E. ACTUARIAL STATUS OF THE TRUST FUNDS

Historically, the actuarial status of the OASDI program has been measured by the actuarial balance, as described earlier in this section. Recent annual reports have shown both medium-range and long-range actuarial balances, which have been computed, respectively, for the 25-year and 75-year valuation periods beginning with the calendar year of issuance of the report. Thus, the medium-range and long-range actuarial balances shown in this report, calculated on a present-value basis, pertain to the periods 1991-2015 and 1991-2065, respectively. Also presented is the actuarial balance for the first 50 years of the 75-year projection period.

Beginning with this year's annual report, actuarial balances are also presented based on the intermediate (alternative II) assumptions for valuation periods that are 11 years, 12 years, ... , 75 years in length. This series of actuarial balances provides the basis for the long-range test of close actuarial balance, described earlier in this section.

In addition to these actuarial balances, other indicators of the financial condition of the program are shown in this report. One is the series of projected annual balances (that is, the year-by-year differences between the projected income rates and cost rates), with particular attention being paid to the level of the annual balances at the end of the long-range period and the time at which the annual balances may change from positive to negative values. Another is the series of projected contingency fund ratios, with particular attention being paid to the amount and year of maximum fund ratio accumulation and to the year of exhaustion of the funds. These additional indicators are defined in the introduction to this section.

The estimates are sensitive to changes in the underlying economic and demographic assumptions. The degree of sensitivity, however, varies considerably among the various assumptions. For example, variations in assumed fertility rates have little effect on the estimates for the early years, because almost all of the covered workers and beneficiaries projected for the early years were born prior to the start of the projection period. However, lower fertility rates have large impacts on the actuarial balance in the later years. Variations in economic factors, such as interest rates and increases in wages and prices, have significant effects on the estimates for the short term, as well as for the long term. In general, the degree of confidence that can be placed in the assumptions and estimates is greater for the earlier years than for the later years. Nonetheless, even for the earlier years, the estimates are only an indication of the expected trend and general range of future program experience. Appendix B contains a more detailed discussion of the effects on the estimates of varying certain economic and demographic assumptions.

Table 26 presents a comparison of the estimated annual income rates and cost rates by trust fund and alternative. As previously mentioned, the annual income rate excludes net interest income, as well as certain other transfers from the general fund of the Treasury. Detailed long-range projections of trust fund operations, in nominal dollar amounts, are shown in Appendix F.

The projections for OASDI under the intermediate alternative II assumptions shows income rates that increase slowly and steadily due to the combination of the flat payroll tax rate and the gradually increasing effect of the taxation of benefits. The pattern followed by the cost rates is much different. Costs as a percent of taxable payroll are projected to be relatively stable for about 15 years and then to increase rather rapidly for the next 30 years (through 2035) as the baby-boom generation reaches retirement age. Cost rates decline slightly for about the next 10 years as the baby-boom generation ages and the relatively small birth cohorts of the 1970s reach retirement age. Thereafter, cost rates rise steadily reflecting projected increases in life expectancy. The cost rates during the third 25-year subperiod rise to a level exceeding 17 percent of taxable payroll under the intermediate alternative II assumptions. The income rate during the third 25-year subperiod rises to just over 13 percent of taxable payroll under alternative II.

The projected pattern of the OASDI annual balances (that is, the difference between the income rates and the cost rates) is important in the analysis of the financial condition of the program. Under the alternative II assumptions the annual balances are positive for 26 years (through 2016) and are negative thereafter. This annual deficit rises rapidly reaching 2 percent of taxable payroll before 2025 and continues rising thereafter, to a level of 4.52 percent of taxable payroll for 2065.

TABLE 26.—COMPARISON OF ESTIMATED INCOME RATES AND COST RATES BY TRUST FUND AND ALTERNATIVE, CALENDAR YEARS 1991-2065

[As a percentage of taxable payroll]

Calendar year	OASI			DI			Total		
	Income rate	Cost rate	Balance	Income rate	Cost rate	Balance	Income rate	Cost rate	Balance
Alternative I:									
1991	11.40	9.91	1.50	1.21	1.12	0.09	12.61	11.03	1.59
1992	11.41	9.90	1.51	1.21	1.11	.10	12.62	11.01	1.61
1993	11.41	9.72	1.69	1.21	1.08	.12	12.62	10.80	1.82
1994	11.41	9.56	1.85	1.21	1.06	.15	12.62	10.63	2.00
1995	11.37	9.38	1.98	1.21	1.04	.16	12.57	10.43	2.14
1996	11.41	9.22	2.20	1.21	1.03	.18	12.62	10.25	2.37
1997	11.41	9.06	2.36	1.21	1.03	.18	12.62	10.08	2.54
1998	11.42	8.91	2.51	1.21	1.02	.18	12.63	9.94	2.69
1999	11.42	8.78	2.64	1.21	1.03	.18	12.63	9.81	2.82
2000	11.21	8.66	2.55	1.43	1.03	.40	12.64	9.69	2.94
2005	11.26	8.35	2.91	1.43	1.11	.32	12.70	9.47	3.23
2010	11.32	8.51	2.81	1.44	1.26	.18	12.76	9.77	3.00
2015	11.37	9.28	2.09	1.45	1.35	.09	12.82	10.64	2.18
2020	11.44	10.44	1.00	1.45	1.40	.05	12.89	11.83	1.06
2025	11.49	11.37	.12	1.45	1.44	.01	12.94	12.81	.13
2030	11.53	11.84	−.32	1.45	1.43	.03	12.98	13.27	−.29
2035	11.53	11.81	−.27	1.45	1.38	.07	12.98	13.19	−.20
2040	11.52	11.41	.11	1.45	1.37	.08	12.97	12.78	.19
2045	11.51	11.04	.47	1.45	1.40	.05	12.96	12.44	.52
2050	11.50	10.87	.64	1.45	1.42	.04	12.96	12.28	.67
2055	11.51	10.87	.64	1.45	1.42	.03	12.96	12.29	.67
2060	11.51	10.91	.60	1.45	1.41	.05	12.96	12.32	.65
2065	11.51	10.89	.62	1.45	1.40	.05	12.96	12.29	.68
Alternative II:									
1991	11.41	9.96	1.44	1.21	1.14	.07	12.61	11.10	1.51
1992	11.41	10.03	1.39	1.21	1.16	.05	12.62	11.18	1.44
1993	11.42	9.98	1.44	1.21	1.16	.05	12.63	11.14	1.48
1994	11.42	9.93	1.49	1.21	1.16	.04	12.63	11.10	1.53
1995	11.42	9.86	1.56	1.21	1.17	.04	12.63	11.04	1.59
1996	11.43	9.80	1.63	1.21	1.19	.02	12.64	10.99	1.65
1997	11.43	9.74	1.69	1.21	1.20	.01	12.64	10.94	1.69
1998	11.44	9.69	1.74	1.21	1.22	−.01	12.65	10.92	1.73
1999	11.45	9.65	1.80	1.21	1.25	−.04	12.66	10.90	1.76
2000	11.23	9.61	1.63	1.43	1.27	.16	12.66	10.88	1.79

TABLE 26.—COMPARISON OF ESTIMATED INCOME RATES AND COST RATES BY TRUST FUND
AND ALTERNATIVE, CALENDAR YEARS 1991-2065 (Cont.)

[As a percentage of taxable payroll]

	OASI			DI			Total		
Calendar year	Income rate	Cost rate	Balance	Income rate	Cost rate	Balance	Income rate	Cost rate	Balance
Alternative II: (Cont.)									
2005	11.30	9.51	1.80	1.44	1.39	0.05	12.74	10.90	1.85
2010	11.38	9.73	1.64	1.45	1.58	−.13	12.82	11.31	1.51
2015	11.44	10.71	.73	1.45	1.72	−.26	12.89	12.42	.47
2020	11.52	12.17	−.65	1.46	1.79	−.33	12.98	13.96	−.98
2025	11.60	13.52	−1.92	1.46	1.86	−.40	13.06	15.38	−2.32
2030	11.65	14.44	−2.79	1.46	1.87	−.40	13.11	16.31	−3.19
2035	11.68	14.81	−3.13	1.46	1.84	−.37	13.14	16.65	−3.50
2040	11.68	14.73	−3.05	1.46	1.84	−.38	13.15	16.58	−3.43
2045	11.68	14.62	−2.94	1.46	1.92	−.46	13.15	16.54	−3.40
2050	11.69	14.75	−3.06	1.47	1.97	−.50	13.16	16.72	−3.56
2055	11.71	15.11	−3.39	1.47	1.99	−.53	13.18	17.10	−3.92
2060	11.74	15.51	−3.77	1.47	1.97	−.51	13.20	17.48	−4.28
2065	11.75	15.77	−4.02	1.47	1.96	−.50	13.22	17.74	−4.52
Alternative III:									
1991	11.41	10.11	1.30	1.21	1.17	.04	12.62	11.28	1.34
1992	11.42	10.47	.96	1.21	1.24	−.03	12.63	11.71	.93
1993	11.43	10.45	.98	1.21	1.26	−.05	12.64	11.71	.93
1994	11.44	10.59	.84	1.21	1.30	−.09	12.65	11.89	.75
1995	11.45	10.94	.51	1.21	1.37	−.16	12.66	12.31	.35
1996	11.45	10.82	.63	1.21	1.40	−.19	12.66	12.22	.45
1997	11.45	10.75	.70	1.21	1.43	−.22	12.67	12.18	.48
1998	11.46	10.71	.75	1.21	1.48	−.27	12.67	12.19	.49
1999	11.47	10.72	.75	1.21	1.53	−.32	12.69	12.25	.44
2000	11.26	10.74	.52	1.43	1.59	−.16	12.70	12.33	.37
2005	11.35	10.75	.61	1.44	1.73	−.29	12.80	12.48	.32
2010	11.44	10.99	.45	1.46	1.96	−.50	12.89	12.94	−.05
2015	11.51	12.10	−.59	1.46	2.15	−.69	12.97	14.25	−1.27
2020	11.60	13.84	−2.24	1.47	2.26	−.79	13.07	16.10	−3.03
2025	11.70	15.62	−3.91	1.47	2.38	−.91	13.17	18.00	−4.82
2030	11.78	17.09	−5.31	1.47	2.42	−.94	13.26	19.51	−6.25
2035	11.84	18.09	−6.25	1.48	2.42	−.95	13.32	20.51	−7.19
2040	11.87	18.63	−6.76	1.48	2.48	−1.01	13.35	21.11	−7.76
2045	11.90	19.14	−7.24	1.48	2.63	−1.15	13.39	21.78	−8.39
2050	11.95	19.97	−8.02	1.48	2.74	−1.26	13.43	22.71	−9.28
2055	12.01	21.13	−9.12	1.49	2.80	−1.32	13.49	23.93	−10.44
2060	12.07	22.36	−10.29	1.49	2.77	−1.29	13.56	25.13	−11.58
2065	12.12	23.34	−11.22	1.49	2.76	−1.27	13.60	26.10	−12.50

Note: Totals do not necessarily equal the sums of rounded components.

Table 27 summarizes, on a present-value basis, the projected annual figures presented in the previous table for several useful periods. Summarized values have been useful in analyzing the financial condition of the program under present law and the financial effects of proposed modifications to the law. However, because any form of summarization involves choices of what to include and exclude, it is important to recognize that these values do not uniquely determine the status of the program or the financial effect of proposed modifications to it.

Table 27 first shows rates on a present-value basis summarized for each of the 25-year subperiods, excluding the funds on hand at the beginning of the period and the cost of reaching a trust fund target by the end of the period. The table next shows summarized rates including the funds on hand and the cost of reaching a target trust fund balance equal to 100 percent of annual expenditures by the end of the period for valuation periods of the first 25 years, the first 50 years, and the entire 75-year period. Therefore, the actuarial balance for each of these three valuation periods is equal to the difference between the summarized income rates and cost rates for the corresponding periods.

The values in table 27 show that the program is expected to operate with a positive balance over shorter valuation periods. For the first 25-year valuation period the summarizing values indicate positive balances of 2.62 percent of taxable payroll under alternative I, 1.47 percent under alternative II, and 0.11 percent under alternative III. Thus, the program is more than adequately financed for the next 25-year valuation period under all three projections. Over a 50-year valuation period, 1991-2040, the OASDI program would have a positive balance of 1.60 percent under alternative I but would have deficits of 0.21 percent under alternative II and 2.27 percent under alternative III. Thus, the program is more than adequately financed for the next 50-year valuation period under only the most optimistic set of assumptions.

For the entire 75-year valuation period, the program would again have actuarial deficits except for the most optimistic set of assumptions, alternative I. The actuarial balance for this long-range valuation period is projected to be 1.34 percent of taxable payroll under alternative I, to be −1.08 percent of taxable payroll under alternative II and to be −4.12 percent of taxable payroll under alternative III.

TABLE 27.—COMPARISON OF SUMMARIZED INCOME RATES AND COST RATES BY TRUST FUND AND ALTERNATIVE, CALENDAR YEARS 1991-2065

|As a percentage of taxable payroll|

Calendar year	OASI			DI			Total		
	Income rate	Cost rate	Balance	Income rate	Cost rate	Balance	Income rate	Cost rate	Balance
Alternative I:									
25-year subperiods:[1]									
1991-2015	11.32	8.92	2.40	1.34	1.14	0.20	12.66	10.06	2.60
2016-2040	11.48	11.22	.26	1.44	1.41	.04	12.92	12.62	.30
2041-2065	11.50	10.98	.52	1.45	1.41	.04	12.94	12.39	.55
Valuation periods:[2]									
25 years: 1991-2015	11.72	9.27	2.45	1.37	1.19	.17	13.09	10.46	2.62
50 years: 1991-2040	11.61	10.14	1.48	1.40	1.28	.12	13.01	11.42	1.60
75 years: 1991-2065	11.58	10.34	1.25	1.41	1.31	.10	13.00	11.65	1.34
Alternative II:									
25-year subperiods:[1]									
1991-2015	11.35	9.83	1.52	1.35	1.37	−.02	12.69	11.20	1.49
2016-2040	11.59	13.57	−1.99	1.45	1.83	−.38	13.04	15.41	−2.37
2041-2065	11.69	15.07	−3.38	1.46	1.96	−.50	13.15	17.03	−3.88
Valuation periods:[2]									
25 years: 1991-2015	11.77	10.23	1.54	1.37	1.43	−.07	13.14	11.67	1.47
50 years: 1991-2040	11.69	11.70	−.01	1.41	1.60	−.20	13.10	13.30	−.21
75 years: 1991-2065	11.69	12.51	−.82	1.42	1.69	−.27	13.11	14.19	−1.08
Alternative III:									
25-year subperiods:[1]									
1991-2015	11.38	10.89	.49	1.35	1.66	−.31	12.73	12.55	.19
2016-2040	11.71	16.03	−4.33	1.46	2.37	−.90	13.17	18.40	−5.23
2041-2065	11.96	20.71	−8.74	1.48	2.72	−1.25	13.44	23.43	−9.99
Valuation periods:[2]									
25 years: 1991-2015	11.83	11.35	.48	1.37	1.74	−.37	13.20	13.09	.11
50 years: 1991-2040	11.77	13.45	−1.67	1.41	2.01	−.60	13.19	15.46	−2.27
75 years: 1991-2065	11.82	15.19	−3.37	1.43	2.18	−.75	13.25	17.37	−4.12

[1] Income rates do not include beginning trust fund balances and cost rates do not include the cost of reaching ending fund targets.

[2] Income rates include beginning trust fund balances and cost rates include the cost of reaching an ending fund target equal to 100 percent of annual expenditures by the end of the period.

Note: Totals do not necessarily equal the sums of rounded components.

Also of interest are the long-range financial conditions of the separate OASI and DI programs. As may be concluded from tables 26, 27, and 28, the OASI program is in much better financial condition than the DI

program. The OASI program is projected to have a positive actuarial balance of 1.54 percent of taxable payroll for the 25-year valuation period under alternative II while the DI program would have a deficit of 0.07 percent for the same period. Both programs are projected to have actuarial deficits for the 50-year and 75-year valuation periods under the alternative II assumptions, but the deficits for DI are much larger when expressed as a percentage of the summarized cost rates.

Tables 26 and 27 also illustrate the range of possible long-range costs and actuarial balances. For OASI, the cost rate projected for 2065 ranges from a low of 10.89 percent of taxable payroll under alternative I to a high of 23.34 percent of taxable payroll under alternative III. The balances for that year are projected to range from a positive balance of 0.62 percent under alternative I to a deficit of 11.22 percent under alternative III. The summarized cost rate for the full 75-year valuation period ranges from a low of 10.34 percent under alternative I to a high of 15.19 percent under alternative III. The long-range actuarial balances for the entire 75-year period range from a positive balance of 1.25 percent under alternative I to a deficit of 3.37 percent of taxable payroll under alternative III.

The spread in the DI cost for 2065 is from a low of 1.40 percent of taxable payroll under alternative I to a high of 2.76 percent of taxable payroll under alternative III. The summarized cost rate for the 75-year period ranges from a low of 1.31 percent of taxable payroll under alternative I to a high of 2.18 percent of taxable payroll under alternative III. The DI long-range actuarial balance ranges from a positive balance of 0.10 percent of taxable payroll under alternative I to a deficit of 0.75 percent of taxable payroll under alternative III.

The spread between the lowest and highest projected annual cost rates and balances grows wider as the projections move further into the future. For OASDI the projected spread of cost rates in 2000 is 2.64 percent of taxable payoll (from 9.69 percent to 12.33 percent for alternatives I and III, respectively). By 2025 the spread is projected to increase to 5.19 percent of taxable payroll (from 12.81 percent to 18.00 percent) and by 2050 it is 10.43 percent of taxable payroll (from 12.28 percent to 22.71 percent). Because of the increasing uncertainty in projections of costs and revenues for the more distant future, the Board recommends caution in using the specific values projected for the long-range period.

Figure 3 shows in graphical form the patterns of the OASDI annual income rates and cost rates. The income rates are shown only for alternative II in order to simplify the graphical presentation and because, as shown in table 26, the variation in the income rates by alternative is very small. The OASDI long-range summarized income rates for alternatives I and III, for the 75-year valuation period differ by only 0.25 percent of taxable payroll. By 2065, the income rates for each year, under alternatives I and III, differ by only 0.64 percent of taxable payroll. Only small fluctuations are projected in the income rate, as the rate of income from taxation of benefits varies only slightly, for each alternative, reflecting changes in the cost rate and the fact that benefit-taxation threshold amounts are not indexed.

The patterns of the annual balances are indicated in figure 3. For each alternative, the magnitude of each of the positive balances in the early years, as a percent of taxable payroll, is represented by the distance between the appropriate cost-rate curve and the income-rate curve above it. The magnitude of each of the deficits in subsequent years is represented by the distance between the appropriate cost-rate curve and the income-rate curve below it.

In the future, the cost of the OASDI program, as a percent of taxable payroll, will not necessarily be within the range encompassed by alternatives I and III. Nonetheless, because alternatives I and III define a reasonably wide range of economic and demographic conditions, the resulting estimates delineate a reasonable range for future program costs.

FIGURE 3.—ESTIMATED OASDI INCOME RATES AND COST RATES BY
ALTERNATIVE, CALENDAR YEARS 1990-2065

[As a percentage of taxable payroll]
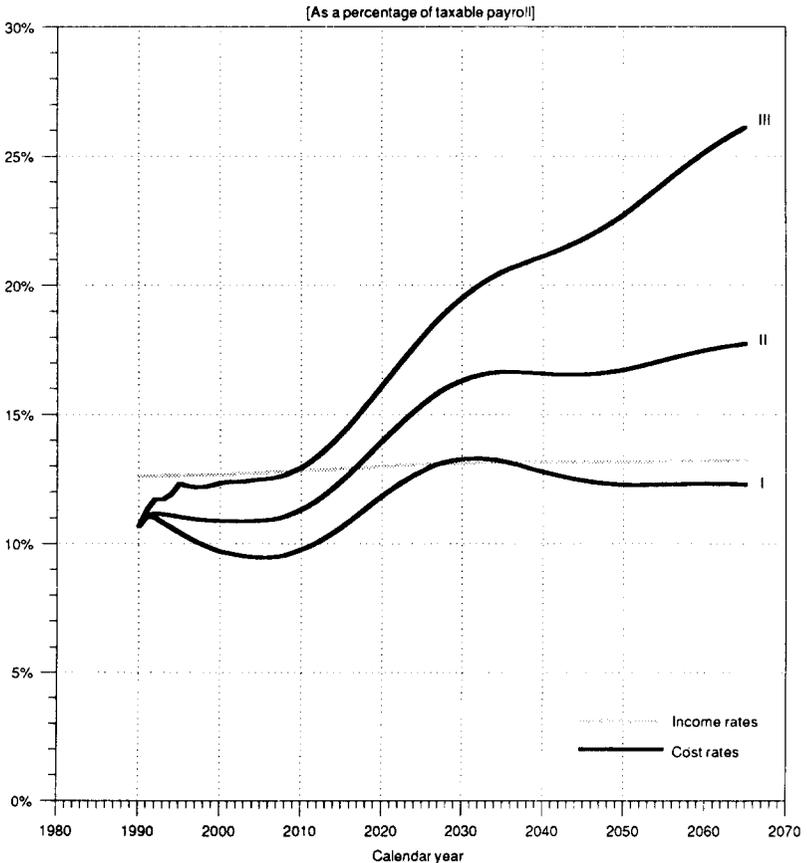
Beginning with this year's annual report, a new test for long-range close actuarial balance is being introduced. This test incorporates a graduated tolerance scale which allows larger actuarial deficits for longer valuation periods, reflecting greater uncertainty in the estimates for later years. The nature of this test, and its relationship with the new short-range test of the financial condition of the program, were discussed earlier in this section. Table 28 presents a comparison of the estimated actuarial balances with the minimum allowable balance (or maximum allowable deficit) under the long-range test, each expressed as a percentage of the summarized cost rate, based on the intermediate alternative II estimates. These minimum allowable balances are calculated to show the limit for each valuation period resulting from the graduated tolerance scale. The patterns in the estimated balances as a percentage of the summarized cost rates as well as that for the minimum allowable balance is presented graphically in figure 4, for the OASI, DI and combined OASDI programs.

As discussed earlier, a program is found not to be in long-range close actuarial balance if, for any of the valuation periods ending with the 11th through 75th years of the projection period, the estimated actuarial balance is less than the minimum allowable balance. The minimum allowable balance as a percentage of the summarized cost rate is -5.0 percent for the full 75-year long-range period and is graduated for shorter valuation periods, approaching 0 percent as the valuation periods approach the 10-year short-range period.

For the OASI program, the estimated actuarial balance as a percentage of the summarized cost rate exceeds the minimum allowable for valuation periods of length 11 years through 64 years, under the intermediate alternative II estimates. For valuation periods of length greater than 64 years, the estimated actuarial balance is less than the minimum allowable. The shortfall rises gradually, reaching 1.55 percent of the summarized cost rate for the full long-range valuation period. Thus, although the OASI program satisfies the short-range test of financial adequacy (as discussed earlier in this section), it is not in long-range close actuarial balance.

For the DI program, the estimated actuarial balance as a percentage of the summarized cost rate is less than the minimum allowable balance for each of the 65 separate valuation periods. The shortfall rises from 2.19 percent of the summarized cost rate for the 11-year valuation period to a level of 10.98 percent of the summarized cost rate for the full long-range period. Thus, the DI program is out of long-range close actuarial balance, in addition to the fact that it does not satisfy the short-range test

of financial adequacy (as discussed earlier in this section).

For the combined OASDI program, the estimated actuarial balance as a percentage of the summarized cost rate exceeds the minimum allowable balance for valuation periods of length 11 years through 57 years. For valuation periods of length greater than 57 years, the estimated actuarial balance is below the minimum allowable balance. The size of the shortfall rises gradually reaching 2.61 percent of the summarized cost rate for the full 75-year long-range valuation period. Thus, although the OASDI program satisfies the short-range test of financial adequacy (as discussed earlier in this section), it is out of long-range close actuarial balance.

TABLE 28.—COMPARISON OF ESTIMATED LONG-RANGE ACTUARIAL BALANCES WITH THE MINIMUM ALLOWABLE FOR THE TEST FOR CLOSE ACTUARIAL BALANCE BY TRUST FUND, BASED ON ALTERNATIVE II

Calendar year period	Rates (percentage of taxable payroll)			Balance as a percentage of cost rate	
	Summarized income rate	Summarized cost rate	Balance	Balance	Minimum allowable balance
OASI:					
11 years: 1991-2001	12.27	10.68	1.59	14.89	-0.08
12 years: 1991-2002	12.19	10.58	1.61	15.22	-.15
13 years: 1991-2003	12.12	10.50	1.62	15.43	-.23
14 years: 1991-2004	12.07	10.43	1.63	15.63	-.31
15 years: 1991-2005	12.02	10.37	1.64	15.81	-.38
16 years: 1991-2006	11.98	10.32	1.65	15.99	-.46
17 years: 1991-2007	11.94	10.28	1.66	16.15	-.54
18 years: 1991-2008	11.91	10.24	1.67	16.31	-.62
19 years: 1991-2009	11.88	10.22	1.67	16.34	-.69
20 years: 1991-2010	11.86	10.20	1.66	16.27	-.77
21 years: 1991-2011	11.84	10.19	1.65	16.19	-.85
22 years: 1991-2012	11.82	10.19	1.63	16.00	-.92
23 years: 1991-2013	11.80	10.19	1.61	15.80	-1.00
24 years: 1991-2014	11.79	10.21	1.58	15.48	-1.08
25 years: 1991-2015	11.77	10.23	1.54	15.05	-1.15
26 years: 1991-2016	11.76	10.27	1.49	14.51	-1.23
27 years: 1991-2017	11.75	10.31	1.44	13.97	-1.31
28 years: 1991-2018	11.74	10.35	1.39	13.43	-1.38
29 years: 1991-2019	11.73	10.40	1.33	12.79	-1.46
30 years: 1991-2020	11.73	10.46	1.27	12.14	-1.54
31 years: 1991-2021	11.72	10.52	1.20	11.41	-1.62
32 years: 1991-2022	11.72	10.59	1.13	10.67	-1.69
33 years: 1991-2023	11.71	10.65	1.06	9.95	-1.77
34 years: 1991-2024	11.71	10.72	.99	9.24	-1.85
35 years: 1991-2025	11.71	10.79	.92	8.53	-1.92
36 years: 1991-2026	11.70	10.86	.84	7.73	-2.00
37 years: 1991-2027	11.70	10.93	.77	7.04	-2.08
38 years: 1991-2028	11.70	11.00	.70	6.36	-2.15
39 years: 1991-2029	11.70	11.07	.63	5.69	-2.23
40 years: 1991-2030	11.70	11.14	.56	5.03	-2.31
41 years: 1991-2031	11.70	11.21	.49	4.37	-2.38
42 years: 1991-2032	11.70	11.27	.42	3.73	-2.46
43 years: 1991-2033	11.69	11.33	.36	3.18	-2.54
44 years: 1991-2034	11.69	11.39	.30	2.63	-2.62
45 years: 1991-2035	11.69	11.45	.24	2.10	-2.69
46 years: 1991-2036	11.69	11.51	.19	1.65	-2.77
47 years: 1991-2037	11.69	11.56	.13	1.12	-2.85
48 years: 1991-2038	11.69	11.61	.08	.69	-2.92
49 years: 1991-2039	11.69	11.66	.03	.26	-3.00
50 years: 1991-2040	11.69	11.70	-.01	-.09	-3.08
51 years: 1991-2041	11.69	11.74	-.05	-.43	-3.15
52 years: 1991-2042	11.69	11.79	-.09	-.76	-3.23
53 years: 1991-2043	11.69	11.82	-.13	-1.10	-3.31
54 years: 1991-2044	11.69	11.86	-.17	-1.43	-3.38
55 years: 1991-2045	11.69	11.90	-.21	-1.76	-3.46
56 years: 1991-2046	11.69	11.93	-.24	-2.01	-3.54
57 years: 1991-2047	11.69	11.96	-.27	-2.26	-3.62
58 years: 1991-2048	11.69	12.00	-.31	-2.58	-3.69
59 years: 1991-2049	11.69	12.03	-.34	-2.83	-3.77
60 years: 1991-2050	11.69	12.06	-.37	-3.07	-3.85
61 years: 1991-2051	11.69	12.09	-.40	-3.31	-3.92
62 years: 1991-2052	11.69	12.12	-.43	-3.55	-4.00
63 years: 1991-2053	11.69	12.15	-.46	-3.79	-4.08
64 years: 1991-2054	11.69	12.18	-.50	-4.11	-4.15
65 years: 1991-2055	11.69	12.21	-.53	-4.34	-4.23
66 years: 1991-2056	11.69	12.25	-.56	-4.57	-4.31
67 years: 1991-2057	11.69	12.28	-.59	-4.80	-4.38
68 years: 1991-2058	11.69	12.31	-.62	-5.04	-4.46
69 years: 1991-2059	11.69	12.34	-.65	-5.27	-4.54
70 years: 1991-2060	11.69	12.36	-.68	-5.50	-4.62
71 years: 1991-2061	11.69	12.39	-.70	-5.65	-4.69
72 years: 1991-2062	11.69	12.42	-.73	-5.88	-4.77
73 years: 1991-2063	11.69	12.45	-.76	-6.10	-4.85
74 years: 1991-2064	11.69	12.48	-.79	-6.33	-4.92
75 years: 1991-2065	11.69	12.51	-.82	-6.55	-5.00

TABLE 28.—COMPARISON OF ESTIMATED LONG-RANGE ACTUARIAL BALANCES WITH THE MINIMUM ALLOWABLE FOR THE TEST FOR CLOSE ACTUARIAL BALANCE BY TRUST FUND, BASED ON ALTERNATIVE II (Cont.)

| Calendar year period	Rates (percentage of taxable payroll)			Balance as a percentage of cost rate	
	Summarized income rate	Summarized cost rate	Balance	Balance	Minimum allowable balance
DI:					
11 years: 1991-2001	1.29	1.32	-0.03	-2.27	-0.08
12 years: 1991-2002	1.30	1.32	-.02	-1.52	-.15
13 years: 1991-2003	1.31	1.32	-.01	-.76	-.23
14 years: 1991-2004	1.32	1.32	-.01	-.76	-.31
15 years: 1991-2005	1.32	1.33	-.01	-.75	-.38
16 years: 1991-2006	1.33	1.34	-.01	-.75	-.46
17 years: 1991-2007	1.34	1.35	-.01	-.74	-.54
18 years: 1991-2008	1.34	1.36	-.01	-.74	-.62
19 years: 1991-2009	1.35	1.37	-.02	-1.46	-.69
20 years: 1991-2010	1.35	1.38	-.03	-2.17	-.77
21 years: 1991-2011	1.35	1.39	-.03	-2.16	-.85
22 years: 1991-2012	1.36	1.40	-.04	-2.86	-.92
23 years: 1991-2013	1.36	1.41	-.05	-3.55	-1.00
24 years: 1991-2014	1.37	1.42	-.06	-4.23	-1.08
25 years: 1991-2015	1.37	1.43	-.07	-4.90	-1.15
26 years: 1991-2016	1.37	1.44	-.07	-4.86	-1.23
27 years: 1991-2017	1.37	1.45	-.08	-5.52	-1.31
28 years: 1991-2018	1.38	1.46	-.09	-6.16	-1.38
29 years: 1991-2019	1.38	1.47	-.10	-6.80	-1.46
30 years: 1991-2020	1.38	1.48	-.10	-6.76	-1.54
31 years: 1991-2021	1.38	1.49	-.11	-7.38	-1.62
32 years: 1991-2022	1.38	1.50	-.12	-8.00	-1.69
33 years: 1991-2023	1.39	1.51	-.12	-7.95	-1.77
34 years: 1991-2024	1.39	1.52	-.13	-8.55	-1.85
35 years: 1991-2025	1.39	1.52	-.14	-9.21	-1.92
36 years: 1991-2026	1.39	1.53	-.14	-9.15	-2.00
37 years: 1991-2027	1.39	1.54	-.15	-9.74	-2.08
38 years: 1991-2028	1.39	1.55	-.15	-9.68	-2.15
39 years: 1991-2029	1.39	1.55	-.16	-10.32	-2.23
40 years: 1991-2030	1.40	1.56	-.16	-10.26	-2.31
41 years: 1991-2031	1.40	1.56	-.17	-10.90	-2.38
42 years: 1991-2032	1.40	1.57	-.17	-10.83	-2.46
43 years: 1991-2033	1.40	1.57	-.18	-11.46	-2.54
44 years: 1991-2034	1.40	1.58	-.18	-11.39	-2.62
45 years: 1991-2035	1.40	1.58	-.18	-11.39	-2.69
46 years: 1991-2036	1.40	1.59	-.19	-11.95	-2.77
47 years: 1991-2037	1.40	1.59	-.19	-11.95	-2.85
48 years: 1991-2038	1.40	1.59	-.19	-11.95	-2.92
49 years: 1991-2039	1.40	1.60	-.19	-11.88	-3.00
50 years: 1991-2040	1.41	1.60	-.20	-12.50	-3.08
51 years: 1991-2041	1.41	1.61	-.20	-12.42	-3.15
52 years: 1991-2042	1.41	1.61	-.20	-12.42	-3.23
53 years: 1991-2043	1.41	1.61	-.21	-13.04	-3.31
54 years: 1991-2044	1.41	1.62	-.21	-12.96	-3.38
55 years: 1991-2045	1.41	1.62	-.21	-12.96	-3.46
56 years: 1991-2046	1.41	1.63	-.22	-13.50	-3.54
57 years: 1991-2047	1.41	1.63	-.22	-13.50	-3.62
58 years: 1991-2048	1.41	1.63	-.22	-13.50	-3.69
59 years: 1991-2049	1.41	1.64	-.23	-14.02	-3.77
60 years: 1991-2050	1.41	1.64	-.23	-14.02	-3.85
61 years: 1991-2051	1.41	1.65	-.23	-13.94	-3.92
62 years: 1991-2052	1.41	1.65	-.24	-14.55	-4.00
63 years: 1991-2053	1.41	1.65	-.24	-14.55	-4.08
64 years: 1991-2054	1.41	1.66	-.24	-14.46	-4.15
65 years: 1991-2055	1.41	1.66	-.25	-15.06	-4.23
66 years: 1991-2056	1.41	1.66	-.25	-15.06	-4.31
67 years: 1991-2057	1.42	1.67	-.25	-14.97	-4.38
68 years: 1991-2058	1.42	1.67	-.25	-14.97	-4.46
69 years: 1991-2059	1.42	1.67	-.26	-15.57	-4.54
70 years: 1991-2060	1.42	1.67	-.26	-15.57	-4.62
71 years: 1991-2061	1.42	1.68	-.26	-15.48	-4.69
72 years: 1991-2062	1.42	1.68	-.26	-15.48	-4.77
73 years: 1991-2063	1.42	1.68	-.26	-15.48	-4.85
74 years: 1991-2064	1.42	1.68	-.27	-16.07	-4.92
75 years: 1991-2065	1.42	1.69	-.27	-15.98	-5.00

TABLE 28.—COMPARISON OF ESTIMATED LONG-RANGE ACTUARIAL BALANCES WITH THE MINIMUM ALLOWABLE FOR THE TEST FOR CLOSE ACTUARIAL BALANCE BY TRUST FUND, BASED ON ALTERNATIVE II (Cont.)

Calendar year period	Rates (percentage of taxable payroll)			Balance as a percentage of cost rate	
	Summarized income rate	Summarized cost rate	Balance	Balance	Minimum allowable balance
OASDI:					
11 years: 1991-2001	13.56	11.99	1.57	13.09	-0.08
12 years: 1991-2002	13.49	11.90	1.59	13.36	-.15
13 years: 1991-2003	13.43	11.82	1.61	13.62	-.23
14 years: 1991-2004	13.38	11.76	1.63	13.86	-.31
15 years: 1991-2005	13.34	11.70	1.64	14.02	-.38
16 years: 1991-2006	13.31	11.66	1.65	14.15	-.46
17 years: 1991-2007	13.28	11.62	1.65	14.20	-.54
18 years: 1991-2008	13.25	11.60	1.65	14.22	-.62
19 years: 1991-2009	13.23	11.58	1.65	14.25	-.69
20 years: 1991-2010	13.21	11.57	1.63	14.09	-.77
21 years: 1991-2011	13.19	11.58	1.61	13.90	-.85
22 years: 1991-2012	13.18	11.59	1.59	13.72	-.92
23 years: 1991-2013	13.16	11.61	1.56	13.44	-1.00
24 years: 1991-2014	13.15	11.63	1.52	13.07	-1.08
25 years: 1991-2015	13.14	11.67	1.47	12.60	-1.15
26 years: 1991-2016	13.13	11.71	1.42	12.13	-1.23
27 years: 1991-2017	13.12	11.76	1.36	11.56	-1.31
28 years: 1991-2018	13.12	11.82	1.30	11.00	-1.38
29 years: 1991-2019	13.11	11.88	1.23	10.35	-1.46
30 years: 1991-2020	13.11	11.94	1.16	9.72	-1.54
31 years: 1991-2021	13.10	12.01	1.09	9.08	-1.62
32 years: 1991-2022	13.10	12.09	1.02	8.44	-1.69
33 years: 1991-2023	13.10	12.16	.94	7.73	-1.77
34 years: 1991-2024	13.10	12.24	.86	7.03	-1.85
35 years: 1991-2025	13.10	12.31	.78	6.34	-1.92
36 years: 1991-2026	13.09	12.39	.70	5.65	-2.00
37 years: 1991-2027	13.09	12.47	.62	4.97	-2.08
38 years: 1991-2028	13.09	12.55	.55	4.38	-2.15
39 years: 1991-2029	13.09	12.62	.47	3.72	-2.23
40 years: 1991-2030	13.09	12.70	.39	3.07	-2.31
41 years: 1991-2031	13.09	12.77	.32	2.51	-2.38
42 years: 1991-2032	13.09	12.84	.25	1.95	-2.46
43 years: 1991-2033	13.09	12.91	.18	1.39	-2.54
44 years: 1991-2034	13.09	12.97	.12	.93	-2.62
45 years: 1991-2035	13.09	13.04	.06	.46	-2.69
46 years: 1991-2036	13.09	13.09	.00	.00	-2.77
47 years: 1991-2037	13.10	13.15	-.06	-.46	-2.85
48 years: 1991-2038	13.10	13.20	-.11	-.83	-2.92
49 years: 1991-2039	13.10	13.26	-.16	-1.21	-3.00
50 years: 1991-2040	13.10	13.30	-.21	-1.58	-3.08
51 years: 1991-2041	13.10	13.35	-.25	-1.87	-3.15
52 years: 1991-2042	13.10	13.40	-.30	-2.24	-3.23
53 years: 1991-2043	13.10	13.44	-.34	-2.53	-3.31
54 years: 1991-2044	13.10	13.48	-.38	-2.82	-3.38
55 years: 1991-2045	13.10	13.52	-.42	-3.11	-3.46
56 years: 1991-2046	13.10	13.56	-.46	-3.39	-3.54
57 years: 1991-2047	13.10	13.59	-.49	-3.61	-3.62
58 years: 1991-2048	13.10	13.63	-.53	-3.89	-3.69
59 years: 1991-2049	13.10	13.67	-.57	-4.17	-3.77
60 years: 1991-2050	13.10	13.70	-.60	-4.38	-3.85
61 years: 1991-2051	13.10	13.74	-.64	-4.66	-3.92
62 years: 1991-2052	13.10	13.77	-.67	-4.87	-4.00
63 years: 1991-2053	13.10	13.81	-.70	-5.07	-4.08
64 years: 1991-2054	13.10	13.84	-.74	-5.35	-4.15
65 years: 1991-2055	13.10	13.87	-.77	-5.55	-4.23
66 years: 1991-2056	13.10	13.91	-.80	-5.75	-4.31
67 years: 1991-2057	13.10	13.94	-.84	-6.03	-4.38
68 years: 1991-2058	13.11	13.97	-.87	-6.23	-4.46
69 years: 1991-2059	13.11	14.01	-.90	-6.42	-4.54
70 years: 1991-2060	13.11	14.04	-.93	-6.62	-4.62
71 years: 1991-2061	13.11	14.07	-.96	-6.82	-4.69
72 years: 1991-2062	13.11	14.10	-.99	-7.02	-4.77
73 years: 1991-2063	13.11	14.13	-1.02	-7.22	-4.85
74 years: 1991-2064	13.11	14.16	-1.05	-7.42	-4.92
75 years: 1991-2065	13.11	14.19	-1.08	-7.61	-5.00

FIGURE 4.—COMPARISON OF ESTIMATED LONG-RANGE ACTUARIAL
BALANCES WITH THE MINIMUM ALLOWABLE FOR CLOSE ACTUARIAL
BALANCE, ALTERNATIVE II BY TRUST FUND

Ending year of valuation period
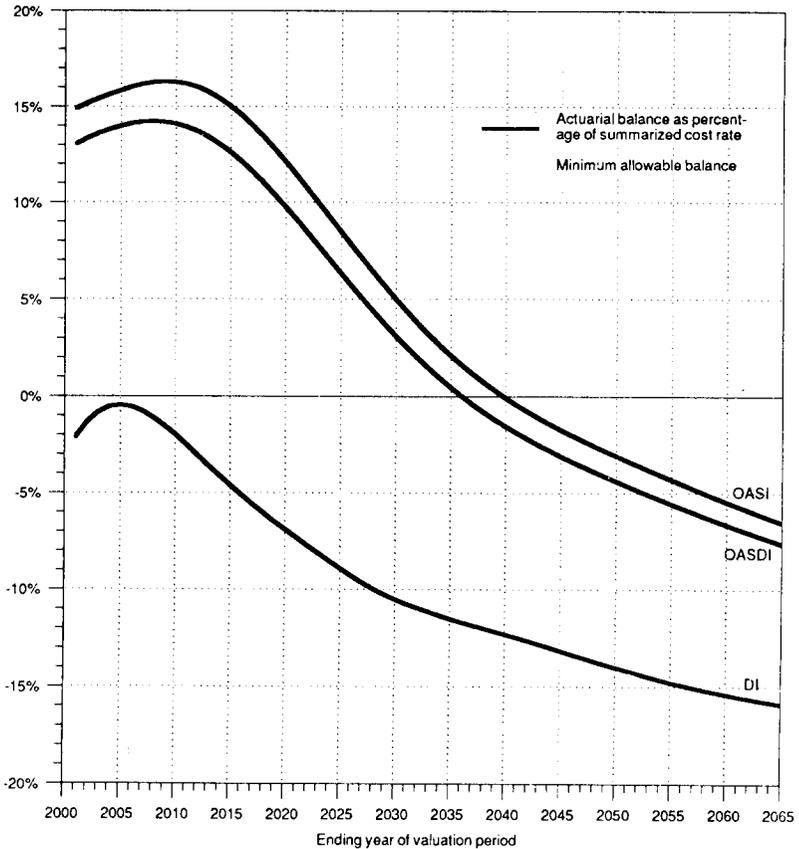
Annual income rates and their components are shown in table 29, for each alternative set of assumptions. The annual income rates reflect the scheduled payroll tax rates and the projected rate of income from the taxation of benefits, which reflect changes in the cost rates and the fact that benefit-taxation threshold amounts are not indexed.

Summarized values for the annual income and cost rates, along with their components, are presented in table 30 for 25-year, 50-year, and 75-year valuation periods. Summarized income rates include the starting trust fund balance in addition to the components included in the annual income rates. The summarized cost rates include the cost of reaching and maintaining an ending trust fund target of 100 percent of annual expenditures by the end of the period in addition to the disbursements included in the annual cost rates. Thus, the total summarized rates shown in table 30 are the same as the summarized income and cost rates shown in table 27 for the 25-year, 50-year, and 75-year valuation periods.

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TABLE 29.—COMPONENTS OF ANNUAL INCOME RATES BY TRUST FUND AND ALTERNATIVE,
CALENDAR YEARS 1991-2065
(As a percentage of taxable payroll)

Calendar year	OASI			DI			Total		
	Payroll tax	Taxation of benefits	Total	Payroll tax	Taxation of benefits	Total	Payroll tax	Taxation of benefits	Total
Alternative I:									
1991	11.20	0.20	11.40	1.20	0.01	1.21	12.40	0.21	12.61
1992	11.20	.21	11.41	1.20	.01	1.21	12.40	.22	12.62
1993	11.20	.21	11.41	1.20	.01	1.21	12.40	.22	12.62
1994	11.20	.21	11.41	1.20	.01	1.21	12.40	.22	12.62
1995	11.20	.17	11.37	1.20	.01	1.21	12.40	.17	12.57
1996	11.20	.21	11.41	1.20	.01	1.21	12.40	.22	12.62
1997	11.20	.21	11.41	1.20	.01	1.21	12.40	.22	12.62
1998	11.20	.22	11.42	1.20	.01	1.21	12.40	.23	12.63
1999	11.20	.22	11.42	1.20	.01	1.21	12.40	.23	12.63
2000	10.98	.23	11.21	1.42	.01	1.43	12.40	.24	12.64
2005	10.98	.28	11.26	1.42	.01	1.43	12.40	.30	12.70
2010	10.98	.34	11.32	1.42	.02	1.44	12.40	.36	12.76
2015	10.98	.39	11.37	1.42	.03	1.45	12.40	.42	12.82
2020	10.98	.46	11.44	1.42	.03	1.45	12.40	.49	12.89
2025	10.98	.51	11.49	1.42	.03	1.45	12.40	.54	12.94
2030	10.98	.55	11.53	1.42	.03	1.45	12.40	.58	12.98
2035	10.98	.55	11.53	1.42	.03	1.45	12.40	.58	12.98
2040	10.98	.54	11.52	1.42	.03	1.45	12.40	.57	12.97
2045	10.98	.53	11.51	1.42	.03	1.45	12.40	.56	12.96
2050	10.98	.52	11.50	1.42	.03	1.45	12.40	.56	12.96
2055	10.98	.53	11.51	1.42	.03	1.45	12.40	.56	12.96
2060	10.98	.53	11.51	1.42	.03	1.45	12.40	.56	12.96
2065	10.98	.53	11.51	1.42	.03	1.45	12.40	.56	12.96
Alternative II:									
1991	11.20	.21	11.41	1.20	.01	1.21	12.40	.21	12.61
1992	11.20	.21	11.41	1.20	.01	1.21	12.40	.22	12.62
1993	11.20	.22	11.42	1.20	.01	1.21	12.40	.23	12.63
1994	11.20	.22	11.42	1.20	.01	1.21	12.40	.23	12.63
1995	11.20	.22	11.42	1.20	.01	1.21	12.40	.23	12.63
1996	11.20	.23	11.43	1.20	.01	1.21	12.40	.24	12.64
1997	11.20	.23	11.43	1.20	.01	1.21	12.40	.24	12.64
1998	11.20	.24	11.44	1.20	.01	1.21	12.40	.25	12.65
1999	11.20	.25	11.45	1.20	.01	1.21	12.40	.26	12.66
2000	10.98	.25	11.23	1.42	.01	1.43	12.40	.26	12.66
2005	10.98	.32	11.30	1.42	.02	1.44	12.40	.34	12.74
2010	10.98	.40	11.38	1.42	.03	1.45	12.40	.42	12.82
2015	10.98	.46	11.44	1.42	.03	1.45	12.40	.49	12.89
2020	10.98	.54	11.52	1.42	.04	1.46	12.40	.58	12.98
2025	10.98	.62	11.60	1.42	.04	1.46	12.40	.66	13.06
2030	10.98	.67	11.65	1.42	.04	1.46	12.40	.71	13.11
2035	10.98	.70	11.68	1.42	.04	1.46	12.40	.74	13.14
2040	10.98	.70	11.68	1.42	.04	1.46	12.40	.75	13.15
2045	10.98	.70	11.68	1.42	.04	1.46	12.40	.75	13.15
2050	10.98	.71	11.69	1.42	.05	1.47	12.40	.76	13.16
2055	10.98	.73	11.71	1.42	.05	1.47	12.40	.78	13.18
2060	10.98	.76	11.74	1.42	.05	1.47	12.40	.80	13.20
2065	10.98	.77	11.75	1.42	.05	1.47	12.40	.82	13.22
Alternative III:									
1991	11.20	.21	11.41	1.20	.01	1.21	12.40	.22	12.62
1992	11.20	.22	11.42	1.20	.01	1.21	12.40	.23	12.63
1993	11.20	.23	11.43	1.20	.01	1.21	12.40	.24	12.64
1994	11.20	.24	11.44	1.20	.01	1.21	12.40	.25	12.65
1995	11.20	.25	11.45	1.20	.01	1.21	12.40	.26	12.66
1996	11.20	.25	11.45	1.20	.01	1.21	12.40	.26	12.66
1997	11.20	.25	11.45	1.20	.01	1.21	12.40	.27	12.67
1998	11.20	.26	11.46	1.20	.01	1.21	12.40	.27	12.67
1999	11.20	.27	11.47	1.20	.01	1.21	12.40	.29	12.69
2000	10.98	.28	11.26	1.42	.01	1.43	12.40	.30	12.70

TABLE 29.—COMPONENTS OF ANNUAL INCOME RATES BY TRUST FUND AND ALTERNATIVE, CALENDAR YEARS 1991-2065 (Cont.)

[As a percentage of taxable payroll]

	OASI			DI			Total		
Calendar year	Payroll tax	Taxation of benefits	Total	Payroll tax	Taxation of benefits	Total	Payroll tax	Taxation of benefits	Total
Alternative III: (Cont.)									
2005	10.98	0.37	11.35	1.42	0.02	1.44	12.40	0.40	12.80
2010	10.98	.46	11.44	1.42	.04	1.46	12.40	.49	12.89
2015	10.98	.53	11.51	1.42	.04	1.46	12.40	.57	12.97
2020	10.98	.62	11.60	1.42	.05	1.47	12.40	.67	13.07
2025	10.98	.72	11.70	1.42	.05	1.47	12.40	.77	13.17
2030	10.98	.80	11.78	1.42	.05	1.47	12.40	.86	13.26
2035	10.98	.86	11.84	1.42	.06	1.48	12.40	.92	13.32
2040	10.98	.89	11.87	1.42	.06	1.48	12.40	.95	13.35
2045	10.98	.92	11.90	1.42	.06	1.48	12.40	.99	13.39
2050	10.98	.97	11.95	1.42	06	1.48	12.40	1.03	13.43
2055	10.98	1.03	12.01	1.42	.07	1.49	12.40	1.09	13.49
2060	10.98	1.09	12.07	1.42	.07	1.49	12.40	1.16	13.56
2065	10.98	1.14	12.12	1.42	.07	1.49	12.40	1.20	13.60

Note: Totals do not necessarily equal the sums of rounded components.

TABLE 30.—COMPONENTS OF SUMMARIZED INCOME RATES AND COST RATES BY TRUST FUND AND ALTERNATIVE, CALENDAR YEARS 1991-2065

[As a percentage of taxable payroll]

	Income rate				Cost rate		
Calendar year	Payroll tax	Taxation of benefits	Beginning fund balance	Total	Disbursements	Ending fund target	Total
OASI:							
Alternative I:							
25 years: 1991-2015	11.05	0.27	0.41	11.72	8.92	0.35	9.27
50 years: 1991-2040	11.01	.38	.23	11.61	9.95	.19	10.14
75 years: 1991-2065	11.00	.42	.16	11.58	10.23	.11	10.34
Alternative II:							
25 years: 1991-2015	11.04	.30	.42	11.77	9.83	.40	10.23
50 years: 1991-2040	11.01	.44	.24	11.69	11.47	.23	11.70
75 years: 1991-2065	11.00	.51	.18	11.69	12.37	.14	12.51
Alternative III:							
25 years: 1991-2015	11.04	.34	.44	11.83	10.89	.46	11.35
50 years: 1991-2040	11.01	.52	.25	11.77	13.16	.29	13.45
75 years: 1991-2065	11.00	.64	.19	11.82	15.00	.20	15.19
DI:							
Alternative I:							
25 years: 1991-2015	1.33	.01	.02	1.37	1.14	.05	1.19
50 years: 1991-2040	1.37	.02	.01	1.40	1.26	.02	1.28
75 years: 1991-2065	1.38	.02	.01	1.41	1.30	.01	1.31
Alternative II:							
25 years: 1991-2015	1.33	.02	.02	1.37	1.37	.06	1.43
50 years: 1991-2040	1.37	.03	.01	1.41	1.57	.03	1.60
75 years: 1991-2065	1.38	.03	.01	1.42	1.67	.02	1.69
Alternative III:							
25 years: 1991-2015	1.33	.02	.02	1.37	1.66	.08	1.74
50 years: 1991-2040	1.36	.04	.01	1.41	1.97	.04	2.01
75 years: 1991-2065	1.38	.04	.01	1.43	2.15	.02	2.18
OASDI:							
Alternative I:							
25 years: 1991-2015	12.38	.28	.43	13.09	10.06	.40	10.46
50 years: 1991-2040	12.38	.40	.24	13.01	11.21	.21	11.42
75 years: 1991-2065	12.38	.44	.17	13.00	11.53	.12	11.65
Alternative II:							
25 years: 1991-2015	12.37	.32	.45	13.14	11.20	.47	11.67
50 years: 1991-2040	12.38	.47	.25	13.10	13.05	.26	13.30
75 years: 1991-2065	12.38	.55	.19	13.11	14.04	.16	14.19
Alternative III:							
25 years: 1991-2015	12.37	.36	.47	13.20	12.55	.54	13.09
50 years: 1991-2040	12.37	.55	.26	13.19	15.13	.33	15.46
75 years: 1991-2065	12.37	.68	.20	13.25	17.15	.22	17.37

Note: Totals do not necessarily equal the sums of rounded components.

The primary reason that the estimated OASDI cost rate increases rapidly after 2005 is that the number of beneficiaries is projected to increase more rapidly than the number of covered workers. This occurs because the relatively large number of persons born during the period of high fertility rates from the end of World War II through the mid-1960s will reach retirement age, and begin to receive benefits, while the relatively small number of persons born during the subsequent period of low fertility rates will comprise the labor force. A comparison of the numbers of covered workers and beneficiaries is shown in table 31.

TABLE 31.—COMPARISON OF OASDI COVERED WORKERS AND BENEFICIARIES BY ALTERNATIVE, CALENDAR YEARS 1945-2065

Calendar year	Covered workers[1] (in thousands)	Beneficiaries[2] (in thousands)			Covered workers per OASDI beneficiary	Beneficiaries per 100 covered workers
		OASI	DI	Total		
Past experience:						
1945	46,390	1,106	—	1,106	41.9	2
1950	48,280	2,930	—	2,930	16.5	6
1955	65,200	7,563	—	7,563	8.6	12
1960	72,530	13,740	522	14,262	5.1	20
1965	80,680	18,509	1,648	20,157	4.0	25
1970	93,090	22,618	2,568	25,186	3.7	27
1975	100,200	26,998	4,125	31,123	3.2	31
1980	112,212	30,385	4,734	35,119	3.2	31
1985	120,098	32,776	3,874	36,650	3.3	31
1986	122,960	33,349	3,972	37,321	3.3	30
1987	125,548	33,917	4,034	37,952	3.3	30
1988	³129,565	34,343	4,077	38,421	3.4	30
1989	³132,995	34,754	4,105	38,859	3.4	29
1990	³133,530	35,266	4,204	39,470	3.4	30
Alternative I:						
1991	133,948	35,766	4,328	40,094	3.3	30
1995	141,490	37,321	4,447	41,768	3.4	30
2000	149,240	38,613	4,782	43,396	3.4	29
2005	133,948	40,076	5,374	45,450	3.4	29
2010	135,521	43,130	6,166	49,296	3.3	31
2015	137,662	48,657	6,648	55,305	3.0	34
2020	139,690	55,622	6,925	62,547	2.7	37
2025	141,490	62,214	7,273	69,486	2.4	41
2030	143,203	67,066	7,390	74,456	2.3	43
2035	144,796	69,708	7,421	77,129	2.3	43
2040	146,381	70,204	7,583	77,787	2.4	42
2045	147,834	70,493	7,981	78,474	2.4	41
2050	149,240	71,493	8,301	79,794	2.4	41
2055	150,425	73,506	8,591	82,097	2.4	41
2060	151,720	75,862	8,779	84,640	2.4	41
2065	152,976	78,025	9,019	87,044	2.4	41
Alternative II:						
1991	133,661	35,765	4,350	40,115	3.3	30
1995	139,177	37,480	4,750	42,230	3.3	30
2000	145,227	39,120	5,468	44,588	3.3	31
2005	133,661	40,938	6,112	47,050	3.2	31
2010	134,774	44,265	7,097	51,362	3.0	33
2015	136,496	50,067	7,683	57,750	2.7	37
2020	137,936	57,352	7,978	65,330	2.4	41
2025	139,177	64,292	8,324	72,616	2.2	46
2030	140,399	69,576	8,385	77,961	2.0	49
2035	141,574	72,671	8,351	81,022	2.0	51
2040	142,800	73,562	8,462	82,024	2.0	51
2045	144,001	74,103	8,828	82,931	2.0	51
2050	145,227	75,232	9,061	84,293	1.9	52
2055	145,969	77,239	9,205	86,444	1.9	53
2060	146,889	79,326	9,159	88,485	1.8	54
2065	147,776	80,885	9,163	90,048	1.8	55
Alternative III:						
1991	133,299	35,775	4,370	40,145	3.3	30
1995	134,643	37,628	5,047	42,675	3.2	32
2000	141,625	39,622	6,328	45,950	3.1	32
2005	133,299	41,853	6,999	48,852	3.0	34
2010	132,238	45,473	8,223	53,696	2.8	36
2015	133,731	51,546	8,946	60,492	2.5	40
2020	134,958	59,187	9,290	68,477	2.2	46
2025	134,643	66,592	9,661	76,254	1.9	52
2030	135,776	72,551	9,686	82,238	1.8	56
2035	137,864	76,482	9,614	86,096	1.7	60
2040	139,404	78,287	9,701	87,988	1.6	62
2045	140,547	79,681	10,054	89,735	1.6	64

TABLE 31.—COMPARISON OF OASDI COVERED WORKERS AND BENEFICIARIES
BY ALTERNATIVE, CALENDAR YEARS 1945-2065 (Cont.)

Calendar year	Covered work-ers[1] (in thousands)	Beneficiaries[2] (in thousands)			Covered workers per OASDI beneficiary	Beneficiaries per 100 covered workers
		OASI	DI	Total		
Alternative III: (Cont.)						
2050	141,625	81,566	10,187	91,753	1.5	67
2055	142,180	84,148	10,147	94,295	1.4	71
2060	142,790	86,469	9,801	96,270	1.3	74
2065	143,377	87,823	9,514	97,337	1.3	77

[1]Workers who pay OASDI taxes at some time during the year.

[2]Beneficiaries with monthly benefits in current-payment status as of June 30.

[3]Preliminary.

Note: The numbers of beneficiaries do not include certain uninsured persons, most of whom both attained age 72 before 1968 and have fewer than 3 quarters of coverage, in which cases the costs are reimbursed by the general fund of the Treasury. The number of such uninsured persons was 8,594 as of June 30, 1990, and is estimated to be fewer than 500 by the turn of the century. Totals do not necessarily equal the sums of rounded components.

Table 31 shows that the number of covered workers per beneficiary, which was about 3.4 in 1990, is estimated to decline in the future. Based on alternative I, for which high fertility rates and small reductions in death rates are assumed, the ratio declines to an ultimate level of 2.4 by 2040. Based on alternative III, for which low fertility rates and substantial reductions in death rates are assumed, the decline is much greater, reaching 1.3 workers per beneficiary by 2065. Based on alternative II, the ratio declines to 1.8 workers per beneficiary.

The impact of the demographic shifts under the three alternatives on the OASDI cost rates is better understood by considering the projected number of beneficiaries per 100 workers. As compared to the current level of 30 beneficiaries per 100 covered workers, this ratio is estimated to rise by the year 2065 to significantly higher levels, which are 41 under alternative I, 55 under alternative II, and 77 under alternative III. The significance of these numbers can be seen by comparing figure 3 to figure 5. For each alternative, the shape of the curve in figure 5, which shows beneficiaries per 100 covered workers, is strikingly similar to that of the corresponding cost-rate curve in figure 3, thereby emphasizing the extent to which the cost of the OASDI program is determined by the age patterns of the population. Because the cost rate is basically the product of the number of beneficiaries and their average benefit, divided by the product of the number of covered workers and their average taxable earnings (and because average benefits rise at about the same rate as average earnings), it is reasonable that the pattern of the annual cost rates is similar to that of the annual ratios of beneficiaries to workers. A graphical presentation of covered workers per beneficiary is shown in the "Summary."

FIGURE 5.—RATIOS OF ESTIMATED OASDI BENEFICIARIES PER 100
COVERED WORKERS BY ALTERNATIVE,
CALENDAR YEARS 1990-2065

Calendar year
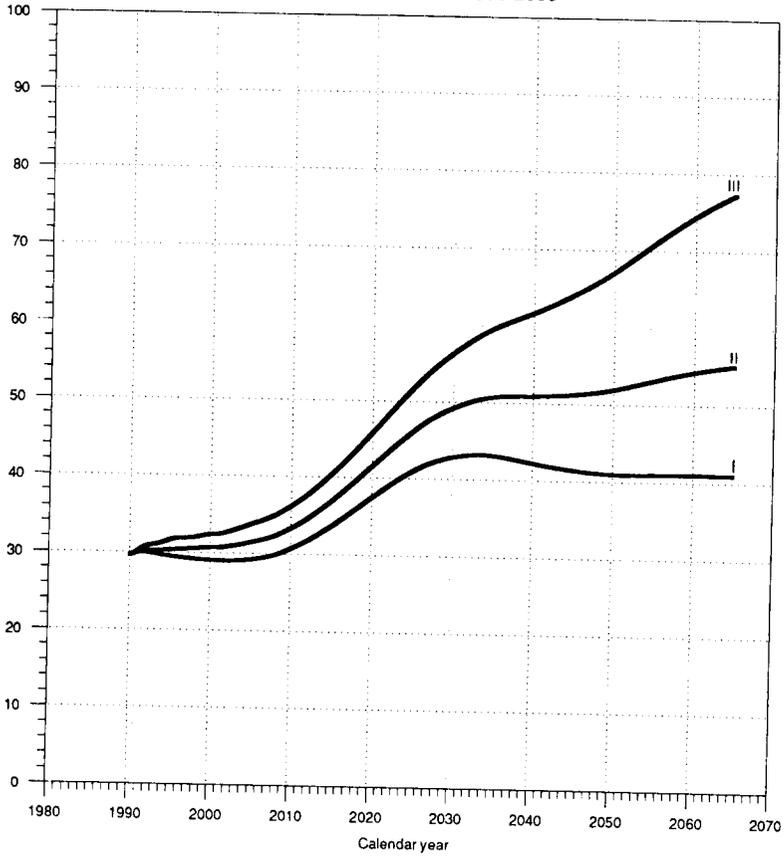
Table 32 shows, by alternative, the estimated contingency fund ratios for the separate and combined OASI and DI Trust Funds. The patterns of the combined fund ratios, over the 75-year period, are shown graphically in figure 6, for all three sets of assumptions.

Both the OASI and DI ratios, which are still fairly low, gradually increase based on alternative II. Such increases in the contingency fund ratios result from the fact that annual income rates (excluding interest) exceed annual outgo for several years (see table 26). The OASI ratio peaks about 2015, when it is 482 percent and the DI ratio peaks about 2005, when it is 94 percent. Thereafter, the OASI and DI ratios decline steadily. Under alternative II, the OASI and DI Trust Funds become exhausted in 2045 and 2015, respectively.

It should be noted that during the period in which the contingency fund ratio declines, the net amount of assets held by the trust funds declines. Initially, the dollar amount of the fund may continue to grow if interest on the fund is more than enough to cover the shortfall of noninterest income with respect to expenditures. However, when the difference between noninterest income and annual expenditures becomes larger than the interest on the fund, then the level of the trust fund in assets will also begin to decline. In either case, revenue from the general fund of the Treasury will be transferred to the trust funds as the special public debt obligations issued to the trust funds are redeemed in order to cover the shortfall. This will differ from the experience of recent years for which the trust funds have been net lenders to the general fund of the Treasury. The change in the cash flow between the trust funds and the general fund is expected to have important public policy and economic implications that go well beyond the operation of the OASDI program itself. Discussion of these issues is outside the scope of this report.

Based on alternative I, the contingency fund ratio increases virtually throughout the long-range projection period reaching extremely high levels by 2065, around 1,200 and 800 percent for the OASI and DI programs, respectively. In contrast, under alternative III, the OASI and DI Trust Funds are estimated to peak at about 220 percent around 2010, and at 41 percent in 1992, respectively, and to be exhausted within 35 years and 6 years, respectively. Thus, because of the high ultimate cost rates that are projected under all but the most optimistic assumptions, eventually income will need to be increased and/or program costs will need to be reduced in order to prevent the OASI and DI Trust Funds from becoming exhausted.

The OASI and DI funds combined are projected to rise for several years under each of the alternative sets of assumptions. Under alternative I the combined fund ratios are still rising at the end of the 75-year period. The combined fund ratios reach peaks in about 2015 under alternatives II and in about 2010 under alternative III, before turning down. The combined funds are projected to be exhausted in 2022 under the pessimistic assumptions in alternative III and in 2041 under the intermediate assumptions of alternative II (2 years earlier than for the intermediate alternative II-B assumptions in last year's report). This means that under even the most pessimistic assumptions the combined

OASDI funds and income would be able to cover expenditures for about 31 years into the future and that under the alternative II assumptions the OASDI funds and income would be able to cover expenditures for about 50 years into the future. The program would be able to cover expenditures for the indefinite future under the most optimistic assumptions in alternative I. In the 1990 report, the combined trust funds were projected to be exhausted in 2023 under alternative III, in 2043 under alternative II-B, and in 2056 under alternative II-A.

TABLE 32.—ESTIMATED CONTINGENCY FUND RATIOS BY TRUST FUND AND ALTERNATIVE, CALENDAR YEARS 1991-2065

[In percent]

Calendar year	Alternative I			Alternative II			Alternative III		
	OASI	DI	Total	OASI	DI	Total	OASI	DI	Total
1991	87	40	83	87	40	82	87	39	82
1992	104	48	98	102	45	96	99	41	93
1993	122	58	116	118	49	111	109	37	101
1994	143	72	136	135	54	126	118	33	109
1995	166	87	159	152	58	142	127	25	115
1996	192	104	183	171	61	159	134	14	120
1997	220	122	210	190	62	176	142	8	125
1998	251	140	240	210	62	194	150	(¹)	130
1999	284	158	271	231	60	211	159	(¹)	135
2000	318	174	303	252	57	229	167	(¹)	139
2005	499	329	479	352	94	319	200	(¹)	157
2010	676	401	641	444	75	392	224	(¹)	160
2015	783	437	739	482	13	418	213	(¹)	132
2020	810	468	769	455	(¹)	387	150	(¹)	60
2025	806	486	770	389	(¹)	321	45	(¹)	(¹)
2030	803	511	772	303	(¹)	235	(¹)	(¹)	(¹)
2035	820	560	792	209	(¹)	139	(¹)	(¹)	(¹)
2040	872	610	844	114	(¹)	40	(¹)	(¹)	(¹)
2045	946	640	911	17	(¹)	(¹)	(¹)	(¹)	(¹)
2050	1,022	669	981	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)
2055	1,088	700	1,044	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)
2060	1,151	744	1,105	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)
2065	1,222	789	1,173	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)
Trust fund is estimated to be exhausted in:	(²)	(²)	(²)	2045	2015	2041	2026	1997	2022

¹The trust fund is estimated to have been exhausted by the beginning of this year. The last line of the table shows the specific year of trust fund exhaustion.

²The fund is not estimated to be exhausted within the projection period.

Note: See footnote 2 of table 13 for definition of contingency fund ratio. The OASDI ratios shown for years after a given fund is estimated to be exhausted are theoretical and are shown for informational purposes only.

A graphic illustration of the contingency fund ratios for the combined trust funds is shown in figure 6 for each of the alternative sets of assumptions.

FIGURE 6.—ESTIMATED CONTINGENCY FUND RATIOS, FOR OASI AND DI
TRUST FUNDS COMBINED, CALENDAR YEARS 1990-2065
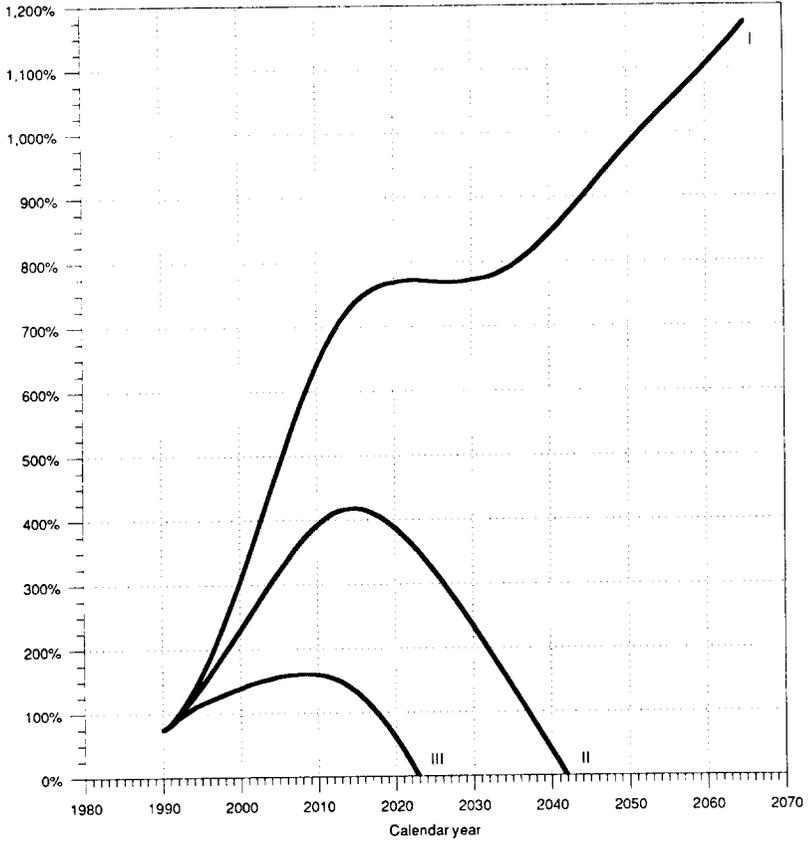
Reasons for changes from last year's report to this report in the long-range actuarial balance under the intermediate assumptions (alternative II-B last year and alternative II this year) are itemized in table 33. Also shown are the estimated effects associated with each reason for change.

TABLE 33.—CHANGE IN ACTUARIAL BALANCE ESTIMATED ON THE BASIS OF INTERMEDIATE, ALTERNATIVE II, ESTIMATES BY TRUST FUND AND REASON FOR CHANGE
[As a percentage of taxable payroll]

Item	OASI	DI	Total
Shown in last year's report:[1]			
Income rate	11.62	1.42	13.04
Cost rate	12.31	1.64	13.95
Actuarial balance	−.69	−.22	−.91
Changes in actuarial balance due to changes in:			
Legislation	+ .17	+ .00	+ .17
Valuation period	−.04	−.01	−.05
Demographic assumptions	+ .03	+ .01	+ .04
Economic assumptions	−.10	−.01	−.11
Disability assumptions	.00	−.01	−.01
Methods	−.06	−.00	−.06
Subtotal for above changes	+ .02	−.03	−.01
Cost of reaching ending trust fund target	−.14	−.02	−.16
Total change in actuarial balance	−.13	−.05	−.17
Shown in this report:[2]			
Actuarial balance	−.82	−.27	−1.08
Income rate	11.69	1.42	13.11
Cost rate	12.51	1.69	14.19

[1]Income rates, cost rates, and taxable payroll are calculated on the basis of alternative II-B assumptions, as described in the 1990 report. Several of those assumptions have been modified for alternative II of this year's report. A description of the modifications is presented in the text of this report. Includes the trust fund balances as of the start of the valuation period.

[2]Includes the trust fund balances as of the start of the valuation period and the cost of reaching the ending fund target of 100 percent of annual expenditures by the end of the period.

Note: Totals do not necessarily equal the sums of rounded components.

The Omnibus Budget Reconciliation Act of 1990 (Public Law 101-508, enacted on November 5, 1990) included several provisions which affect the long-range cost of the OASDI program. (See section II. of this report for a detailed description of these provisions.) The most significant effect results from the provision for OASDI coverage of State and local employee earnings that are not covered by any State or local pension plan. This change results in a significant improvement in the long-range actuarial balance. In addition, this act alters the definition of disability for disabled widow(er) benefits and the requirements for the disability pre-effectuation review, both of which slightly decrease the actuarial balance.

The Immigration Act of 1990 (Public Law 101-649, enacted on November 29, 1990), substantially increases quotas for legal immigration into the United States. As a result of this legislation, the Trustees have increased the immigration assumptions for this report. The additional immigration is estimated to improve the long-range actuarial balance significantly.

In changing from the valuation period of last year's report, which was 1990-2064, to the valuation period of this report, 1991-2065 the balance year of 2065 is included. This results in a decrease in the long-range actuarial balance. (Note that the positive balance for 1990 is, in effect, retained because the funds accumulated during the year are included in the income rate and the actuarial balance for this year's report.)

Several demographic assumptions were modified: (1) the starting population, used in the projection of the Social Security Area population, was updated; (2) the total fertility rate was increased slightly for the first 25 projection years reflecting recently observed birth rates that were higher than expected; and (3) mortality assumptions were revised to incorporate the latest data and analyses. The net effect of these modifications is an increase in the long-range actuarial balance. Immigration assumptions were modified as described above to reflect new legislation.

Two ultimate economic assumptions were altered significantly this year. The ultimate real-wage differential (the difference between the annual rate of growth in average wages in covered employment and the annual rate of growth in the Consumer Price Index for Urban Wage Earners and Clerical Workers) was reduced from the level of 1.3 percent used for alternative II-B in last year's report to 1.1 percent for alternative II in this report. This change significantly reduces the actuarial balance. The assumed ultimate real interest rate on special public-debt obligations issuable to the trust funds was increased from the level of 2.0 percent assumed for alternative II-B last year to 2.3 percent for alternative II in this report. This change significantly improves the actuarial balance.

Other economic assumptions and projected rates of employment were updated to incorporate the latest information and analyses. Price inflation was higher and wage growth was lower than was expected during 1990. Slightly lower labor force participation rates are projected based on recent data. Recent data indicate that the ratio of OASDI taxable earnings to earnings in covered employment has increased somewhat since 1988. This change alone improves the long-range actuarial balance by about 0.1 percent of taxable payroll, the result of offsetting roughly one half of the estimated reduction in this ratio for recent years, which was reflected in last year's report. These changes have the net effect of decreasing the long-range actuarial balance.

Projections of the number of disabled beneficiaries were increased somewhat reflecting recent increases in incidence rates and decreases in termination rates and, beginning about 2010, increases in the projections of the disability insured population. These modifications result in a small reduction in the long-range actuarial balance.

Several minor improvements were made in the methods used to estimate the long-range actuarial balance. These had a net effect that reduced the estimated balance.

Finally, the definition of actuarial balance has been altered this year by including in the summarized cost rate the cost of reaching and maintaining an ending trust fund target equal to 100 percent of annual expenditures by the end of the period. This change decreases the estimated actuarial balance by 0.16 percent of taxable payroll. Without this change, the 75-year OASDI actuarial balance would be nearly the same as was estimated for alternative II-B in last year's report.

The cost of the OASDI program has been discussed in this section in relation to taxable payroll, which is a program-related concept that is very useful in analyzing the financial status of the OASDI program. The

cost can also be discussed in relation to broader economic concepts, such as the gross national product (GNP). OASDI outlays generally rise from a little less than 5 percent of GNP currently to about 6.75 percent of GNP by the end of the 75-year projection period under alternative II. Discussion of both the cost and the taxable payroll of the OASDI program in relation to GNP is presented in Appendix G.

VII. CONCLUSION

The combined OASI and DI Trust Funds continue to grow, as shown by the estimates of financial operations presented in this report. The combined assets of the trust funds are expected to reach a level of at least 1 year's expenditures by the beginning of 1993, based on all three sets of economic and demographic assumptions for which estimates are shown in the report. The combined funds will continue to grow during the next 10 years, and for many years thereafter, under each of the three sets of assumptions.

In the short range, the combined funds meet the new 10-year test of financial adequacy, as described earlier in this report, because the funds' assets exceed 1 year's expenditures from 1993 through 2000, based on the intermediate assumptions. However, the DI Trust Fund, by itself, does not meet the new test in the short range, indicating a need to strengthen the financial position of the DI fund. Because the combined funds meet the 10-year test, a reallocation of contribution rates between the OASI and DI Trust Funds during the next 10 years could make the DI fund financially adequate in the short range without causing the OASI fund to fail the short-range test.

In the long range, the estimates indicate that the combined trust funds would be sufficient to enable the timely payment of benefits for the next 50 years, based on the intermediate assumptions. For the OASI fund and the DI fund, separately, sufficient funds would be available for the next 55 years and the next 25 years, respectively. On the basis of the more pessimistic assumptions in alternative III, the combined funds would be sufficient to enable timely payment of benefits for the next 30 years. However, the DI fund, by itself, would be exhausted in 1997, without corrective legislation. Based on the more optimistic assumptions of alternative I, both the OASI and DI Trust Funds would continue to grow throughout the next 75 years, and benefits could be paid during all of the long-range period.

The actuarial balance of the OASDI program as a whole over the next 75 years is a deficit of 1.08 percent of taxable payroll, based on the intermediate assumptions. As noted earlier in this report, the OASDI program does not meet the criteria in the new long-range test for close actuarial balance. Beginning with the 1991-2048 period, and for all successively longer periods through the 75-year period 1991-2065, the actuarial balance is lower than the minimum allowable level. Thus the program is not in long-range close actuarial balance.

For the first 25-year subperiod, the OASDI program has a positive balance of 1.49 percent of taxable payroll, on a present-value basis. However, the balances in the second and third 25-year subperiods are deficits of 2.37 percent and 3.88 percent, respectively. (These balances, which are based on the intermediate assumptions, do not include the funds on hand at the beginning of the subperiod, nor do they take account of the cost of an ending trust fund target of 100 percent of annual expenditures.)

The actuarial deficits in the later years of the 75-year projection period are caused primarily by the combination of (a) rising cost rates, due largely to demographic trends, and (b) nearly flat income rates,

which result from the flat contribution rate scheduled for 1992 and later and the relatively small income from the taxation of benefits. Because of this combination of rising cost rates and relatively flat income rates, the annual deficit in the OASDI program is estimated to be 4.52 percent of taxable payroll at the end of the 75-year projection period, based on intermediate assumptions.

The OASDI long-range estimates based on the intermediate assumptions show a pattern of annual balances that are positive throughout the first 26 years and negative thereafter. The inclusion of interest earnings in the annual income results in trust fund growth, in dollars, that continues for about another decade after the annual balances (which do not account for the effect of interest income) first become negative. However, because disbursements are estimated to increase at a faster rate than assets, OASDI assets decline, relative to annual disbursements, from about 4 times to about 3 times annual expenditures, during this same time period.

The OASI Trust Fund, by itself, is similarly out of close actuarial balance because it fails to meet the test for the period 1991-2055 and for all longer periods through the full 75-year period from 1991-2065. The DI Trust Fund does not meet the short-range test over the next 10 years, as noted above, and it fails the long-range test as well. In fact, the actuarial balances for the DI fund are below the minimum allowable level in all of the measuring periods from 1991-2001 through 1991-2065.

In view of the worsening condition of the DI Trust Fund since the 1990 report was released, and the failure of the fund to meet the new test for financial adequacy in both the short range and the long range, the Board strongly recommends taking action to strengthen the financial position of the DI Trust Fund. The combined OASI and DI Trust Funds are estimated to continue growing for many years. Thus, the financing of the DI Trust Fund could be strengthened for many years into the future by a reallocation of contribution rates without increasing the total contribution rates scheduled for OASDI under present law.

However, because the OASDI program is not in close actuarial balance in the long range, possible ways of addressing the deficits estimated for distant future years should continue to be the subject of extensive study. The current Advisory Council on Social Security is examining the financial status of the OASDI program, and the Board anticipates receiving its report, with recommendations, for consideration later this year.