TAX FOUNDATION
FISCAL FACT
No. 511
Jun. 2016

# Comparing the Returns from Tax-Favored Retirement Plans to Social Security Yields

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## Introduction

Social Security benefits alone are not adequate to replace retirement income. They were never intended to be the only support in old age, merely part of a "three legged stool" in association with personal saving and employer-provided pensions. Unfortunately, millions of Americans save too little to support their preretirement living standard after they stop working. Many workers do not have a tax-favored retirement plan, such as an employer-provided pension, a 401(k), or an IRA, to fully fund them when they are available. The attached dataset is designed to suggest the major advantages of beginning to save early in life in tax-favored retirement arrangements, and how well private saving can perform relative to the returns available from Social Security.

## Prospects for Social Security, Personal Saving, and the Economy

Social Security retirement programs (Old Age and Survivors Insurance, and Disability Insurance, OASDI) are projected to run large, growing deficits over the next 75 years as a reduction in the number of workers per retiree and longer lifespans in retirement increase promised benefits beyond projected revenues currently dedicated to the system.[1] This means that there will have to be a rise in payroll or other taxes to pay promised benefits, or the growth of future benefits will have to be scaled back. The "returns" on Social Security taxes will be low. Revenues and benefit growth will be limited to population growth and real wage gains due to technological advances. Any effort to raise payroll tax rates to support larger real transfers under the program will retard growth by making labor less rewarding to offer and more expensive to employ. Shifting the burden to capital income would depress technological advances, capital formation, and wages, and lose much of the presumed revenue gains.



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1 The 2015 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds.

By contrast, personal retirement plans and pensions are prefunded programs that augment saving, which can be used to expand the capital stock (or at least increase American ownership of capital, with less reliance on foreign investors). Insofar as the saving raises capital formation, it adds to GDP, with the retirees receiving payments out of expanded national income. This is vastly different from a tax-transfer system like Social Security in which there is no net saving, and a portion of the current unimproved output of current workers is merely diverted to the retirees. Historically, returns on saving and capital investment have outstripped population growth, which helps to deepen the capital stock per worker. In addition, saving and investment may increase the rate of technological advances.

For all these reasons, it is important for Americans to understand the opportunities afforded by a consistent lifetime program of personal saving.

## Comparing the Return of Social Security vs. Tax Preferred Saving

The accompanying dataset compares returns on saving to Social Security retirement and spousal benefits. Private saving can generally provide higher retirement income than is available from Social Security, even at currently promised benefit levels. The data reflects a variety of households and earnings histories, and the amount of saving that would build up over a working life by setting specified portions of wages aside in a tax-deferred account, such as an IRA or 401(k) plan. The amount of wages assumed to be saved each year is set roughly equal to the amount of wages paid in payroll taxes in support of Social Security retirement and spousal benefits. It assumes no changes in the portion of the payroll tax used to support the survivors or disability benefits of Social Security or Medicare, or in the benefits provided by those programs. The annual Social Security benefits available in retirement are compared to the indexed, annuitized amounts that would be available annually from the accumulated savings.

The following table displays outcomes for five workers who saved 10 percent of wages and began working at age 22. All five workers invested in a portfolio of 60 percent stocks and 40 percent bonds. The data shows that as income increased (as a percent of the average income), both Social Security benefits and income from private saving at retirement increased. However, for each case, the annual return income from private saving exceeded that of annual Social Security Benefits. For example, the worker who earned the average income and retired at the normal retirement age of 66 in 2016 could expect a Social Security retirement benefit of $19,646 a year. His accumulated saving would total $719,670, which might provide an annuitized annual income of $57,319 a year, a far larger sum.

Table 1.

**Social Security Benefits and Retirement Saving of a Worker**

| Worker's Earnings (As a % of Average) | 25% | 45% | 100% | 160% | Maximum |
|---|---|---|---|---|---|
| Annual Social Security Benefit When Retired | $9,111.60 | $11,923.20 | $19,646.40 | $26,037.60 | $31,672.80 |
| Accumulated 401(k) Savings at age 65 (see note) | $179,956.79 | $323,834.80 | $719,669.66 | $1,151,399.09 | $1,760,593.61 |
| Annual Annuity | $14,332.84 | $25,792.15 | $57,318.82 | $91,704.35 | $140,224.27 |

Note: Each worker saves 10 percent of income up to the Social Security payroll tax cap ($118,500 in 2016) beginning at age 22. Each worker's investment portfolio consists of 60 percent stocks and 40 percent bonds.

In all but four of the 400 cases in the accompanying dataset, the annual income from saving outstrips the Social Security retirement benefit. The four exceptions are for the very lowest income workers (at 25 percent the average earnings history) in a one-earner couple investing 60-to-40 percent in stocks and bonds who will be retiring at age 67 in 2060. Longer lifespans in the future require stretching savings over a longer retirement, and future interest rates are projected to be a bit below historical levels. As a result, the annuitized values of the savings do not rise as much as wages and promised Social Security retirement and spousal benefits.[2] The couple would receive the greatest boost from the spousal benefit, and have more income from Social Security than from their savings. Their income from saving would exceed their Social Security benefits if they invested 100 percent in stocks.

## Guide to the Data

The attached dataset contains our calculations of expected Social Security benefits at retirement and the expected annual income from retirement saving for 400 individuals and couples.

The dataset contains the following variables:

**Retirement Year.** This variable indicates the year in which the individual (or couple) retires. "2015" indicates a backward-looking measure that assumes individuals retire in 2016 at the age of 66. "2060" indicates a forward-looking measure that assumes a worker begins earning income and saving this year and retires at the age of 67 in 2060.

**Portfolio.** This variable indicates one of two assumptions about an individual's investment portfolio. This variable either indicates an individual saves 60 percent in stocks and 40 percent in bonds, or 100 percent in stocks.

2 The interest rates going forward are somewhat less than the historical rates, and life expectancy is longer in retirement, requiring the savings to last for a longer time.

**Saving Assumption.** This variable indicates one of two saving assumptions. The first (indicated with a "1") assumes that each individual (or couple) saves 10 percent of income up to the Social Security payroll tax cap ($118,000 in 2016). A "2" indicates that the individual (or couple) saves 10 percent on the first $20,000 in wages and 6.5 percent on all wages above $20,000.

**Started Working (age).** This variable indicates the year in which an individual (or couple) begins working. A "22" indicates that the individual (or couple) starts working at 22. A "18 and 26" indicates that an individual (or couple) begins working at the age of 18 and those that earn the maximum earnings (see below) begin working at 26.

**Marital Status.** This variable indicates whether the individual is single or married.

**Earnings.** Indicates the earnings of the individual (or one of two spouses). We used five assumptions about earnings as a percent of the average income: 25 percent, 45 percent, 100 percent, 160 percent, and max. "Max" is equal to the Social Security payroll tax cap ($118,500 in 2016).

**Spouse Earnings.** Indicates the earnings of a second earner in married couples. We used five assumptions about earnings as a percent of the average income: 25 percent, 45 percent, 100 percent, 160 percent, and max. "Max" is equal to the Social Security payroll tax cap ($118,500 in 2016). "N/A" indicates that the observation reflects a single.

**Annual SS Benefits.** This variable indicates how much each individual (or couple) will receive annually in Social Security benefits when retired.

**Accumulated 401(k) Saving.** This variable indicates what each individual (or couple) has accumulated in private saving over their working years.

**Annuity.** This variable indicates what each individual (or couple) will receive annually from their retirement saving.

# Methodology

**Individuals studied.** We examine wages, savings, and retirement benefits for people of five lifetime income levels and different marital statuses. The individuals illustrated have wage patterns over their lives derived from a study by the Office of the Actuary. These are called "scaled earnings."[3] They are lowest in a worker's early years on the job, rising over time with experience and training, peaking in one's 50s, and declining in the last 15 years prior to retirement. This pattern results in lower amounts saved at early ages but with longer times for compound growth, and larger amounts in middle age but with less time for compound growth. The actuarial note presents average historical earnings patterns, including probabilities of being unemployed, disabled, or leaving the workforce, for workers earning 25 percent, 45 percent, 100 percent, and 160 percent of the average wage over time, and for people who always earn the maximum wage covered by the OASDI portion of the payroll tax.

A Social Security calculator was used to estimate retirement benefits resulting from the wage histories using current law benefit formulas. Results are shown for single workers, married one-earner couples in which the nonworking spouse receives a spousal benefit equal to half the benefit of the income-earning spouse, and all income combinations of two-earner couples in which the lower-earning spouse gets the larger of the spousal benefit or the benefit based on his or her own earnings. All combinations of marriages between persons of equal or unequal earnings and benefits are illustrated.

**Two illustrations based on the economy and incomes of the past and the projections for the future in the 2015 Trustees Report.** The tables present two sets of calculations. Part I looks backward at the Social Security benefits earned by people retiring in 2016 at age 66, and the presumed returns they could have earned on saving at historical interest rates and stock yields over their working lives. Part II looks forward at the projected Social Security benefits of people turning age 22 in 2015 and retiring in 2060 at age 67, and the presumed returns on saving they could have over their working lives. Looking back, we assume the work history, corporate AAA bond interest rates, and rates of return on the Standard & Poor's stock index with reinvested dividends over the last 45 years.[4]

3 Michael Clingman and Kyle Burkhalter, "Scaled Factors for Hypothetical Earnings Examples Under the 2015 Trustees Report Assumptions," Actuarial Note Number 2015.3, July 2015, Social Security Administration, Office of the Chief Actuary, Baltimore, Maryland.

4 Economic Report of the President, 2005, Table B-95, Historical stock prices and yields, 1949-2003. Economic Report of the President, 2013. Table B-96, Common stock prices and yields, 2000-2012. Economic Report of the President, 201. Table B-17 Bond yields and interest rates, 1945-2014.Available at https://www.gpo.gov/fdsys/browse/collection.action?collectionCode=ERP
Later stock yield data available from: Economic Indicators, Council of Economic Advisors. Available at: https://www.gpo.gov/fdsys/browse/collection.action?collectionCode=ECONI&browsePath=2015%2F12&isCollapsed=false&leafLevelBrowse=false&ycord=171.42857142857142

Looking forward, we assume wage growth, interest rates, and inflation as projected in the 2015 Trustees Reports of the OASDI System, and an average rate of return on stocks going forward roughly equal to the growth of the past decade and past 45 years.[5]

**Two levels of assumed saving.** We perform two hypothetical experiments: One in which workers set aside 10 percent of wages in personal retirement accounts; and another in which workers set aside 10 percent of the first $20,000 of wages (at 2015 levels), and 6.5% of wages in excess of $20,000 up to the maximum OASDI taxable earnings. The $20,000 is wage-indexed to remain a constant share of past and future wages. Ten percent of payroll is roughly the portion of the non-Medicare payroll tax used for retirement benefits. The remaining portion of the tax provides disability and survivors' benefits.

**Two assumed mixes of stocks and bonds in a savings portfolio.** Preretirement savings are assumed to be invested in two types of portfolios, one that is 60 percent in bonds and 40 percent in stocks and the other invested 100 percent in stocks. All interest and dividends are assumed to be reinvested. The resulting savings accumulated by the normal retirement age are assumed to be converted into an indexed annuity upon retirement investing in bonds and a broad stock index fund, to achieve a 5 percent real return on the holdings, accounting for inflation.[6] This return is about the historical average of earnings from a conservative mixed portfolio in retirement of 50 percent bonds and 50 percent stocks. The resulting payments shown in the tables can then rise with inflation, and can be compared with current and future promised Social Security benefits, also calculated and shown in the tables. We show no reductions in future benefits to match projected revenues.

**Two assumptions on how long people work.** We also made two assumptions about how many years people of differing earnings levels would work. For one set of people, we assumed individuals (or couples) begin work at age 22 and retire at the expected ages of 66 in 2016 or 67 in 2060 (roughly speaking, as if all had gone to college, graduated at age 21 and begun work at age 22). For the second group of people, we assumed those with the two lowest earnings histories began work at age 18 (as if starting work upon leaving high school), and maximum earnings workers began work at age 26 (as if they all went to graduate school for four years).[7]

5 Ibid. We cannot guarantee future returns will be equal to past returns. There has been some decline in tax rates on capital formation, and some curbing of inflation, in the last half century, boosting returns on financial investments. Continuation of historical real yields may require further reductions in tax and regulatory burdens on capital formation. Tax increases on capital have occurred in the last few years, and may act to curb future yields.

6 The annuitization is based on Social Security Administration projections average of the male and female life expectancies as of 2016 and 2060. See 2015 Trustees Report, Table V.A4.—Cohort Life Expectancy. Available at https://www.socialsecurity.gov/OACT/TR/2015/lr5a4.html. The annual annuity payments are based on assets accumulated by the end of the year before retirement, and are assumed to be indexed for inflation. To accommodate indexing we assume a postretirement blended 5 percent real rate of return. We also assume a postretirement portfolio of 50 percent stocks and 50 percent bonds.

7 The scaled earnings in the Actuarial note start at age 22; these were extrapolated by the author for earlier ages. The wages at younger ages affect the savings history. They seldom enter the calculation of the top 35 years of earnings used to determine Social Security benefits.