ACTUARIAL NOTE
Number 2017.5
December 2017

SOCIAL SECURITY ADMINISTRATION
Office of the Chief Actuary
Baltimore, Maryland

INTERNAL REAL RATES OF RETURN UNDER THE OASDI PROGRAM FOR HYPOTHETICAL WORKERS

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Introduction

The OASDI program operates on an essentially pay-as-you-go (PAYGO) basis. Under a PAYGO plan, benefits do not depend on the accumulation of individual contributions, as in a defined contribution plan, nor do annual contributions depend on scheduled future benefits of current workers and beneficiaries, as in an advance-funded defined benefit plan. Rather, the total benefits paid in a year determine the combined amount that workers and employers need to contribute to fund the system for that year.

This note presents analysis of theoretical internal real rates of return for hypothetical workers with various earnings patterns and levels under the Old-Age, Survivors, and Disability Insurance (OASDI) program.[1] The internal real rate of return (referred to as the internal rate of return) is the real interest rate (effective real annual yield) for which the present value of expected payroll taxes (contributions)[2] is equal to the present value of expected benefits for an individual or cohort of workers. Therefore, internal rates of return attempt to answer the question: If an individual or group of workers with selected characteristics were to invest contributions to fund future benefits (including dependents), what real annual yield would be required to finance those future benefits?[3]

Internal rates of return for a PAYGO-financed benefit program reflect only theoretical values for contributions on a cohort basis. Payments to beneficiaries each year, in comparison to the total cost of (or resources used by) the program for that year, determine the real value of benefits under a PAYGO social insurance program. On this basis, with current administrative expenses of about 1 percent of total program cost, the value of OASDI benefits is extraordinarily high.

Internal rates of return do not reflect the value of reducing the risk to individuals for extreme outcomes, such as death or disability at very young ages or survival to very old ages. In addition, OASDI internal rates of return are not truly comparable with similar rates from private-sector plans, because many features of OASDI benefits are not typically available in private-sector plans. Two such features are annual cost-of-living adjustments and benefits for life in the event of disability. However, internal rate of return analysis does indicate the relative value of benefits that the OASDI program provides across generations and types of workers. While the rates in this note do not reflect any differences in mortality by earnings level, we recognize the tendency for higher earners to have greater life expectancy, which would offset, to some degree, the progressive nature of benefits on a lifetime basis.

All estimates in this note use the methods and assumptions from the intermediate alternative of the 2017 Trustees Report. Tables 1 through 6 present internal rates of return for hypothetical scaled workers who differ by year of birth, earnings level, and family grouping. Tables 1 and 4 show the internal rates of return for the ***Present Law Scheduled*** scenario, which uses contributions and benefits scheduled under present law. Because projected scheduled income would not fully finance scheduled benefits for the OASDI program after 2033, we include the two additional scenarios described below.

- ***Increased Payroll Tax*** - Increase payroll-tax rates above those scheduled in current law for each year after 2033, such that total program income finances fully the benefits scheduled in present law for each year. Tables 2 and 5 present the internal rates of return for this scenario.
- ***Payable Benefits*** - Reduce benefits below those scheduled in present law by a specified percentage for each year after 2033, such that present-law program income is sufficient to pay the resulting benefits. Tables 3 and 6 present the internal rates of return for this scenario.

[1] Internal rates of return are theoretical measures that are not directly relevant for a pay-as-you-go financed benefit program, as discussed later in this section.

[2] Payroll taxes include any amounts transferred from the General Fund of the Treasury to substitute for employee/employer contributions, such as the 2 percent employee payroll tax reduction in 2011 and 2012 under Public Laws 111-312, 112-78, and 112-96.

[3] Because the OASDI Trust Funds receive transfers from the General Fund of the Treasury equal to a portion of taxes on benefits, internal rates of return that ignore these transfers may arguably overstate the ratio. Due to the difficulty of determining the level of income tax on benefits, this factor is not addressed in this note.

This note presents hypothetical workers with four different levels of *scaled* pre-retirement earnings patterns.[4] A worker with a *scaled* earnings pattern has earnings that vary with age as a percentage of the national average wage index (AWI). The scaled worker enters the labor force at age 21 and retires at age 65. The scaled earnings level at each age reflects both the average earnings level of workers at that age and the percentage of individuals at that age who work. In addition to the scaled workers, this note presents a hypothetical steady maximum worker who has earnings at or above the OASDI contribution and benefit base for each year from age 22 to retirement at age 65.

The Office of the Chief Actuary (OCACT) has been producing theoretical internal rates of return for a number of years, including for recurring Actuarial Note 2016.5[5] and for the 1994-96 Advisory Council Report on Social Security.[6] OCACT based the analyses in the 1994-96 Advisory Council report on hypothetical workers with *steady* earnings patterns, that is, workers with earnings that are a constant percentage of the AWI for each year of work. OCACT first introduced non-steady hypothetical workers, referred to as scaled workers, in Actuarial Note 144 in 2001.[7] Other authors have addressed alternative approaches to considering non-steady earnings histories, and we recognize that a broader set of earnings patterns may provide additional insights into the distributions of benefits payable and internal rates of return under the OASDI program. However, for the sake of practicality, we limit the number of cases considered in this note.

Methodology and Assumptions

This note presents theoretical internal rates of return for three hypothetical scenarios of the OASDI program: *Present Law Scheduled, Increased Payroll Tax,* and *Payable Benefits.* The *Present Law Scheduled* scenario utilizes the taxes and benefits specified in present law, even though projected program income and assets under present law are inadequate to pay all benefits through the 75-year projection period.

The *Increased Payroll Tax* scenario raises payroll-tax rates, beginning with the year of Trust Fund reserve depletion, to finance scheduled benefits fully in every year. The payroll-tax rate increases from the present law amount of 12.4 percent beginning in 2034. The payroll-tax rate increases to 16.22 percent for 2035 and continues to increase year-by-year, reaching 16.87 percent for 2091. Under this scenario, the payroll tax rate increases further after 2091 due to continuing increases in life expectancy.

Under the third scenario, *Payable Benefits*, payroll-tax rates hold constant while benefits decrease for each year after Trust Fund reserve depletion so that, for the Trust Funds as a whole, benefits paid equal taxes received. The reductions from scheduled levels apply proportionally to all types of benefits paid during the year. The intermediate projections of the 2017 Trustees Report show that program income does not fully pay scheduled benefits in 2034 and later. Thus, for the *Payable Benefits* scenario, annual benefit reductions begin in 2034 and generally increase each year thereafter. Projected program income, using present-law tax rates, pays 77.0 percent of scheduled benefits in 2035 and 73.4 percent of scheduled benefits in 2091. Under this scenario, annual reductions in benefits continue to grow after 2091 due to continuing increases in life expectancy.

The four earnings patterns for the hypothetical scaled workers reflect very low, low, medium, and high career-average levels of pre-retirement earnings patterns starting at age 21. OCACT sets the career-average level of earnings for these workers at a specified percent of the AWI. For the scaled medium earner, the career-average level of earnings is approximately equal to the AWI. For the scaled very low, low, and high earners, the career-average level of earnings is approximately equal to 25, 45, and 160 percent of the AWI, respectively.

Table A compares overall earnings for these hypothetical workers to those of actual retiring workers. We use the Average Indexed Monthly Earnings[8] (AIME), which is based on a worker's earnings, as a measure of overall earnings. We develop the distribution of actual workers retiring in 2016 from a 1–percent sample of Social Security administrative records.

[4]Additional details on developing scaled earnings patterns appear in recurring Actuarial Note 2017.3 at http://www.ssa.gov/OACT/NOTES/ran3/an2017-3.pdf.

[5]See http://www.ssa.gov/OACT/NOTES/ran5/an2016-5.pdf.

[6]The final report is located at http://www.ssa.gov/history/reports/adcouncil/report/toc.htm.

[7]See http://www.ssa.gov/OACT/NOTES/note2000s/note144.html.

[8]See http://www.ssa.gov/OACT/COLA/Benefits.html for more details on how to calculate the AIME.

Table A.---Distribution of Actual Workers Retiring in 2016 by AIME, Percent with AIMEs Less Than or Closest to Hypothetical Workers Retiring in 2016

Hypothetical worker[1] (Career-average earnings)[2]	Percent with AIME less than AIME for hypothetical case			Percent with AIME closest to AIME for hypothetical case[3]		
	All males	All females	Total, all workers	All males	All females	Total, all workers
Very Low ($12,003)	7.6	17.0	12.1	11.9	25.8	18.7
Low ($21,606)	15.9	34.3	24.9	15.7	29.8	22.5
Medium ($48,014)	40.7	73.0	56.4	28.8	30.3	29.5
High ($76,822)	70.5	93.0	81.5	28.7	12.0	20.5
Maximum ($116,993)	100.0	100.0	100.0	15.0	2.1	8.8

[1] See text for definitions of hypothetical workers.

[2] Career-average earnings of hypothetical scaled workers retiring at age 62 in 2016. Earnings are wage indexed to 2015 in this calculation.

[3] Rounded values do not necessarily sum to 100 percent. The percentage of workers with AIME values closest to that of the hypothetical maximum worker is expected to decline in future years because of a significant increase in the OASDI taxable maximum, relative to the AWI, in 1981 and a smaller increase in 1990.

Note: Worker distributions include individuals who are dually entitled, or may become dually entitled to a higher benefit in the future, based on another worker's account. A significant proportion of entitled female workers, especially those with lower earnings, will receive higher benefits as aged spouse or aged widow beneficiaries. If such dually entitled workers were excluded from this analysis, the distributions would be skewed more toward the higher-level hypothetical workers.

This note groups the hypothetical workers into four categories: single males, single females, one-earner couples where only the husband is employed, and two-earner couples. The note presents the single-earner and one-earner couple examples for the four earnings patterns listed above as well as for the hypothetical steady maximum worker. In addition, the note presents the two-earner couples at seven earnings combinations as follows:

1) Husband high, wife high;
2) Husband high, wife medium;
3) Husband medium, wife medium;
4) Husband medium, wife low;
5) Husband low, wife low;
6) Husband low, wife very low; and
7) Husband very low, wife very low.

Of course, there are many other types of couples and earnings patterns that could be presented, including same-sex couples and couples where the wife is the sole or higher earner. The examples presented in this note are intended to illustrate a broad, but not complete, range of possibilities.

We assume that each scaled worker is born on January 2 and starts working on his/her 21*st* birthday.[9] The wife and husband of each couple have the same date of birth. Each marriage occurs on the joint 22*nd* birthday of the wife and husband and continues for life. Assuming that marriages are life-long means that the calculated internal rates of return do not reflect the effects of divorce and of remarriage after death and divorce. However, because each individual may receive a total benefit equal only to the highest of any spouse, widow(er), or worker benefit that may be available, this omission has only a minor consequence. We assume that the couples have two children, one on the joint 27*th* birthday of the wife and husband, and the other on the joint 29*th* birthday of the wife and husband. We consider all types of retirement, disability, and survivor benefits, except for benefits to student children, disabled-adult children, and parents based on caring for a disabled-adult child. Omission of these benefits results in a very small understatement of the theoretical internal rate of return.

We assume that all nondisabled, surviving workers retire at age 65. We assume no mortality for children through age 18 in this analysis.

[9] The maximum steady worker is assumed to be born on January 2 and to start working on his/her 22nd birthday.

Analysis of Results

The following tables present the theoretical internal rates of return. The tables facilitate comparison of rates of return across different family groups, different years of birth, and different career-average levels of earnings.

Tables 1 through 6 present results for single males, single females, one-earner couples, and two-earner couples under the following three OASDI program scenarios:

- *Present Law Scheduled,*
- *Increased Payroll Tax, and*
- *Payable Benefits.*

For each sex, family grouping, and year-of-birth cohort, the internal rates of return decrease as earnings increase. This decrease occurs because the benefit formula replaces a higher proportion of career average earnings for beneficiaries with lower earnings. The advantage for lower earners is partially offset by their lower life expectancy.[10] Females have lower mortality than males, resulting in higher likelihood of surviving to retirement age, longer life after retirement, and therefore higher internal rates of return, even when earnings levels are the same. The one-earner couples have the highest rates of return because of the auxiliary spouse, child, and widow(er) benefits payable based on one earnings record.

In tables 1, 2, and 3, where both spouses have the same earnings, the rate of return for the two-earner couples is closer to the higher (female) single ratio because of the inclusion of child benefits not reflected for single cases. In tables 4, 5, and 6, where spouses have different earnings levels, the two-earner rate of return is closer to the single female rate of return, at the female's earnings level, because of the inclusion of child and surviving spouse benefits. For the cases presented in this note, the lower earner's (wife's) retired worker benefit is always more than half of her husband's, so no aged spouse's benefit is payable.

This note does not include cases where a single individual has children. We believe that the internal rate of return for such cases will fall between those for the single worker and one-earner couple.

Based on the rising tax rates for the OASDI program (combined employer and employee tax went from 2 percent in 1941 to 12.4 percent starting in 1990), and the declining relative value of benefits due to an increase in the normal retirement age (NRA), one might expect that internal rates of return would decline steadily for later years of birth. In fact, all of the combinations of sex, family groupings, and earnings levels shows substantial decreases in real rates of return from the first to the fourth year-of-birth cohorts (1920 to 1943).

For the *Present Law Scheduled* scenario (tables 1 and 4), first consider all hypothetical workers except for the steady maximum worker. For single male and female workers, internal rates of return increase from the 1943 through the 2004 cohort, as improvements in mortality (which generally increase rates of return) more than offset tax rate and NRA increases (which decrease rates of return). For one-earner couples, internal rates of return mostly decrease from the 1943 through the 1964 cohort because of reductions in the disability family maximum, and because improved mortality also leads to reduced survivor auxiliary benefits. For one-earner couples, rates of return generally increase from the 1963 through the 2004 cohort. For two-earner couples, the results generally fall between those for single workers and one-earner couples, with rates decreasing from the 1943 to 1949 cohort, and then increasing through the 2004 cohort. For these couples, the net result of offsetting effects of reduced auxiliary benefits due to lower mortality and of the reduced family maximum is not as large.

For steady maximum earners, internal rates of return are also affected by relative historical increases in the taxable maximum. Internal rates of return for steady maximum earners decrease for all family types from the 1943 through the 1964 cohort. By the 1964 cohort (age 20 in 1984), relative increases in the taxable maximum are largely phased in and internal rates of return increase from the 1964 through 2004 cohort for all family types, consistent with the patterns for other hypothetical workers.

For the *Increased Payroll Tax* scenario (tables 2 and 5) payroll tax rates increase from those scheduled in present law beginning in 2034. Internal rates of return for the first seven year-of-birth cohorts (from the 1920 through the 1964 cohort) are the same as for the *Present Law Scheduled* scenario for all family groupings and earnings levels, since each of these year-of-birth cohorts reaches age 65 prior to 2034 and is not affected by the tax increase. Internal rates of return decrease for the 1973 cohort relative to the *Present Law Scheduled* scenario. Within the *Increased Payroll Tax* scenario, after the 1973 birth cohort, rates of return decrease for all family groupings due to increasing tax rates.

For the *Payable Benefits* scenario (tables 3 and 6), benefits decrease from those scheduled in present law beginning in 2034. For the 1920 through 1937 birth cohorts, only retired beneficiaries at very advanced ages are affected and there is little significant change from the *Present Law Scheduled* scenario. Beginning with the 1943 cohort, internal rates of return decrease relative to the *Present Law Scheduled* scenario. Within the *Payable*

[10] As mentioned above, the rates in this note do not reflect any differences in mortality by earnings level. However, we recognize the tendency for higher earners to have greater life expectancy, which would offset, to some degree, the progressive nature of benefits on a lifetime basis.

Benefits scenario, from the 1943 to the 1973 cohort, rates of return decrease for all categories, with benefit reductions offsetting improvements in mortality. For maximum earners in these cohorts, rates also decrease due to the increasing relative level of the taxable maximum. After the 1973 birth cohort, except for single males, rates of return continue to generally decrease, but to a lesser degree than before, as benefit reductions level off and mortality improvements continue. Single male rates of return are more likely to increase because life expectancy at age 65 increases more rapidly for males than for females after the 1973 birth cohort.

Conclusion

This note presents theoretical internal rates of return over time for various illustrative demographic groups and earnings levels. We could have used a variety of other approaches, methods, and assumptions in this type of analysis. However, these hypothetical examples provide useful insight into how individual and cohort internal rates of return vary across generations, and within generations by sex, earnings level and pattern, and family grouping.

It is important to keep the significance of the internal rate of return in proper perspective. A higher internal rate of return does not necessarily mean a higher monthly benefit, even for two individuals with the same earnings. As one example, consider a man and a woman with the same earnings. A woman born in 1975 may expect to live 22.9 years on average after reaching age 65. Her male counterpart born in 1975 may expect to live 20.7 years on average after reaching age 65. Her expected number of years of life after age 65 exceeds his by 11 percent, and, as a result, her internal rate of return is considerably higher than his. However, the monthly benefit she receives is exactly the same as he receives. Her higher internal rate of return derives solely from her longer expected lifetime.

Based on the provisions for benefits in the Social Security Act that have evolved since 1935, a primary goal of the OASDI program is to provide monthly benefit levels with a mix of equity (higher benefits for higher earners/contributors) and adequacy (replacement of a larger portion of pre-retirement earnings for lower earners). The program's goal is not to provide similar lifetime benefits or internal rates of return across earnings levels, family groupings, or generations.

Internal rates of return for a PAYGO-financed benefit program reflect only theoretical values for contributions on a cohort basis. Payments to beneficiaries each year, in comparison to the total cost of (or resources used by) the program for that year, determine the real value of benefits under a PAYGO social insurance program. On this basis, with current administrative expenses of about 1 percent of total program cost, the real value of OASDI benefits is extraordinarily high.

Table 1.---Internal Real Rates of Return for Various Earning Level Scaled Workers

OASDI Program--***Present Law Scheduled Scenario***

(Percent)

Earnings level	Year of birth	Year attains age 65	Single male	Single female	One-earner couple	Two-earner couple
	1920	1985	5.41	6.17	9.26	6.67
	1930	1995	4.50	5.02	7.39	5.28
	1937	2002	4.45	4.82	7.00	5.10
	1943	2008	4.33	4.69	6.69	4.90
	1949	2014	4.36	4.71	6.57	4.84
Very Low	1955	2020	4.40	4.82	6.51	4.87
	1964	2029	4.44	4.86	6.37	4.88
	1973	2038	4.57	4.98	6.38	4.97
	1985	2050	4.73	5.05	6.46	5.06
	1997	2062	4.80	5.06	6.45	5.09
	2004	2069	4.85	5.12	6.46	5.14
	1920	1985	4.46	5.29	8.09	5.55
	1930	1995	3.35	3.92	6.19	4.06
	1937	2002	3.32	3.74	5.80	3.89
	1943	2008	3.20	3.61	5.50	3.71
	1949	2014	3.23	3.63	5.42	3.68
Low	1955	2020	3.30	3.73	5.42	3.75
	1964	2029	3.33	3.77	5.31	3.78
	1973	2038	3.47	3.89	5.33	3.88
	1985	2050	3.63	3.97	5.42	3.98
	1997	2062	3.71	3.99	5.41	4.02
	2004	2069	3.77	4.05	5.43	4.07
	1920	1985	2.91	3.81	6.48	3.91
	1930	1995	2.22	2.84	5.11	2.95
	1937	2002	2.25	2.73	4.78	2.84
	1943	2008	2.15	2.61	4.49	2.66
	1949	2014	2.17	2.62	4.41	2.64
Medium	1955	2020	2.24	2.71	4.41	2.71
	1964	2029	2.28	2.74	4.31	2.74
	1973	2038	2.42	2.85	4.34	2.85
	1985	2050	2.58	2.93	4.42	2.94
	1997	2062	2.67	2.97	4.43	3.00
	2004	2069	2.73	3.02	4.44	3.05
	1920	1985	2.62	3.53	6.10	3.54
	1930	1995	1.78	2.43	4.68	2.47
	1937	2002	1.66	2.16	4.17	2.21
	1943	2008	1.51	1.99	3.82	1.98
	1949	2014	1.53	2.00	3.75	1.97
High	1955	2020	1.61	2.09	3.76	2.04
	1964	2029	1.64	2.12	3.67	2.08
	1973	2038	1.79	2.23	3.71	2.19
	1985	2050	1.94	2.31	3.78	2.29
	1997	2062	2.04	2.36	3.80	2.35
	2004	2069	2.10	2.41	3.82	2.40
	1920	1985	2.37	3.30	5.85	3.27
	1930	1995	1.37	2.07	4.39	2.04
	1937	2002	1.20	1.75	3.81	1.72
	1943	2008	0.92	1.44	3.29	1.37
	1949	2014	0.79	1.29	3.02	1.20
Maximum[1]	1955	2020	0.73	1.23	2.85	1.14
	1964	2029	0.68	1.16	2.65	1.08
	1973	2038	0.81	1.26	2.68	1.18
	1985	2050	0.98	1.36	2.77	1.30
	1997	2062	1.07	1.40	2.79	1.36
	2004	2069	1.13	1.46	2.81	1.42

[1] Other earnings levels shown in this table are more representative of individuals' actual earnings histories (see table A).

Note: Based on the intermediate assumptions of the 2017 Trustees Report.

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Table 2.---Internal Real Rates of Return for Various Earning Level Scaled Workers

OASDI Program--***Increased Payroll Tax Scenario***

(Percent)

Earnings level	Year of birth	Year attains age 65	Single male	Single female	One-earner couple	Two-earner couple
	1920	1985	5.41	6.17	9.26	6.67
	1930	1995	4.50	5.02	7.39	5.28
	1937	2002	4.45	4.82	7.00	5.10
	1943	2008	4.33	4.69	6.69	4.90
	1949	2014	4.36	4.71	6.57	4.84
Very Low	1955	2020	4.40	4.82	6.51	4.87
	1964	2029	4.44	4.86	6.37	4.88
	1973	2038	4.54	4.96	6.36	4.94
	1985	2050	4.52	4.85	6.31	4.86
	1997	2062	4.31	4.59	6.02	4.60
	2004	2069	4.17	4.46	5.83	4.44
	1920	1985	4.46	5.29	8.09	5.55
	1930	1995	3.35	3.92	6.19	4.06
	1937	2002	3.32	3.74	5.80	3.89
	1943	2008	3.20	3.61	5.50	3.71
	1949	2014	3.23	3.63	5.42	3.68
Low	1955	2020	3.30	3.73	5.42	3.75
	1964	2029	3.33	3.77	5.31	3.78
	1973	2038	3.44	3.86	5.31	3.85
	1985	2050	3.39	3.74	5.23	3.74
	1997	2062	3.19	3.49	4.96	3.49
	2004	2069	3.07	3.37	4.78	3.36
	1920	1985	2.91	3.81	6.48	3.91
	1930	1995	2.22	2.84	5.11	2.95
	1937	2002	2.25	2.73	4.78	2.84
	1943	2008	2.15	2.61	4.49	2.66
	1949	2014	2.17	2.62	4.41	2.64
Medium	1955	2020	2.24	2.71	4.41	2.71
	1964	2029	2.28	2.74	4.31	2.74
	1973	2038	2.38	2.82	4.31	2.81
	1985	2050	2.31	2.68	4.21	2.67
	1997	2062	2.12	2.44	3.94	2.44
	2004	2069	2.02	2.34	3.78	2.33
	1920	1985	2.62	3.53	6.10	3.54
	1930	1995	1.78	2.43	4.68	2.47
	1937	2002	1.66	2.16	4.17	2.21
	1943	2008	1.51	1.99	3.82	1.98
	1949	2014	1.53	2.00	3.75	1.97
High	1955	2020	1.61	2.09	3.76	2.04
	1964	2029	1.64	2.12	3.67	2.08
	1973	2038	1.74	2.19	3.68	2.14
	1985	2050	1.65	2.03	3.56	1.99
	1997	2062	1.47	1.81	3.30	1.78
	2004	2069	1.39	1.72	3.15	1.68
	1920	1985	2.37	3.30	5.85	3.27
	1930	1995	1.37	2.07	4.39	2.04
	1937	2002	1.20	1.75	3.81	1.72
	1943	2008	0.92	1.44	3.29	1.37
	1949	2014	0.79	1.29	3.02	1.20
Maximum[1]	1955	2020	0.73	1.23	2.85	1.14
	1964	2029	0.68	1.16	2.65	1.08
	1973	2038	0.75	1.21	2.64	1.12
	1985	2050	0.67	1.07	2.54	1.00
	1997	2062	0.54	0.89	2.34	0.83
	2004	2069	0.47	0.81	2.21	0.75

[1] Other earnings levels shown in this table are more representative of individuals' actual earnings histories (see table A).

Note: Based on the intermediate assumptions of the 2017 Trustees Report.

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Table 3.--- Internal Real Rates of Return for Various Earning Level Scaled Workers

OASDI Program--***Payable Benefits Scenario***

(Percent)

Earnings level	Year of birth	Year attains age 65	Single male	Single female	One-earner couple	Two-earner couple
	1920	1985	5.41	6.17	9.26	6.67
	1930	1995	4.50	5.02	7.39	5.28
	1937	2002	4.45	4.82	7.00	5.10
	1943	2008	4.31	4.67	6.68	4.89
	1949	2014	4.30	4.65	6.52	4.78
Very Low	1955	2020	4.25	4.66	6.38	4.72
	1964	2029	4.02	4.45	5.99	4.48
	1973	2038	3.86	4.29	5.72	4.34
	1985	2050	3.90	4.24	5.73	4.29
	1997	2062	3.86	4.14	5.56	4.17
	2004	2069	3.86	4.14	5.51	4.16
	1920	1985	4.46	5.29	8.09	5.55
	1930	1995	3.35	3.92	6.19	4.06
	1937	2002	3.32	3.74	5.80	3.88
	1943	2008	3.18	3.58	5.49	3.69
	1949	2014	3.16	3.55	5.36	3.61
Low	1955	2020	3.12	3.55	5.27	3.58
	1964	2029	2.89	3.33	4.89	3.34
	1973	2038	2.74	3.19	4.66	3.24
	1985	2050	2.80	3.15	4.68	3.20
	1997	2062	2.77	3.07	4.53	3.11
	2004	2069	2.78	3.08	4.49	3.11
	1920	1985	2.91	3.81	6.48	3.91
	1930	1995	2.22	2.84	5.11	2.95
	1937	2002	2.25	2.72	4.78	2.83
	1943	2008	2.13	2.57	4.47	2.64
	1949	2014	2.09	2.52	4.34	2.55
Medium	1955	2020	2.05	2.50	4.24	2.51
	1964	2029	1.80	2.26	3.86	2.27
	1973	2038	1.68	2.13	3.66	2.18
	1985	2050	1.74	2.11	3.67	2.16
	1997	2062	1.74	2.06	3.55	2.09
	2004	2069	1.75	2.07	3.52	2.10
	1920	1985	2.62	3.53	6.10	3.54
	1930	1995	1.78	2.43	4.68	2.47
	1937	2002	1.66	2.16	4.17	2.20
	1943	2008	1.48	1.95	3.79	1.95
	1949	2014	1.44	1.89	3.66	1.87
High	1955	2020	1.39	1.87	3.57	1.83
	1964	2029	1.14	1.62	3.21	1.58
	1973	2038	1.03	1.50	3.02	1.52
	1985	2050	1.10	1.49	3.04	1.50
	1997	2062	1.11	1.45	2.93	1.46
	2004	2069	1.13	1.46	2.91	1.47
	1920	1985	2.37	3.30	5.85	3.27
	1930	1995	1.37	2.07	4.39	2.04
	1937	2002	1.20	1.74	3.80	1.72
	1943	2008	0.89	1.40	3.26	1.33
	1949	2014	0.69	1.17	2.93	1.09
Maximum[1]	1955	2020	0.49	0.99	2.65	0.90
	1964	2029	0.16	0.65	2.18	0.57
	1973	2038	0.07	0.54	2.01	0.54
	1985	2050	0.16	0.55	2.05	0.55
	1997	2062	0.17	0.52	1.97	0.51
	2004	2069	0.19	0.53	1.94	0.53

[1] Other earnings levels shown in this table are more representative of individuals' actual earnings histories (see table A).

Note: Based on the intermediate assumptions of the 2017 Trustees Report.

Table 4. Internal Real Rates of Return for Scaled Two-Earner Couples with Selected Earnings Levels

OASDI Program—***Present Law Scheduled Scenario***

(Percent)

Year of birth	Year attains age 65	H: very low W: very low	H: low W: very low	H: low W: low	H: med W: low	H: med W: med	H: high W: med	H: high W: high
1920	1985	6.67	6.24	5.55	4.83	3.91	3.85	3.54
1930	1995	5.28	4.74	4.06	3.73	2.95	2.85	2.47
1937	2002	5.10	4.52	3.89	3.54	2.84	2.63	2.21
1943	2008	4.90	4.33	3.71	3.34	2.66	2.42	1.98
1949	2014	4.84	4.29	3.68	3.31	2.64	2.41	1.97
1955	2020	4.87	4.32	3.75	3.34	2.71	2.46	2.04
1964	2029	4.88	4.32	3.78	3.33	2.74	2.47	2.08
1973	2038	4.97	4.40	3.88	3.41	2.85	2.56	2.19
1985	2050	5.06	4.50	3.98	3.50	2.94	2.66	2.29
1997	2062	5.09	4.52	4.02	3.53	3.00	2.71	2.35
2004	2069	5.14	4.57	4.07	3.57	3.05	2.76	2.40

Note: Based on the intermediate assumptions of the 2017 Trustees Report.

Table 5. Internal Real Rates of Return for Scaled Two-Earner Couples with Selected Earnings Levels

OASDI Program—***Increased Payroll Tax Scenario***

(Percent)

Year of birth	Year attains age 65	H: very low W: very low	H: low W: very low	H: low W: low	H: med W: low	H: med W: med	H: high W: med	H: high W: high
1920	1985	6.67	6.24	5.55	4.83	3.91	3.85	3.54
1930	1995	5.28	4.74	4.06	3.73	2.95	2.85	2.47
1937	2002	5.10	4.52	3.89	3.54	2.84	2.63	2.21
1943	2008	4.90	4.33	3.71	3.34	2.66	2.42	1.98
1949	2014	4.84	4.29	3.68	3.31	2.64	2.41	1.97
1955	2020	4.87	4.32	3.75	3.34	2.71	2.46	2.04
1964	2029	4.88	4.32	3.78	3.33	2.74	2.47	2.08
1973	2038	4.94	4.37	3.85	3.37	2.81	2.52	2.14
1985	2050	4.86	4.27	3.74	3.25	2.67	2.38	1.99
1997	2062	4.60	4.02	3.49	3.00	2.44	2.15	1.78
2004	2069	4.44	3.87	3.36	2.87	2.33	2.04	1.68

Note: Based on the intermediate assumptions of the 2017 Trustees Report.

Table 6. Internal Real Rates of Return for Scaled Two-Earner Couples with Selected Earnings Levels

OASDI Program—***Payable Benefits Scenario***

(Percent)

Year of birth	Year attains age 65	H: very low W: very low	H: low W: very low	H: low W: low	H: med W: low	H: med W: med	H: high W: med	H: high W: high
1920	1985	6.67	6.24	5.55	4.83	3.91	3.85	3.54
1930	1995	5.28	4.74	4.06	3.73	2.95	2.85	2.47
1937	2002	5.10	4.52	3.88	3.53	2.83	2.63	2.20
1943	2008	4.89	4.31	3.69	3.31	2.64	2.39	1.95
1949	2014	4.78	4.23	3.61	3.23	2.55	2.32	1.87
1955	2020	4.72	4.16	3.58	3.15	2.51	2.25	1.83
1964	2029	4.48	3.89	3.34	2.87	2.27	1.98	1.58
1973	2038	4.34	3.78	3.24	2.78	2.18	1.92	1.52
1985	2050	4.29	3.72	3.20	2.72	2.16	1.88	1.50
1997	2062	4.17	3.62	3.11	2.63	2.09	1.82	1.46
2004	2069	4.16	3.60	3.11	2.62	2.10	1.82	1.47

Note: Based on the intermediate assumptions of the 2017 Trustees Report.

Actuarial Note No. 2017.5
Office of the Chief Actuary
Social Security Administration
December 2017