

Although the number of eligible workers aged 65-69 is expected to treble between January 1, 1941, and January 1, 1954, the aging of the program has an even greater effect on the number fully insured at attained ages 70 and over. This number is expected to increase eightfold during this period, even under the lower-employment assumptions of alternative II. At the latter date, the estimated number eligible at these attained ages will comprise about 55 percent of the total number of eligible persons.

The estimates presented above result in a net increase in the trust fund during the 5-year period of about \$12.5 billion under alternative I and about \$10.5 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 the war and the brief postwar period to the date of that report. In the succeeding 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. The consideration of social security legislation by the Congress, resulting in the passage of H. R. 6000 by the House of Representatives on October 5, 1949, necessitated extensive actuarial cost estimating for various proposed changes. Accordingly, new cost bases involving postwar developments have not been fully developed but are being worked upon.

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 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 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 seems probable that the actual future experience, on the average, will be closer to the high economic assumptions than to the low ones and very likely even above the high economic assumptions.

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 be-

tween covered and noncovered employment. In other words, assumptions as to each of these factors were combined so as to yield a cost illustration which indicated low costs possible under reasonable assumptions, and similarly for the high-cost illustration. For instance, low mortality produces higher cost for the program as a whole.

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 combinations of assumptions which would show a significantly wide range in absolute dollar costs would not necessarily yield a range of percent of pay-roll costs sufficiently wide to reflect the many uncertainties involved in the demographic and economic factors underlying the estimates. It was considered desirable, therefore, to present 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 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 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. 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 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 many war brides have come to this country, and some refugees or displaced persons are 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 has recently been released 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 analysis here presented was made, 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 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 9 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 20 and 20 to 64, because of the assumed declining fertility which more than offsets the improved mortality.

(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 relatively little change above that age. 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.

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TABLE 9.—Estimated population of the 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 estimates for 1948 | | | | | | | | | |
| 1948..... | 147 | 73 | 74 | 86 | 42 | 43 | 10.9 | 5.2 | 5.7 |
| 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 |

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 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 relationship 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 benefits 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 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 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 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 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 10 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 10.—*Estimated old-age insurance recipients of monthly benefits¹ in selected years, 1960-2000*

[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 1949 | | | | | | |
| 1949..... | 1, 013 | 169 | 360 | 28 | 236 | 13 |
| Low-employment, low-cost assumptions | | | | | | |
| 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 | | | | | | |
| 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 | | | | | | |
| 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 | | | | | | |
| 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.

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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 11 lists these two groups separately.

TABLE 11.—*Estimated younger survivor insurance recipients of monthly benefits in selected years, 1960-2000*

[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 |
| 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 1949: 587,000 orphaned children and 150,000 widowed mothers.

The high-cost assumptions for each of the two economic assumptions show, as expected, a larger number of beneficiaries than the low-cost assumptions (table 10); 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 11); 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 12 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 10 years of operation of the system. As would be expected, those who are fully insured are concentrated at the longer periods of employment, followed by those only currently insured, with those not insured having had employment in only 1 or 2 years in the majority of the cases.

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TABLE 12.—Percentage distribution of workers in covered employment under old-age and survivors insurance at some time during 1937-46, by number of years with wage credits, and by insured status ¹ as of Jan. 1, 1947

| 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..... | (²) | (²) | 29.4 | (²) | (²) | 33.4 |
| 2..... | 1.1 | 4.7 | 23.3 | 2.0 | 5.7 | 25.9 |
| 3..... | 4.8 | 10.9 | 17.2 | 7.9 | 18.2 | 17.0 |
| 4..... | 7.5 | 19.5 | 12.2 | 13.4 | 28.2 | 10.5 |
| 5..... | 6.7 | 26.6 | 7.9 | 13.2 | 25.3 | 6.5 |
| 6..... | 8.1 | 18.1 | 5.1 | 11.9 | 11.3 | 3.5 |
| 7..... | 9.6 | 10.4 | 2.9 | 9.8 | 5.6 | 1.8 |
| 8..... | 10.4 | 5.6 | 1.3 | 9.1 | 3.2 | .9 |
| 9..... | 10.7 | 2.9 | .5 | 8.7 | 1.6 | .4 |
| 10..... | 40.9 | 1.3 | .2 | 24.0 | .9 | .1 |

¹ Not adjusted to reflect changes in insured status arising from (a) combined earnings under coordinated survivor provisions of the old-age and survivors insurance and railroad retirement programs; (b) veterans deemed to be fully insured only as result of sec. 210 of title II as amended in 1946.
² Inapplicable.

Another indication of the relative proportions of the population having contact with the program is given in table 13. Here are 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 13.—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 | 11 | 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 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 primary

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beneficiaries. Table 15 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 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 primary 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-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 |
| Men | | | | | | | | |
| 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 | | | | | | | | |
| 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 15.—*Estimated proportion of population aged 65 and over receiving primary benefits,¹ 1960–2000*

[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 |
| 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 and for wife's, widow's, or parent's benefits are shown as primary beneficiaries.

NOTE.—Actual data for June 1949: Men 19.1 percent and women 2.9 percent.

In tables 10, 11, 14, and 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, and increasingly, small proportion that younger survivor benefits bear to old-age 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 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 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 more than \$80,000,000,000 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 1949, less than 55 percent of those age 65 and over who were fully insured were actually receiving benefits (table 8). This low proportion is due to the apparently abnormal work opportunities for the aged now prevailing, and also to the element of lag in that the aged insured population now contains relatively few at the more advanced ages (say, 75 and over) where work opportunities are relatively sparse. 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. 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 16.

TABLE 16.—Average wage credits of workers under old-age and survivors insurance by year, 1937-48

| Calendar year | Workers with any wages in year | | | Workers with wages in all 4 calendar quarters | | |
|-------------------------|--------------------------------|---------|--------|---|------------------|------------------|
| | Total | Male | Female | Total | Male | Female |
| 1937..... | \$899 | \$1,037 | \$539 | (¹) | (¹) | (¹) |
| 1938..... | 832 | 958 | 508 | \$1,211 | \$1,359 | \$783 |
| 1939..... | 881 | 1,014 | 536 | 1,246 | 1,400 | 800 |
| 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 |
| 1945..... | 1,328 | 1,591 | 895 | 1,982 | 2,293 | 1,384 |
| 1946..... | 1,387 | 1,624 | 928 | 2,027 | 2,262 | 1,478 |
| 1947 ² | 1,561 | 1,820 | 1,034 | 2,159 | 2,372 | 1,598 |
| 1948 ² | 1,663 | 1,910 | 1,130 | 2,250 | 2,450 | 1,700 |

¹ Data not available.

² Preliminary.

The high-employment assumptions use an average annual creditable wage throughout the period up to 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 the past years as shown by the last two columns of table 16. It will be observed that the high-employment assumption for men corresponds roughly to the 1947 experience, while for women with 1946. This seems to indicate a need for revision of the basic wage assumptions which were made shortly after the war when the postwar trend was not at all clear.

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 17 illustrates differences in the extent of employment contact that workers had with the program within the single calendar year 1947.

TABLE 17.—Percentage distribution of workers in employment covered by old-age and survivors insurance, by number of calendar quarters with wage credits, 1947¹

| Calendar quarters with wage credits | Total | Male | Female | Age ² | | |
|-------------------------------------|-------|-------|--------|------------------|----------|-------------|
| | | | | Under 25 | 25 to 44 | 45 and over |
| Total..... | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 1..... | 12.7 | 10.5 | 17.2 | 19.8 | 10.6 | 9.3 |
| 2..... | 12.4 | 10.7 | 15.9 | 19.8 | 10.4 | 8.6 |
| 3..... | 12.9 | 11.8 | 15.1 | 17.3 | 11.8 | 10.6 |
| 4..... | 62.0 | 67.0 | 51.9 | 43.1 | 67.2 | 71.5 |

¹ Preliminary.

² Age at birthday in 1947.

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 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. 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 net effect 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 at this time.

Table 18 summarizes the previous discussion by showing illustrative number 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 18.—*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 assumptions | | | High-cost assumptions | | |
|---------------|-----------------------------|-------------------|-----------------------|-----------------------|-------------------|-----------------------|
| | Old-age beneficiaries | Younger survivors | Lump sum ¹ | Old-age beneficiaries | Younger survivors | Lump sum ¹ |
| | Low-employment assumptions | | | | | |
| 1960..... | 4,400 | 1,030 | 340 | 5,800 | 890 | 320 |
| 1980..... | 8,800 | 1,150 | 580 | 13,400 | 680 | 500 |
| 2000..... | 10,000 | 1,300 | 770 | 19,500 | 600 | 850 |
| | High-employment assumptions | | | | | |
| 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.

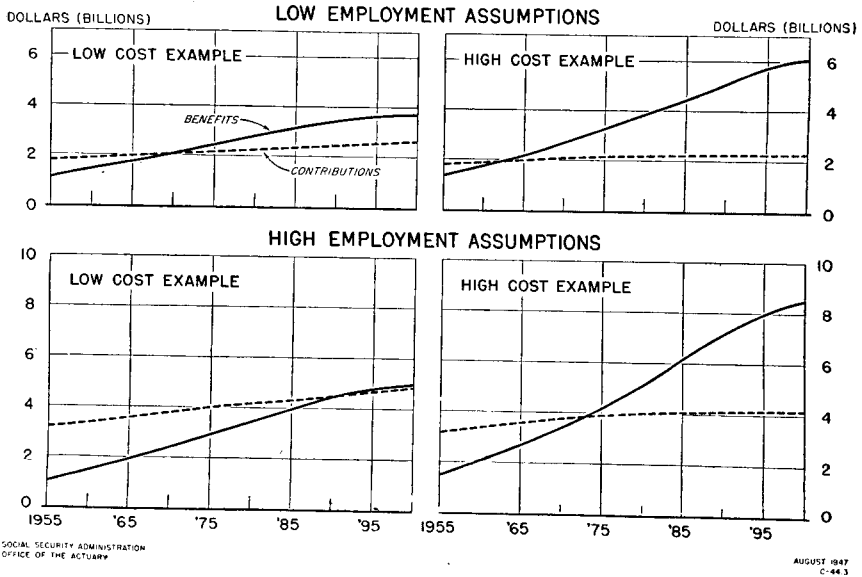
NOTE.—Actual data for June 1949: 1,818,000 old-age beneficiaries and 737,000 younger survivors. Actual lump-sum death payments in 12-month period ending June 1949: 198,000 deaths.

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 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 chart 1 and in table 19.

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



SOCIAL SECURITY ADMINISTRATION
OFFICE OF THE ACTUARY

AUGUST 1947
C-443

TABLE 19.—Illustrations of benefit payments and contribution income of the old-age and survivors insurance trust fund in selected years, 1960–2000¹

| 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 | | | | | | |
| 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 | | | | | | |
| 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 limitations stated in the text and correspond to the values used in chart 1. Contribution income is based on the 4 percent statutory rate.

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 1948: \$0.56 billion benefit payments, \$1.68 billion contribution income, and benefits 0.66 percent of taxable pay roll.

As indicated in the chart and table, assuming a constant average wage throughout the period considered, 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, for at least the next 15 years there would result 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 is quite sensitive to current fluctuations, through increases or decreases in job opportunities, ups and downs in 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.

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 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 19 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 19.

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 assumption, 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 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, but rather revisions would be adopted which would make average benefits at least as adequate relative to the then

existing 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 the 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 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

At the end of the fiscal year 1949, aggregate old-age and survivors insurance benefit payments were being made at an annual rate of about \$670 million; in the last of the five fiscal years ahead, annual payments are expected to total from \$1,064 to \$1,167 million. The trend of such payments will be upward throughout the present century; by 1970, benefit disbursements are expected to increase to three to five 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.

Since January 1, 1937, employers and employees have contributed 1 percent each on taxable wages and pay rolls in industries covered under the program. The Social Security Act Amendments of 1947 increase this rate to 1½ percent each on employer and employee, effective January 1, 1950, and to 2 percent each, effective January 1, 1952.

As stated in earlier reports the Board is convinced that prudent management of the finances of the trust fund requires special emphasis on the long-range relationships between the income and the disbursements of the fund. According to the calculations summarized in this report, the level-premium cost of benefits under 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 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 thirties, have been accompanied by important changes in many of the long-range factors which determine the relationship between contributions and benefits 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 industries.

The Board wishes to emphasize that the present cost figures are predicated on the maintenance of level wage rates. The evidence available from historical experience and from the past 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 this tendency for wages to rise, the range of level-premium costs might be reduced from 3-7 to 2½-6 percent.

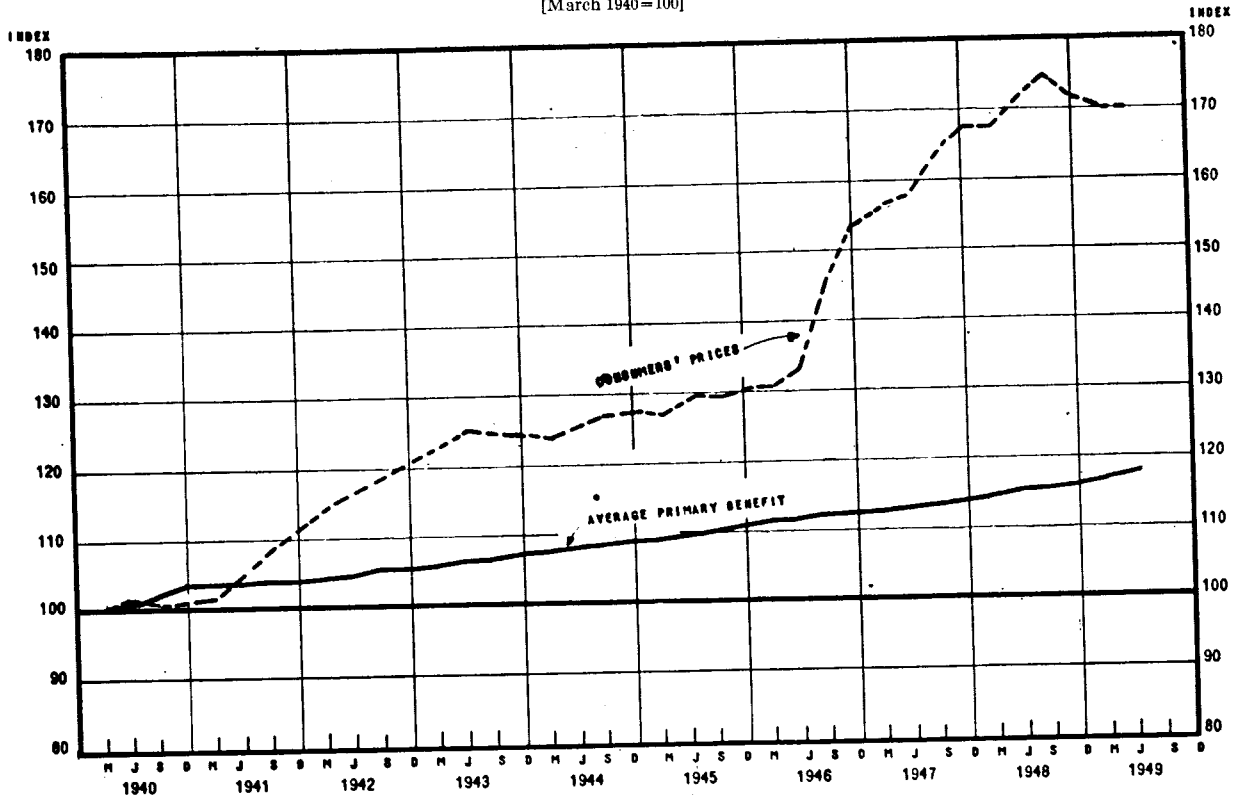
The factors which, in large part, account for the anticipated favorable financial position of the program in the period immediately ahead, and for the reduction shown in the figures on the long-range cost as a percent of pay roll, at the same time have seriously impaired the adequacy of benefits based on present benefit provisions. From the first quarter of calendar year 1940, when monthly benefits began to be paid, to the middle of 1949, the cost of living rose 70 percent, while the average primary benefit rose 18 percent—from \$21.84 to \$25.72 (chart 2). One in every ten aged insurance beneficiaries was receiving old-age assistance payments in 1948. Undoubtedly other beneficiaries could have obtained assistance if they had applied for it. From a study made in 1946, it has been estimated that in one large eastern city a little more than a third of all aged beneficiaries who were retired were either receiving public assistance, or, on the basis of their meager resources, probably could have qualified for it. 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 large measure have developed or been intensified by war and postwar developments. Similar views were expressed by the Advisory Council on Social Security in its report submitted to the Senate Committee on Finance in April 1948, and by the Ways and Means Committee of the House of Representatives in its report on H. R. 6000 in August 1949. The Board of Trustees is hopeful that the comprehensive review of the old-age and survivors insurance program which has now been undertaken in Congress covering not only the benefit formula, the coverage of the system, and the scope of protection afforded, but also the contributions and financial policy, will lead to the development of a total program more nearly in accord with current and prospective conditions.

In conclusion, the Board wishes to emphasize the soundness and propriety of investing the trust fund in interest-bearing obligations of the United States in accordance with section 201 (c) of the Social Security Act, as amended. As both the Advisory Council on Social Security of the Senate and the Ways and Means Committee of the House of Representatives recently have stated, such investment is as reasonable and proper as is the investment by life-insurance companies of their own reserve funds in Government securities. The accumula-

CHART 2.—Index of average monthly primary benefit in current-payment status and consumers' price index, last month of each calendar quarter, 1940-1949

[March 1940=100]



tion of a trust fund so invested does not mean, as some have erroneously alleged, that the people will be taxed twice for the benefits they will receive. This "double taxation" fallacy counts payments on the Federal debt as social-security costs. Actually these debt payments will have to be made by the Federal Government whether or not there is a trust fund. The Government obligations held by the trust fund represent a part of the Federal debt. If these obligations were not held by the trust fund they, or their equivalent, would be in the hands of private investors. Payment of interest charges on these securities, or the cost of their redemption, does not increase total Federal expenditures on account of the public debt. Receipt of interest by the trust fund, on the other hand, decreases the amount of contributions that will be required in the future to finance benefit payments under the insurance system.

