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

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Introduction

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) is equal to the present value of expected benefits. Therefore, internal rates of return represent an attempt to answer the question: If the contributions of a group of workers with selected characteristics were invested to fund the future benefits of those workers and their dependents, at what real annual yield would the contributions need to be invested?[2]

Internal rates of return are presented in tables 1 through 6 for hypothetical scaled workers who differ by year of birth, earnings level, and family grouping. The rates of return in tables 1 and 4 are based on the contributions and benefits scheduled in present law. This scenario is referred to as ***Present Law Scheduled***. Because scheduled income is not projected to be sufficient to fully finance scheduled benefits for the OASDI program after 2036[3], two additional scenarios are included and are described below.

- ***Increased Payroll Tax*** - Payroll-tax rates are increased above those scheduled in current law for each year after 2036. The amount of increase would be the amount needed so that total program income would fully finance the benefits scheduled in present law for each year. The internal rates of return for this scenario are presented in tables 2 and 5.

- ***Payable Benefits*** - Benefits scheduled in present law are reduced by an annual percentage for each year after 2036. The annual percentage reduction would be the amount needed so that present-law tax and other program income would be sufficient to pay the resulting benefits for each year. The internal rates of return for this scenario are presented in tables 3 and 6.

Because the Social Security program has operated on a largely pay-as-you-go (PAYGO) basis, the level of contributions of each generation of workers is not directly related to the benefits they will receive. Under a PAYGO plan, benefits are not based on the accumulation of individual contributions, as in a defined contribution plan, nor are annual contributions determined based on scheduled future benefits of current workers and beneficiaries, as in an advance-funded defined benefit plan. Rather, the combined amount of contributions from workers and employers needed to fund the system is largely determined by the total amount of benefits to be paid for any year.

Thus, internal rates of return for a PAYGO-financed benefit program are only theoretical indicators of the apparent value for contributions on an individual or cohort basis. The real value of benefits under a PAYGO social insurance program is, of course, what is paid to beneficiaries each year in comparison to the total cost of (or resources used by) the program for that year. On this basis, with administrative expenses of less than 1 percent of total program cost, the real value of OASDI benefits is extraordinarily high.

Internal rate of return does not reflect the full value of insurance in reducing the risk for extreme outcomes, such as death or disability at very young ages or survival to very old ages. In addition, calculations of the internal rate of return from Social Security benefits are not fully adequate for making comparisons with private-sector plans, since many features of Social Security benefits are not typically available in private-sector plans. Examples include guaranteed cost-of-living adjustments based on the Consumer Price Index, and benefits for life in the event of disability. However, internal rates of return are of value for exploring the relative value of benefits provided across generations and types of workers.

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[1] Internal rates of return are highly theoretical measures that in fact are not directly related to a PAYGO-financed benefit program, as discussed later in this section.

[2] Individuals or couples with income above certain thresholds may be subject to personal income tax on up to 85 percent of the Social Security benefits. Due to the difficulty of determining the level of income tax on benefits, this factor is not addressed in this note.

[3] Based on the intermediate projections of the 2009 Trustees Report.

Hypothetical workers are considered in this note for 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). Scaled workers used here are assumed to enter the labor force at age 21 and to retire at age 65. In addition to the scaled workers, a hypothetical steady maximum worker is included in this note. This worker is assumed to have 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 has for years been producing theoretical internal rates of return. Examples can be found in recurring Actuarial Note 2008.5,[5] Actuarial Note #144,[6] and in the 1994-96 Advisory Council Report on Social Security.[7] The analysis from the 1994-96 Advisory Council was based on hypothetical workers with *steady* earnings patterns—workers with earnings that are a constant percentage of the AWI for each year of work. Non-steady hypothetical workers, referred to as scaled workers, were first introduced in Actuarial Note #144 in 2001. Alternative approaches to considering non-steady earnings histories have been addressed by other authors, and it is recognized that a broader set of earnings patterns might be desirable to more fully explore the distributions of benefits payable and internal rates of return under the OASDI program. However, for the sake of practicality, the number of cases considered in this note is limited.

Methodology and Assumptions

For this note, theoretical internal rates of return were determined for three hypothetical scenarios of the OASDI program, *Present Law Scheduled, Increased Payroll Tax, and Payable Benefits.* The *Present Law Scheduled* scenario is based on the taxes and benefits specified in present law, even though the program income and assets under present law are projected to be inadequate to fully pay all benefits through the 75-year projection period.

Under the *Increased Payroll Tax scenario*, payroll-tax rates are assumed to be increased as needed beginning with the year of trust-fund exhaustion so that present-law scheduled benefits would be payable in each year. The payroll-tax rate would begin to increase from the present law amount of 12.4 percent beginning in 2037. The payroll-tax rate increases to 16.28 percent for 2038 and continues to increase year-by-year, reaching 16.75 percent for 2083. It is expected that, under this scenario, further increases in the payroll tax rate would be needed after 2083 due to continuing increases in life expectancy.

The third scenario, *Payable Benefits*, assumes that benefits would be reduced to a level that could be paid using tax rates scheduled in present law for each year after Trust Fund exhaustion. The reductions from scheduled levels would apply to all types of benefits paid during the year. Under the intermediate projections of the 2009 Trustees Report, scheduled benefits under present law are not projected to be fully payable in 2037 and later. Thus, for this scenario, annual reductions would begin in 2037 and would increase each year thereafter. Program income using present-law tax rates is estimated to be sufficient to pay 76.2 percent of scheduled benefits in 2038 and 73.9 percent of scheduled benefits in 2083. It is expected that, under this scenario, annual reductions in the benefits would continue to increase after 2083 due to continuing increases in life expectancy.

The four different 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. The career-average level of earnings for these workers is assumed to be a specified percent of the AWI. For the scaled medium earner, the career-average level of earnings is assumed to about equal the AWI in the year prior to entitlement. For the scaled very low, low, and high earners, the career-average level of earnings is assumed to about equal 25, 45, and 160 percent of the AWI in the year prior to entitlement, respectively.

It is useful to see how overall earnings for these hypothetical workers compare to those of actual retiring workers. The Average Indexed Monthly Earnings[8] (AIME), which is calculated based on a worker's earnings, is a convenient measure of this. Table A shows the distribution of actual workers retiring in 2008 relative to the AIMEs of hypothetical scaled workers, based on a 1–percent sample of records from the Social Security administrative records.

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[4] Additional details are provided on the development of scaled earnings patterns in the recurring Actuarial Note 2009.3, located at the following internet address: http://www.socialsecurity.gov/OACT/NOTES/ran3/an2009-3.html.
[5] This note was published in April 2009 and is located at the following internet address:
http://www.socialsecurity.gov/OACT/NOTES/ran5/an2008-5.html.
[6] This note was published in June 2001 and is located at the following internet address:
http://www.socialsecurity.gov/OACT/NOTES/note2000s/note144.html.
[7] See Appendix II of Volume I of the 1994-96 Advisory Council Report located at:
http://www.socialsecurity.gov/history/reports/adcouncil/report/append2.htm.

[8] The AIME is used in the computation of Social Security benefits. See: http://www.socialsecurity.gov/OACT/COLA/Benefits.html#aime for more details on how the AIME is calculated.

Table A.—Distribution of Actual Workers Retiring in 2008, Relative to AIMEs for Hypothetical Workers Retiring in 2008

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 ($10,101)	6.2	19.1	12.3	10.0	28.9	19.0
Low ($18,182)	13.2	38.4	25.2	13.5	31.9	22.2
Medium ($40,406)	35.9	77.8	55.8	28.3	28.4	28.3
High ($64,649)	67.8	95.1	80.8	31.8	9.4	21.2
Maximum ($90,952)	100	100	100	16.4	1.5	9.3

[1] See text for definitions of hypothetical workers.

[2] Career-average earnings of hypothetical scaled workers retiring at age 62 in 2008. Earnings are wage indexed to 2007 for this calculation.

[3] Rounded values do not necessarily sum to 100 percent.

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 high 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.

The hypothetical workers presented in this note are grouped by sex and marital status into four categories: single males, single females, one-earner couples where only the husband is employed, and two-earner couples. The single-earner and one-earner couple examples are presented for all five earnings levels listed above. In addition, the two-earner couples are presented 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.

Each scaled worker is assumed to be born on January 2 and to start working on his/her 21st birthday.[9] The wife and husband of each couple are assumed to have the same date of birth. Each marriage is assumed to occur on the joint 22nd birthday of the wife and husband and to continue for life. Assuming that marriages are life-long means that the effects of divorce and of remarriage after death and divorce are not explicitly reflected. 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 is of minor consequence. Two children are assumed, one

born on the joint 27th birthday of the wife and husband, and one born on the joint 29th birthday of the wife and husband. All types of retirement, disability, and survivor benefits are considered, 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 negligible understatement of the theoretical internal rate of return.

All nondisabled, surviving workers are assumed to retire at age 65. The mortality rates and disability incidence and termination rates used in these computations are taken from historical data, and from the intermediate projections of the 2009 Trustees Report by age, sex, and year of birth. For these calculations, no difference in mortality is assumed by earnings level or marital status. In addition, no mortality is assumed for children through age 18 in this analysis. Benefit increases and earnings levels for these hypothetical workers are based on historical data and the 2009 Trustees Report assumptions for the future.

Analysis of Results

The following tables present the theoretical internal rates of return. The tables are intended to 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,*

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

- *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 is because the benefit formula is weighted toward 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. This effect is only partially offset by lower rates of disability for women. 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.

For two-earner couples, the internal rates of return often fall between the corresponding rates for single male and single female workers. Where both spouses have the same earnings (tables 1, 2, and 3), the internal rate of return for the two-earner couples is closer to the higher (female) single internal rate of return because of the inclusion of child benefits not reflected for single cases. Where spouses have different earnings levels (tables 4, 5, and 6), the two-earner internal rate of return is generally closer to the single female internal rate of return, at the female's earnings level. This is for the reason stated above, plus the fact that a significant additional surviving spouse benefit may be payable to the lower earner (female in these examples). For the cases presented in this note, the wife's retired worker benefit is more than half of that of her husband's, so no aged spouse's benefit is payable.

It should be mentioned that this note does not include cases where a single individual has children, an increasingly common occurrence. Future analyses may address these cases. For now, it can be assumed that the internal rate of return for such cases would fall between those for the single worker and one-earner couple.

Based on the rising tax rates for the OASDI program (the combined employer and employee tax rate 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, one might expect that the internal rate of return would decline steadily as the year of birth advances. Tables 1 through 6 show internal rates of return for a series of birth cohorts for 69 different combinations of sex, family grouping, earnings level, and three OASDI program scenarios (*Present Law*

Scheduled, *Increased Payroll Tax*, and *Payable Benefits*), which permit us to test this expectation.

Internal rates of return for the first seven year-of-birth cohorts presented are the same for both *Present Law Scheduled* and *Increased Payroll Tax* for every family grouping, and every earnings level, since each of these year-of-birth cohorts reaches age 65 prior to 2037 (when the payroll tax rates for the *Increased Payroll Tax* scenario first depart from those scheduled in present law). However, beginning with the 1937 birth cohort, the *Payable Benefits* scenario has rates of return that are lower as compared to the other two scenarios, because benefit payments in 2037 and later under *Payable Benefits* are projected to be less than scheduled benefits.

Every one of the 69 combinations shows substantial decreases in the internal rates of return from the first to the fourth year-of-birth cohorts (1920, 1930, 1937, and 1943) due to increasing payroll tax rates from 1937 to 1990 reflecting the maturation of the program. Also, the normal retirement age (NRA) increases from age 65 for the 1937 birth cohort to age 66 for the 1943 birth cohort. But for subsequent birth cohorts the trends vary.

For the *Present Law Scheduled* scenario (tables 1 and 4), the internal rates of return increase continually from the 1973 birth cohort through the 2004 birth cohort due to improving mortality rates, combined with a fixed NRA and a fixed payroll tax rate. Rates generally increase from the 1943 to the 1955 birth cohort, except for one-earner couples and maximum earners, for which they generally decrease. The increase is due to improved mortality. The decrease for maximum workers is due to the increasing relative level of the taxable maximum through 1982. The decrease for most one-earner couples is due to reductions in survivor and disability auxiliary benefits caused by mortality improvements and due to a reduction in the disability family maximum.

From the 1955 to the 1964 birth cohorts, rates decrease for all categories due to the increase in the NRA from age 66 and 2 months to age 67 (again, all nondisabled surviving workers are assumed to retire at age 65 for this analysis). From the 1964 to the 1973 birth cohorts, rates for single workers and two-earner couples increase while those for one-earner couples generally decrease. Here increased longevity raised lifetime benefits for primary workers and spouses but reduced benefits enough for survivor beneficiaries to contribute to a reduction of the internal rate of return for one-earner couples.

For the *Increased Payroll Tax* scenario (tables 2 and 5), the internal rates of return decrease for all combinations after the 1973 birth cohort. These decreases in the internal rates of return result from the increasing tax rates under this scenario for years beginning with 2037. However, for the 1943 to 1964 birth cohorts, trends in rates

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

vary from cohort to cohort for the same reasons as in the *Present Law Scheduled* scenario, because these cohorts are not affected by the payroll tax increases.

For the *Payable Benefits* scenario (tables 3 and 6), the internal rates of return are generally the same as *Present Law Scheduled* for the 1920 through 1937 birth cohorts. The effects of trust fund exhaustion and lower benefits payable after 2036 start to fully appear in the 1943 birth cohort. From the 1949 birth cohort through the 1973 birth cohort, rate of returns decline across-the-board. Thereafter, internal rates of return for one-earner and two-earner couples generally decrease, while rates of return for single workers fluctuate.

Conclusion

In this note, theoretical internal rates of return are presented over time for various illustrative demographic groups and earnings levels. We recognize that a variety of other approaches, methods and assumptions can be used 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.

The significance of the internal rate of return must be kept 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 22.0 years after reaching age 65. Her male counterpart born in 1975 may expect to live 19.8 years after

reaching age 65.[11] Her expected number of years of life after age 65 exceeds that of his by 11 percent, and, as a result, her internal rate of return is considerably higher than his with the same earnings record. However, the monthly benefit she receives is exactly the same as he would receive. 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, it is clear that the goal for the program has been to provide **monthly** benefit levels for men and women, and for married and non-married workers with a specific mix of **equity** (higher benefits for higher earners/contributors) and **adequacy** (replacement of a larger portion of pre-retirement earnings for lower earners). The goal has not been to provide similar lifetime benefits or internal rates of return for these groups. Thus, while this note illustrates the fact that the internal rate of return has varied considerably across and within generations and will continue to do so in the future, it is clear that this kind of variation was both expected and intended.

Finally, it should again be noted that internal rates of return for a PAYGO-financed benefit program are only theoretical indicators of the apparent value for contributions on an individual or cohort basis. The real value of benefits under a PAYGO social insurance program is, of course, what is paid to beneficiaries each year in comparison to the total cost of (or resources used by) the program for that year. On this basis, with administrative expenses of less than 1 percent of total program cost, the real value of OASDI benefits is extraordinarily high.

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[11] Based on 2009 Trustees Report intermediate mortality assumptions.

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
Very Low	1920	1985	5.32	6.09	9.07	6.41
	1930	1995	4.37	4.90	7.35	5.11
	1937	2002	4.26	4.65	6.96	4.88
	1943	2008	4.11	4.47	6.63	4.65
	1949	2014	4.21	4.55	6.58	4.66
	1955	2020	4.26	4.61	6.52	4.67
	1964	2029	4.21	4.58	6.30	4.60
	1973	2038	4.28	4.66	6.26	4.64
	1985	2050	4.42	4.73	6.28	4.71
	1997	2062	4.53	4.81	6.32	4.79
	2004	2069	4.58	4.85	6.34	4.83
Low	1920	1985	4.38	5.20	7.95	5.33
	1930	1995	3.23	3.80	6.18	3.92
	1937	2002	3.12	3.57	5.77	3.68
	1943	2008	2.99	3.39	5.46	3.47
	1949	2014	3.08	3.47	5.45	3.51
	1955	2020	3.15	3.54	5.43	3.55
	1964	2029	3.10	3.49	5.24	3.49
	1973	2038	3.18	3.57	5.22	3.56
	1985	2050	3.34	3.66	5.26	3.65
	1997	2062	3.45	3.74	5.31	3.73
	2004	2069	3.50	3.79	5.33	3.78
Medium	1920	1985	2.83	3.73	6.40	3.66
	1930	1995	2.09	2.72	5.10	2.73
	1937	2002	2.06	2.55	4.74	2.58
	1943	2008	1.94	2.38	4.44	2.39
	1949	2014	2.03	2.46	4.43	2.44
	1955	2020	2.10	2.52	4.43	2.48
	1964	2029	2.05	2.46	4.24	2.43
	1973	2038	2.14	2.54	4.23	2.50
	1985	2050	2.29	2.64	4.27	2.60
	1997	2062	2.41	2.73	4.33	2.70
	2004	2069	2.47	2.78	4.36	2.75
High	1920	1985	2.54	3.46	6.04	3.33
	1930	1995	1.65	2.31	4.67	2.27
	1937	2002	1.47	2.00	4.14	1.97
	1943	2008	1.29	1.77	3.77	1.72
	1949	2014	1.39	1.84	3.77	1.77
	1955	2020	1.46	1.90	3.78	1.83
	1964	2029	1.41	1.84	3.60	1.77
	1973	2038	1.50	1.92	3.60	1.85
	1985	2050	1.66	2.02	3.65	1.96
	1997	2062	1.79	2.12	3.71	2.06
	2004	2069	1.85	2.17	3.74	2.11
Maximum[1]	1920	1985	2.28	3.22	5.80	3.06
	1930	1995	1.23	1.93	4.39	1.84
	1937	2002	1.00	1.57	3.80	1.48
	1943	2008	0.70	1.22	3.27	1.11
	1949	2014	0.66	1.14	3.08	1.03
	1955	2020	0.59	1.05	2.90	0.94
	1964	2029	0.47	0.91	2.62	0.81
	1973	2038	0.56	0.99	2.62	0.89
	1985	2050	0.72	1.09	2.67	1.00
	1997	2062	0.84	1.18	2.73	1.10
	2004	2069	0.91	1.24	2.77	1.16

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

Note: 2009 Trustees Report Intermediate Assumptions

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	5.32	6.09	9.07	6.41
	1930	1995	4.37	4.90	7.35	5.11
	1937	2002	4.26	4.65	6.96	4.88
	1943	2008	4.11	4.47	6.63	4.65
	1949	2014	4.21	4.55	6.58	4.66
Very Low	1955	2020	4.26	4.61	6.52	4.67
	1964	2029	4.21	4.58	6.30	4.60
	1973	2038	4.28	4.65	6.25	4.64
	1985	2050	4.26	4.59	6.17	4.56
	1997	2062	4.11	4.41	5.98	4.37
	2004	2069	3.98	4.27	5.81	4.22
	1920	1985	4.38	5.20	7.95	5.33
	1930	1995	3.23	3.80	6.18	3.92
	1937	2002	3.12	3.57	5.77	3.68
	1943	2008	2.99	3.39	5.46	3.47
	1949	2014	3.08	3.47	5.45	3.51
Low	1955	2020	3.15	3.54	5.43	3.55
	1964	2029	3.10	3.49	5.24	3.49
	1973	2038	3.18	3.57	5.21	3.55
	1985	2050	3.15	3.49	5.13	3.46
	1997	2062	2.99	3.31	4.93	3.27
	2004	2069	2.88	3.18	4.77	3.14
	1920	1985	2.83	3.73	6.40	3.66
	1930	1995	2.09	2.72	5.10	2.73
	1937	2002	2.06	2.55	4.74	2.58
	1943	2008	1.94	2.38	4.44	2.39
	1949	2014	2.03	2.46	4.43	2.44
Medium	1955	2020	2.10	2.52	4.43	2.48
	1964	2029	2.05	2.46	4.24	2.43
	1973	2038	2.13	2.53	4.22	2.49
	1985	2050	2.08	2.44	4.12	2.39
	1997	2062	1.93	2.26	3.92	2.21
	2004	2069	1.83	2.15	3.78	2.10
	1920	1985	2.54	3.46	6.04	3.33
	1930	1995	1.65	2.31	4.67	2.27
	1937	2002	1.47	2.00	4.14	1.97
	1943	2008	1.29	1.77	3.77	1.72
	1949	2014	1.39	1.84	3.77	1.77
High	1955	2020	1.46	1.90	3.78	1.83
	1964	2029	1.41	1.84	3.60	1.77
	1973	2038	1.49	1.91	3.59	1.84
	1985	2050	1.43	1.81	3.48	1.73
	1997	2062	1.28	1.63	3.29	1.55
	2004	2069	1.20	1.53	3.15	1.46
	1920	1985	2.28	3.22	5.80	3.06
	1930	1995	1.23	1.93	4.39	1.84
	1937	2002	1.00	1.57	3.80	1.48
	1943	2008	0.70	1.22	3.27	1.11
	1949	2014	0.66	1.14	3.08	1.03
Maximum[1]	1955	2020	0.59	1.05	2.90	0.94
	1964	2029	0.47	0.91	2.62	0.81
	1973	2038	0.55	0.98	2.61	0.87
	1985	2050	0.45	0.85	2.49	0.74
	1997	2062	0.35	0.71	2.33	0.61
	2004	2069	0.28	0.64	2.23	0.54

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

Note: 2009 Trustees Report Intermediate Assumptions

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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	5.32	6.09	9.07	6.41
	1930	1995	4.37	4.90	7.35	5.11
	1937	2002	4.26	4.65	6.95	4.88
	1943	2008	4.11	4.46	6.63	4.64
	1949	2014	4.18	4.51	6.56	4.62
Very Low	1955	2020	4.16	4.50	6.43	4.56
	1964	2029	3.89	4.25	6.00	4.28
	1973	2038	3.60	3.99	5.68	4.03
	1985	2050	3.63	3.96	5.57	3.94
	1997	2062	3.63	3.92	5.47	3.88
	2004	2069	3.61	3.90	5.41	3.85
	1920	1985	4.38	5.20	7.95	5.33
	1930	1995	3.23	3.80	6.18	3.92
	1937	2002	3.12	3.57	5.77	3.68
	1943	2008	2.98	3.38	5.45	3.46
	1949	2014	3.05	3.42	5.41	3.47
Low	1955	2020	3.03	3.40	5.33	3.43
	1964	2029	2.75	3.12	4.91	3.14
	1973	2038	2.48	2.88	4.63	2.92
	1985	2050	2.54	2.88	4.54	2.86
	1997	2062	2.55	2.86	4.45	2.82
	2004	2069	2.54	2.84	4.40	2.79
	1920	1985	2.83	3.73	6.40	3.66
	1930	1995	2.09	2.72	5.10	2.73
	1937	2002	2.06	2.55	4.74	2.58
	1943	2008	1.93	2.37	4.43	2.38
	1949	2014	1.99	2.40	4.39	2.39
Medium	1955	2020	1.96	2.37	4.31	2.34
	1964	2029	1.66	2.07	3.88	2.04
	1973	2038	1.41	1.83	3.63	1.85
	1985	2050	1.49	1.85	3.55	1.81
	1997	2062	1.51	1.84	3.47	1.79
	2004	2069	1.51	1.83	3.43	1.77
	1920	1985	2.54	3.46	6.04	3.33
	1930	1995	1.65	2.31	4.67	2.27
	1937	2002	1.47	2.00	4.14	1.97
	1943	2008	1.28	1.75	3.76	1.71
	1949	2014	1.34	1.77	3.73	1.71
High	1955	2020	1.31	1.73	3.65	1.67
	1964	2029	1.00	1.42	3.22	1.36
	1973	2038	0.77	1.21	2.99	1.19
	1985	2050	0.85	1.23	2.92	1.17
	1997	2062	0.89	1.23	2.86	1.15
	2004	2069	0.89	1.22	2.82	1.14
	1920	1985	2.28	3.22	5.80	3.06
	1930	1995	1.23	1.93	4.39	1.84
	1937	2002	1.00	1.57	3.79	1.48
	1943	2008	0.69	1.20	3.26	1.10
	1949	2014	0.60	1.07	3.03	0.96
Maximum[1]	1955	2020	0.42	0.87	2.76	0.77
	1964	2029	0.03	0.47	2.23	0.38
	1973	2038	-0.17	0.28	2.02	0.23
	1985	2050	-0.08	0.31	1.96	0.22
	1997	2062	-0.05	0.32	1.91	0.22
	2004	2069	-0.03	0.31	1.88	0.21

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

Note: 2009 Trustees Report Intermediate Assumptions

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	6.41	5.99	5.33	4.54	3.66	3.60	3.33
1930	1995	5.11	4.58	3.92	3.51	2.73	2.62	2.27
1937	2002	4.88	4.31	3.68	3.30	2.58	2.38	1.97
1943	2008	4.65	4.09	3.47	3.08	2.39	2.16	1.72
1949	2014	4.66	4.11	3.51	3.12	2.44	2.21	1.77
1955	2020	4.67	4.12	3.55	3.13	2.48	2.24	1.83
1964	2029	4.60	4.05	3.49	3.05	2.43	2.17	1.77
1973	2038	4.64	4.09	3.56	3.09	2.50	2.24	1.85
1985	2050	4.71	4.16	3.65	3.17	2.60	2.33	1.96
1997	2062	4.79	4.24	3.73	3.25	2.70	2.42	2.06
2004	2069	4.83	4.28	3.78	3.30	2.75	2.47	2.11

Note: 2009 Trustees Report Intermediate Assumptions

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	6.41	5.99	5.33	4.54	3.66	3.60	3.33
1930	1995	5.11	4.58	3.92	3.51	2.73	2.62	2.27
1937	2002	4.88	4.31	3.68	3.30	2.58	2.38	1.97
1943	2008	4.65	4.09	3.47	3.08	2.39	2.16	1.72
1949	2014	4.66	4.11	3.51	3.12	2.44	2.21	1.77
1955	2020	4.67	4.12	3.55	3.13	2.48	2.24	1.83
1964	2029	4.60	4.05	3.49	3.05	2.43	2.17	1.77
1973	2038	4.64	4.08	3.55	3.09	2.49	2.23	1.84
1985	2050	4.56	3.99	3.46	2.98	2.39	2.12	1.73
1997	2062	4.37	3.80	3.27	2.79	2.21	1.93	1.55
2004	2069	4.22	3.66	3.14	2.67	2.10	1.83	1.46

Note: 2009 Trustees Report Intermediate Assumptions

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	6.41	5.99	5.33	4.54	3.66	3.60	3.33
1930	1995	5.11	4.58	3.92	3.51	2.73	2.62	2.27
1937	2002	4.88	4.31	3.68	3.30	2.58	2.38	1.97
1943	2008	4.64	4.08	3.46	3.07	2.38	2.15	1.71
1949	2014	4.62	4.07	3.47	3.07	2.39	2.16	1.71
1955	2020	4.56	4.01	3.43	3.00	2.34	2.09	1.67
1964	2029	4.28	3.71	3.14	2.67	2.04	1.77	1.36
1973	2038	4.03	3.49	2.92	2.50	1.85	1.62	1.19
1985	2050	3.94	3.39	2.86	2.41	1.81	1.55	1.17
1997	2062	3.88	3.34	2.82	2.36	1.79	1.53	1.15
2004	2069	3.85	3.30	2.79	2.34	1.77	1.51	1.14

Note: 2009 Trustees Report Intermediate Assumptions