age 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 persons drawing primary benefits from 1955 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 results in 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 approximately $75 to $100 billion of "life insurance" protection for survivors, exclusive of the temporary survivor protection for veterans provided for by title II of the Social Security Act amendments of 1946.

(f) *Employment of beneficiaries.*—Since monthly benefits for all categories of beneficiaries are suspended in any month in which the beneficiary earns $15 or more of covered wages, assumptions as to the employment of beneficiaries rank high among the various cost elements. As of June 1947, less than half of those age 65 and over who were fully insured were actually receiving benefits (table 7). This low proportion is in part due to the apparently abnormal work opportunities now prevailing, and partly due to the element of lag in that the aged insured population now contains relatively few of those at the more advanced ages. In the future this proportion is bound to increase, if for no other reason than that this group will contain a relatively larger number at the more advanced ages (say, 75 and over) where work opportunities are relatively sparse.

Then, too, a large demand for labor draws into employment and away from benefit receipt many widowed mothers and older children. Under the high-employment illustrations there is a greater allowance for this savings factor of employment of beneficiaries than in the low-

employment examples.   Likewise, within each employment assumption there is assumed to be more employment of beneficiaries 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 1938.   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. Under the high-employment assumptions this increase is assumed to be more or less permanent, whereas under the low-employment assumptions it is assumed to be only temporary, although affecting future years to a certain extent.

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.   Some indirect recognition of uncertainties with respect to wages is given in the adoption of low and high sets of average wage assumptions used respectively with the low- and high-employment assumptions.   This point is discussed further in connection with the illustrative cost chart presented subsequently.

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 15.

The high-employment assumptions use an average annual taxable wage throughout the period 1955–2000 of $2,400 for men working in four quarters of a year and correspondingly $1,440 for women.   Under the low-employment assumptions the four-quarter-average wage used for males is $1,800, with $1,080 being used for women.   For both low- and high-employment assumptions and 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.   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 past years as shown by the last three columns of table 15.

TABLE 15.—*Average wage credits of workers under old-age and survivors insurance by year, 1937–46*

Calendar year	Workers with any wages in year			Workers with wages in all 4 calendar quarters		
	Total	Men	Women	Total	Men	Women
1937	$899	$1,040	$539	(¹)	(¹)	(¹)
1938	832	959	508	$1,211	$1,356	$781
1939	881	1,016	536	(¹)	(¹)	(¹)
1940	926	1,069	553	1,305	1,462	829
1941	1,014	1,185	574	1,466	1,647	910
1942	1,127	1,360	609	1,703	1,928	1,041
1943	1,289	1,579	787	1,913	2,204	1,271
1944	1,369	1,681	881	1,973	2,275	1,386
1945 ²	1,336	1,605	898	1,993	2,303	1,391
1946 ²	1,370	1,650	900	(¹)	(¹)	(¹)

¹ Data not available.
² Preliminary.

In determining the number of covered persons under the low-employment assumption, percentages by age were developed through analysis of the 1940 wage data, while for the high-employment assumption the percentages derived were based on 1943–44 conditions with suitable modification to allow for the absence of younger males in military service. It was assumed that in the future the proportion of the population which would be in covered employment would gradually rise for each age group since there has been a definite trend in the past for more and more of the total labor force to be in covered employment. Correspondingly, the rise was assumed to be greater for women, 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 (agricultural, domestic, nonprofit, railroad, and public employment and the self-employed), there is a flow of workers between covered and noncovered employments as well as 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 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 illustrates differences in the extent of contact workers had with the program in 1945.

TABLE 16.—*Percentage distribution of workers in employment covered by old-age and survivors insurance, by number of calendar quarters with wage credits, 1945* [1]

Calendar quarters with wage credits	Total	Male	Female	Age [2]		
				Under 25	25–44	45 and over
Total	100.0	100.0	100.0	100.0	100.0	100.0
1	16.8	17.0	16.5	24.5	17.2	9.0
2	12.9	11.2	15.7	20.1	11.4	8.5
3	14.3	12.3	17.5	18.5	13.3	12.1
4	56.0	59.6	50.2	36.8	58.1	70.4

[1] Preliminary; partly estimated and subject to revision.
[2] Age at birthday in 1945.

The carrying through of the prospective 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. 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.

The Social Security Act Amendments of 1946 contained only one major benefit provision in regard to old-age and survivors insurance, namely, the providing of survivor protection for veterans for a limited period after discharge (generally 3 years). These payments are to be on an entirely independent basis but are not in full an addition to benefits otherwise payable on the basis of wage credits. The cost is to be met entirely by appropriations from the General Treasury. Since the protection is on a temporary basis and since the cost is to be met independently of the regular sources of income of the trust fund, these long-range cost illustrations disregard both the benefit payments and the appropriations arising under this special provision.

Another important element affecting old-age and survivors insurance costs arose through amendments made to the Railroad Retirement Act in July 1946, which provide for a coordination of railroad retirement and old-age and survivors insurance covered wages in determining survivors 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. The amendments to the Railroad Retirement Act provide that before 1950 a study should be made setting forth the actual experience and recommending legislative changes necessary for equitable distribution of the financial burden of such awards as between the two systems. 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 offset on the long-range costs that this coordination provision may be safely ignored. Even if it were desirable to consider this element, there are no available data for making any reasonable estimates and it is likely that there will be none in the next year or two.

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

TABLE 17.—*Estimated old-age and survivors insurance beneficiaries in receipt of benefits as of middle of selected years, 1955–2000*

[In thousands]

Calendar year	Low-cost assumptions			High-cost assumptions		
	Old-age benefici- aries	Younger survivors	Lump sum [1]	Old-age benefici- aries	Younger survivors	Lump sum [1]
	Low-employment assumptions					
1955	3,300	960	280	4,300	930	280
1960	4,400	1,030	340	5,800	890	320
1980	8,800	1,150	580	13,400	680	560
2000	10,900	1,300	770	19,500	600	850
	High-employment assumptions					
1955	2,900	920	310	4,400	910	300
1960	3,900	1,020	380	6,000	890	350
1980	8,800	1,260	680	14,500	740	640
2000	12,500	1,470	980	23,100	670	1,020

[1] Number of deaths during the year resulting in lump-sum payments.

NOTE.—Actual data for June 1947: 1,218,000 old-age beneficiaries and 614,000 younger survivors. Actual lump-sum death payments in 12-month period ending June 1947: 190,000 deaths.

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 rates, 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 various 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 revised long-range cost illustrations, which are subject to continual testing, refinement, and adjustment, are presented in chart 1 and in table 18. These exhibits commence with the year 1955.

CHART 1.

ILLUSTRATIVE LONG-TERM TRENDS OF BENEFITS AND CONTRIBUTIONS
(SUBJECT TO THE LIMITATIONS STATED IN THE TEXT)

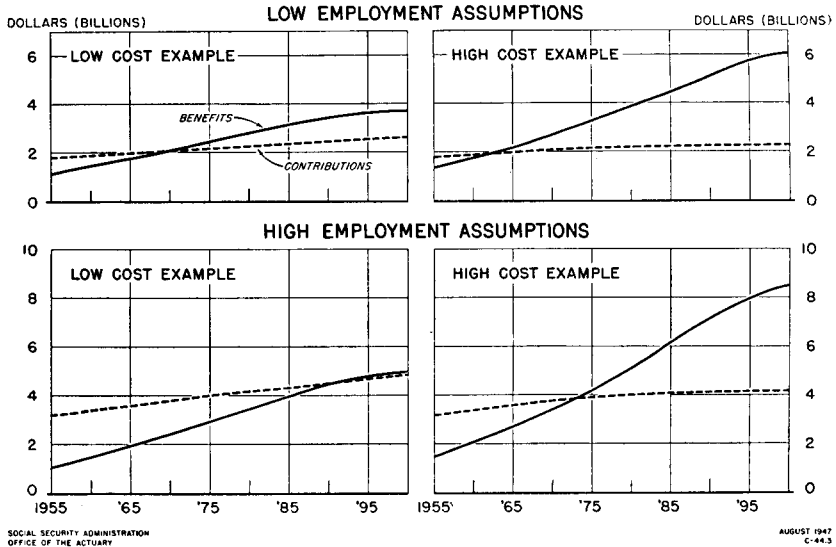
TABLE 18.—*Illustrations of benefit payments and contribution income of the old-age and survivors insurance trust fund in selected years, 1955–2000* [1]

Calendar year	Low-cost assumptions			High-cost assumptions		
	Benefit payments (in billions)	Contribution income (in billions)	Benefits as percent of pay roll	Benefit payments (in billions)	Contribution income (in billions)	Benefits as percent of pay roll
	Low-employment assumptions					
1955	$1.1	$1.8	2.5	$1.3	$1.8	3.0
1960	1.4	1.9	3.1	1.7	1.9	3.7
1970	2.1	2.1	4.0	2.7	2.1	5.2
1980	2.8	2.3	5.0	3.9	2.2	7.2
1990	3.5	2.4	5.7	5.1	2.2	9.2
2000	3.8	2.6	5.8	5.9	2.2	10.5
1946 to 2000 [2]			[2] 4.3			[2] 6.2
Level premium in perpetuity [3]			[3] 4.4			[3] 7.0
	High-employment assumptions					
1955	$1.0	$3.2	1.3	$1.5	$3.2	1.9
1960	1.5	3.4	1.8	2.1	3.4	2.5
1970	2.4	3.8	2.6	3.4	3.8	3.7
1980	3.5	4.2	3.3	5.2	4.0	5.2
1990	4.5	4.5	4.0	7.1	4.1	6.9
2000	5.1	4.8	4.2	8.5	4.2	8.1
1946 to 2000 [2]			[2] 2.9			[2] 4.6
Level premium in perpetuity [3]			[3] 3.0			[3] 5.3

[1] The figures in this table are subject to the limitations stated in the text and correspond to the values used in chart 1.

[2] Average or level cost without interest for the 55-year period.

[3] Level cost (based on discounting at 2 percent interest) of benefit payments after 1945 and in perpetuity, taking into account accumulated funds through 1945.

NOTE.—Actual data (based on Daily Statement of the U. S. Treasury) for calendar year 1946: $0.38 billion benefit payments, $1.30 billion contribution income, and benefits 0.55 percent of taxable pay roll.

As indicated in the chart and table, assuming a constant average wage throughout the period 1955 to 2000, contributions at the rate of 4 percent of taxable pay roll (the rate scheduled to become effective in 1952) would exceed benefits until 1990 under the high-employment, low-cost example and even thereafter would be only slightly lower. Under both the high-employment, high-cost example and the low-employment, low-cost example, contributions would exceed benefits until about 1970, while for the low-employment, high-cost example, this point would come somewhere between 1960 and 1965. In all instances there would result for at least the next 15 years increases in the funds accumulated and the interest earnings thereon would be available later to meet a portion of the benefit payments. In the case of the high-employment, low-cost example, this income from interest could forestall indefinitely the necessity for (1) an increase above 4 percent in pay-roll contribution rates; (2) contributions on the part of the Treasury derived from general taxes as distinct from pay-roll contributions; (3) liquidation of the trust fund for purposes of meeting benefit obligations when these come to exceed pay-roll-contribution income; or (4) any combinations of these. Under the other three examples, however, such interest income would substantially defer, but not eliminate, the time when one or more of these other sources would have to be tapped to assist in financing the benefits provided by statute.

The chart shows the steady rise in benefit payments under the widely different sets of conditions discussed earlier in this section. It shows the large increases, relatively and in absolute quantities, which would occur even after 1980, particularly within the framework of the high-cost assumptions. 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 pay roll of covered workers from which the contribution income is derived has been, and will continue to be, quite sensitive to current fluctuations, through increases or decreases in job opportunities, ups and downs in the work week, 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.

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 in large part by the average monthly wage up to the maximum of $250; 40 percent is applied to the first $50 thereof and 10 percent to that part above $50. As average wages increase and as more persons approach or reach the $250 maximum, a larger portion of such wages falls in that portion of the benefit formula to which the 10 percent, rather than the 40-percent rate, applies. Thus benefits are reduced 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 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 the 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 18 and chart 1). At the same time, contributions would be increased by about 50 percent under the low-employment (and low-wage in the early years) assumptions and by about 35 percent under the high-employment assumptions. On this basis the annual benefits related to annual pay roll for the year 2000 would be as follows:

	Rising wage	Level wage
	Percent	*Percent*
Low-employment, low-cost assumptions	4.2	5.8
Low-employment, high-cost assumptions	7.7	10.5
High-employment, low-cost assumptions	3.4	4.2
High-employment, high-cost assumptions	6.6	8.1

Thus, the cost of benefits relative to contributions in a year half a century hence would be decreased by about 20 to 25 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 2½ to 6 percent, as contrasted with the range of from 3 to 7 percent as shown in table 18.

The assumptions of steadily rising average wages in conjunction with an unamended benefit formula have an important bearing on the long-range cost of the program. With such assumptions, the future rise in wages would seem to offer significant financial help in the financing of benefits because pay-roll contributions at a fixed percentage rate would increase steadily relative to benefit disbursements; but benefits paid to beneficiaries would steadily diminish in relation to current wage levels. In such a case, it is likely that the present formula would not be maintained, but rather revisions would be adopted which would make average benefits at least as adequate relative to the then existing average wage level as average benefits under the present formula were in relation to the 1939 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 changes

resulting from the fact that a worker's benefit would be based on wages prevailing at that time of retirement while his contributions and the interest accumulated thereon would be based on the lower wages prevailing during the period of his active employment.

In addition to 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 is a drastic change in the age of retirement either to a considerably lower effective age so that practically all persons are retiring at the minimum age of 65, or conceivably in reverse 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

At the end of the fiscal year 1947, aggregate old-age and survivors insurance benefit payments were being made at an annual rate of about $470 million; in the last of the five fiscal years ahead, annual payments are expected to total from $855 to $965 million. The trend of such payments will be upward throughout the present century; by 1970, benefit disbursements are expected to have increased to four to seven times their current level.

Contributions paid by employers and employees 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.

At present, employers and employees are contributing 1 percent each on taxable wages and pay rolls in industries covered under the program. By the end of 1947, this 1-percent rate had been maintained for 11 consecutive years by repeated congressional actions postponing the effective date of the scheduled increase in the contribution rate. The Social Security Act Amendments of 1947 (Public Law, 379) further postponed the increase in the contribution rate until January 1, 1950, when, under the amended schedule, the rate will rise to 1½ percent each on employer and employee. The amendments provide for a 2-percent contribution rate for the calendar year 1952 and thereafter.

In its previous annual reports, the Board of Trustees has stated its view that prudent management of the finances of the trust fund requires emphasis on the long-range relationships between the disbursements and the income of the fund. According to the calculations summarized in this report, the level-premium cost of benefits under the system, or the average contribution rate required to finance the system into perpetuity at a 2-percent interest rate, may range between 3 and 7 percent of pay roll. These figures are lower than the estimated costs of the program when it was adopted in 1939 and below the level-premium cost figures contained in some of the earlier reports of the Board. The war and its aftermath, as well as the recovery from the depression of the early thirties, have been accompanied by important changes in many of the factors which determine the relationship between benefits and contributions under the program.

Among the more important factors which have led to a reduction in the illustrative costs, measured as a percent of pay roll, are the increased level of earnings and the expanded employment in covered occupations.

The present cost figures are predicated on the maintenance of level wage rates. The evidence available from historical experience and from the development of our economic system indicates that the level of income and earnings in the Nation is likely to rise in the future. Increases in the past have been somewhat uneven, but on the whole they have been persistent over the decades. Taking into account a long-term tendency for wages to rise, the range of the level-premium cost might be reduced from 3–7 percent to 2½–6 percent.

The factors which, in large part, account for the anticipated favorable financial position of the program in the period immediately ahead, and for the reduction shown in the figures on the long-range cost as a percent of pay roll, at the same time have seriously impaired the adequacy of benefits based on present benefit provisions. From 1940, when monthly benefits began to be paid, to the middle of 1947, the cost of living rose 56 percent, while the average primary benefit paid rose less than 10 percent—from $22.60 to $24.72 (chart 2). The inadequacies of the benefits paid will become increasingly pronounced unless the benefit formula is adjusted upward to reflect the rise in wages, national income, and living standards.

In their annual reports to Congress, the Federal Security Agency and the Social Security Administration have pointed out that there are many inadequacies and gaps in present coverage and benefit provisions—gaps which in a large measure have developed or been intensified by war and postwar conditions. The Board of Trustees is of the opinion that there is need for a review of the old-age and survivors insurance program, covering not only the benefit formula, the coverage of the system, and the scope of protection afforded, but also contributions and financial policy, in order to develop a total program more nearly in accord with current and prospective conditions.

CHART 2.—*Index of average monthly primary benefit in current-payment status and consumers' price index, last month of each calendar quarter, 1940–47*

[March 1940=100]