January 1, 1996

ECONOMIC COMMENTARY

Federal Reserve Bank of Cleveland

RESEARCH LIBRARY
MAR 7 9 44 AM '96
OF CLEVELAND

Social Security: Are We Getting Our Money's Worth?

by Jagadeesh Gokhale and Kevin J. Lansing

Consider the following investment scenario. You turn over 10 percent of your salary each year to an investment manager who pools your contributions with those of others to form something that looks like a mutual fund. The manager assembles a portfolio that ends up earning a meager rate of return—less than 1 percent after adjusting for inflation.

Next, you learn that before you ever joined the fund, the manager made some unwise promises to the early investors. In particular, he guaranteed that they would receive very high rates of return—far exceeding the fund's ability to pay, given its less-than-spectacular investment performance. Moreover, he handed out all sorts of cash bonuses along the way to keep the early investors happy. To maintain investor confidence, the manager used incoming cash from the new investors to make direct payments to the early investors.

This precarious setup actually worked for awhile. Now, however, like all pyramid schemes, the fund is on the brink of collapse because the supply of new investors has begun to dry up. Indeed, the manager informs you that you will have to increase your annual contribution to keep the fund solvent, and that you should reduce your expectations about future payoffs from this investment.

Although the possibility of becoming entangled in such a financial mess is probably not foremost in many people's minds, it may already be a reality for the majority of American wage earners. As it turns out, the U.S. Social Security Trust Fund has many features in common with this hypothetical scenario. Today's workers may wonder whether Social Security will be able to deliver the benefits that have been promised for their retirement, and if so, how these benefits compare to those that might be provided by alternative investments. In this *Economic Commentary,* we examine Social Security from an individual investment perspective and discuss whether current and future workers are likely to receive their money's worth from the program.

A Dramatic Rise in Social Security Contributions

Similar to the hypothetical scenario, 10.52 percent of every U.S. employee's gross annual wage (up to a maximum of $61,200) must be "contributed" to the Old Age and Survivor's Insurance (OASI) trust fund under the Federal Insurance Contribution Act of 1939. These contributions are collected via a payroll tax on employee earnings.[1] The payroll tax rate has risen dramatically and is now almost six times its original level.

As tax rates have risen, so too has the maximum level of earnings subject to the tax. At its inception, the OASI tax rate was 2 percent on earnings up to $3,000, implying a *maximum* annual contribution of $60 per employee. Today, the *average* contribution is more

Although early Social Security participants received far more from the program than they ever put in, current and future workers face dismal rates of return on their contributions. Future returns are likely to become even worse as the baby boomers enter retirement and strain the solvency of the trust fund. Continued delays in reforming Social Security will only contribute to inequities between the nation's young and old generations.

ISSN 0428-1276

than $2,000 per year—an increase that has far outpaced the growth of worker compensation per hour (figure 1). Hence, compared to earlier generations, today's workers must turn over a much larger fraction of their paychecks in order to qualify for benefits.

A Dramatic Fall in Rates of Return

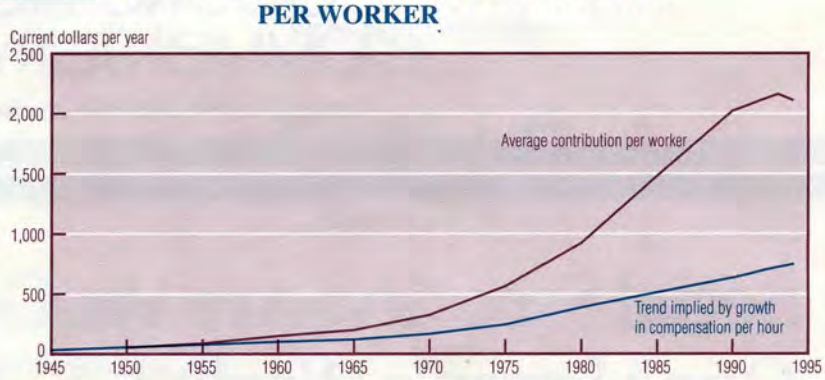
High Returns for Older Generations

The enormous amount of workers' earnings being channeled into OASI has raised concern about the nature of the investment "deal" they may expect to receive.[2] Assuming that the return from participation consists of post-retirement benefit checks alone, one can compute the "internal rate of return" on contributions made over an individual's working years.[3] Figure 2 shows the internal rates of return for different generations according to birth year. Early participants, especially those born before 1900, have received extremely high returns—12 percent or more after adjusting for inflation.[4]

The high returns paid to these early participants can be traced in part to the conversion of OASI from a fully funded system into a "pay-as-you-go" plan in 1939. At that time, it was decided that early participants would receive full benefits (retirement, spousal, dependent, and survivor) regardless of the number of years, or the amounts, of their prior contributions. In following years, the number of covered occupations was expanded, with new participants likewise receiving full benefits.[5] These large windfalls granted to the early OASI participants assured them of a high rate of return.

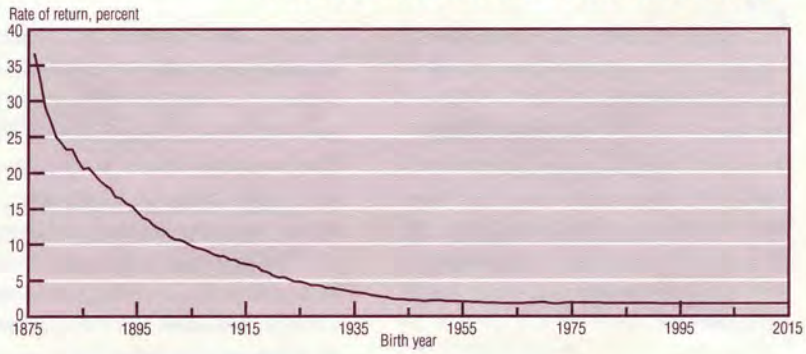
In addition to extending benefits to those who had contributed little or nothing to the program, Congress has periodically legislated higher benefits for retirees and their dependents. In 1972, a whopping 20 percent increase in Social Security benefits was enacted for 27.8 million individuals. Benefits were expanded by another 11 percent in 1974 and, with the advent of cost-of-living adjustments (COLAs) in 1975, began rising automatically every year. However, a flaw in the indexing formula caused increases in the cost of living to be double-counted. Until Congress corrected this mistake in 1977, the system was geared to provide huge rewards to older generations whenever inflation occurred. As a result of these benefit hikes, generations born between 1900 and 1930 have earned relatively healthy rates of return from OASI (see figure 2).

FIGURE 1 AVERAGE OASI CONTRIBUTION PER WORKER



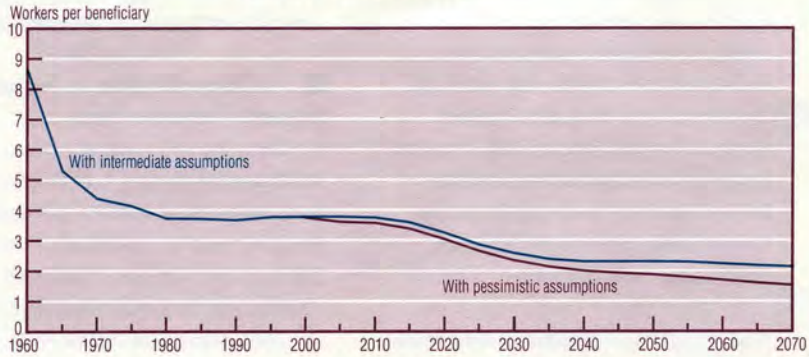
SOURCES: *Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance Trust Fund* (footnote 9), tables II.F8 and II.F19; and *Economic Report of the President, 1995* (footnote 12), table B-47.

FIGURE 2 INFLATION-ADJUSTED INTERNAL RATE OF RETURN FROM OASI BY BIRTH YEAR



SOURCE: Dean R. Leimer, "Cohort-Specific Measures of Lifetime Net Social Security Transfers (footnote 6), appendix E.

FIGURE 3 NUMBER OF OASI WORKERS PER BENEFICIARY



SOURCE: *Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance Trust Fund* (footnote 9), table II.F19.

Dismal Returns for Current and Future Generations

Rapid expansion of benefits for past retirees implied that less money was accumulated in the OASI trust fund for those who came later. To make matters worse, the rate of return earned by the trust

TABLE 1 HISTORICAL MINIMUM RETURNS OVER VARIOUS TIME HORIZONS (Percent)

Asset Type	Time Horizon 1 yr.	5 yr.	10 yr.	15 yr.	20 yr.
Small company stocks	−58.0	−27.5	−5.7	−1.3	5.7
S&P 500 stock index	−43.3	−12.5	−0.9	0.6	3.1
Long-term government bonds	−9.2	−2.1	−0.1	0.4	0.7
Intermediate-term government bonds	−5.1	1.0	1.3	1.5	1.6

NOTE: These figures are based on 1926–94 data and represent the minimum observed compound rates of return, before adjusting for inflation, for a series of overlapping holding periods, each spanning the specified number of years.

SOURCE: *Stocks, Bonds, Bills, and Inflation, 1995 Yearbook* (footnote 7), table 2-7.

fund itself has remained extremely low, primarily because it is legally barred from investing in assets other than U.S. government securities. Between 1937 and 1989, the inflation-adjusted rate of return on OASI trust fund assets averaged a meager 0.6 percent per year.[6] Consequently, workers born during the postwar period are expected to receive much lower rates of return than those of earlier generations. For example, under existing rules, those born around 1960 and now in their prime working years are projected to earn about 1.8 percent on their contributions.

Viewed purely in monetary terms, therefore, OASI represents a poor investment for today's workers. Alternative investments might provide a much higher return. The Standard & Poor's (S&P) 500 stock index, for example, has averaged a 7.1 percent return since the inception of the OASI program.[7]

Indeed, many of today's workers might gain by forfeiting *all* of their accumulated OASI benefits in exchange for the freedom to invest future contributions in common stocks. For instance, investing 10 percent of a $40,000 annual salary for 45 years—from ages 21 to 65—in an instrument that earns a 1.8 percent rate of return will yield a portfolio worth $273,700 on the individual's sixty-fifth birthday. Now suppose that, at age 40, the investment program is terminated, the entire portfolio (then worth $88,800) is discarded, and future contributions are invested in a new plan that earns 7.1 percent per year. At age 65, the new portfolio would be worth $278,800—$5,100 more than the original plan.[8] This suggests that workers below the age of 40 could benefit if allowed to redirect their OASI contributions into common stocks.

One might argue that comparisons such as these, which are based solely on average returns, are unfair to OASI because common stocks involve a higher level of risk for investors. Although this is true for short time horizons, holding assets over long periods reduces the risk of experiencing low or even negative returns. To illustrate, table 1 shows that the *minimum* historical return on each of the various types of assets tends to increase as the investment horizon lengthens. Over 20-year periods, the minimum return on the S&P 500 stock index was 3.1 percent—nearly double the 1.6 percent minimum earned on intermediate-term government bonds. Thus, if one is concerned about minimizing downside risk over the long run—as when investing for retirement security—historical evidence seems to favor a diversified portfolio of common stocks.

A Looming Financial Crisis

The high rates of return enjoyed by the initial wave of retirees were made possible by favorable demographic conditions. A small, Depression-era generation of retirees was being supported by a huge baby boom generation of workers. Not only did early participants receive far more than they ever put in, but all sorts of new benefits were added without regard to the long-term financial consequences. This demographic profile will soon reverse itself as the population of workers shrinks and the number of elderly retirees balloons rapidly. As in our hypothetical scenario, the pyramid scheme is headed for insolvency.

The retirement of the baby boom generation beginning around the year 2010 will cause the number of OASI workers per beneficiary to decline steadily, from 3.6 in 2010 to 2.4 in 2030 (figure 3). Official projections under intermediate economic and demographic assumptions show that the OASI trust fund will be bankrupt in the year 2031. Under pessimistic assumptions involving lower fertility and death rates—and consequently fewer workers per beneficiary—current tax and benefit rules will push OASI into bankruptcy 11 years earlier.[9]

Underlying these projected bankruptcy dates is the redemption of government securities held in the OASI trust fund. This will be necessary to cover the shortfall of contributions relative to benefits that will occur as the baby boom generation begins retiring. The cash necessary to redeem the government bonds can be obtained only by 1) running a bigger deficit, 2) cutting government spending, 3) increasing taxes, or 4) reducing OASI benefits. These actions will place additional financial burdens on current and future workers, implying that the internal rates of return reported earlier should probably be revised downward. For example, under the intermediate set of economic assumptions, a gradual series of payroll tax increases beginning in the year 2020 will cause the internal rates of return for future workers to drop below 1 percent. Under pessimistic assumptions, these rates actually become *negative.*[10]

A Broader Perspective

Social Benefits

Although current and future workers are projected to earn far less from OASI than they would from competing alternatives, the program may provide social advantages not reflected in calculations based solely on cash contributions and benefits. For example, one might argue

that workers are not farsighted enough to save for retirement and must be forced to do so. Alternatively, individuals might strategically "free ride" on public generosity: Knowing that the government will bail them out, they will arrive penniless at retirement.

Another view is that OASI affords society a valuable mechanism for risk-sharing between living and unborn generations —one that private markets cannot provide. For example, if some generations suffer through a war or a severe economic depression, the government can spread the cost of these events to future generations by providing benefits to the unfortunate today and deferring taxation until much later. Finally, OASI might help to accomplish other goals, such as reducing poverty among elderly Americans.

Despite their merit, however, these arguments cannot be used in defense of the current OASI setup. First, they assume that the government *is* farsighted enough to invest worker contributions in ways that build the nation's stock of productive resources. The record to date, however, suggests that contributions have been used to finance consumption either by the government or by individuals via government transfers.

Second, retirement security can be ensured without the government itself operating a retirement program. For example, Congress could mandate withholding a portion of each employee's wage for deposit into an account handled by a professional investment manager—much like a private pension plan.

Third, the existence of unfavorable demographics, combined with the fact that past contributions have been largely consumed, makes it doubtful that the government could bail out the baby boom generation from a calamity such as the Great Depression.

Finally, while reducing poverty is an important social goal, OASI was designed primarily for providing retirement insurance. Its founders believed that benefits would be earned according to time and pay in the workforce. Old-age poverty could be adequately addressed via an explicit welfare program rather than by combining it with a retirement program like OASI.

Macroeconomic Effects

In our hypothetical scenario, the pyramid scheme that took advantage of new investors was limited to a small number of individuals. The OASI program, in contrast, is nearly universal and has the potential for economywide repercussions that could further reduce workers' resources. The mean real income of households headed by persons age 65 or older in 1990 was 27 percent larger than that of similar households in 1980. For households headed by persons age 64 or younger, the corresponding figure was only 11 percent. A comparison based on consumption expenditures yields similar results. This suggests that programs like OASI, Medicare, and others have enabled the elderly to consume a growing portion of the economic pie.[11]

A direct consequence of greater consumption by the elderly is a lower saving rate. The personal saving rate has dropped from about 5½ percent of GDP during the 1970s to only 3½ percent during the 1990s.[12] Lower saving translates into a lower stock of productive resources for the future—particularly a reduced stock of capital per worker, a key ingredient of productivity improvement in the post–WWII era. Indeed, gains in productivity have been the driving force behind the growth in real wages.

Declining saving rates, slower productivity gains, and sluggish wage growth are all clearly discernible in U.S. economic statistics since the 1970s—precisely the time when OASI benefits to the elderly skyrocketed. Thus, apart from having to turn over a higher fraction of their paychecks to OASI, current and future workers could be further affected by the dynamic economic forces that may link OASI to lower saving and reduced wage growth.[13]

Conclusion

The terms "trust fund" and "contributions" were carefully selected during the crafting of the 1939 amendments to the Social Security legislation. They suggest that participants have earned the right to future benefits, and create an impression of asset management for the exclusive benefit of contributors under an inviolable set of rules. These labels have proved misleading because Congress has exercised its legal right to change the tax and benefit structure on numerous occasions. Indeed, frequent changes have caused OASI to grow from a small initiative for providing retirement security into a massive and complex program that involves huge cross-generational resource transfers. The lopsided nature of the investment deal that rewards earlier participants at the expense of those who enroll later raises serious questions about the program's intergenerational fairness.

Under current rules, OASI represents a bad investment for today's young workers, many of whom would be better off if they could invest their future contributions in private capital markets. The current rules are not sustainable, however: Additional measures will be necessary to keep the program solvent, and these are likely to further worsen current workers' rates of return. Moreover, many of OASI's social objectives could be obtained via a mandatory pension plan that prevents resources allocated for retirement support from being consumed immediately. A critical element of such a plan would be the freedom to invest worker contributions in a wide range of assets, including corporate stocks and bonds. In addition, the poverty-reduction benefits of OASI could be obtained through a separate welfare program designed specifically for that purpose.

In the face of these deficiencies and despite the long-term unsustainability of OASI, many people, including some key policymakers, continue to support the current framework. Indeed, the policy options being debated today for balancing the federal budget by the year 2002 contain no proposals for reforming the program. Further delay in addressing OASI's shortcomings will only increase intergenerational inequities and impede efforts to improve Americans' living standards.

Footnotes

1. Half of this tax (or 5.26 percent of the wage) is paid by the employee, while the other half is paid by the employer. Despite this sharing arrangement, it is correct to view the employee as the one who bears the full burden of the Social Security tax. This is because employers have the ability to shift their portion of the tax back onto employees (who are also consumers) in the form of lower wages or higher product prices. An additional 1.88 percent of each employee's wage (split equally between employee and employer) is contributed to the Disability Insurance (DI) trust fund. This yields a combined employee/employer tax rate for both OASI and DI of 12.4 percent. In this article, we consider only the OASI portion of the Social Security program.

2. Total OASI contributions reached about $308 billion in fiscal year 1994.

3. The internal rate of return is the rate of interest that causes the present value of contributions to equal the present value of benefits. The computation explicitly takes into account the size and timing of cash flows as they occur over an individual's lifetime, and the probability of surviving to each age.

4. The very first beneficiary, Ms. Ida Fuller, paid only $22 in Social Security taxes, but ended up collecting about $20,000 in benefits. See "Your Stake in the Fight over Social Security," *Consumer Reports,* September 1981, pp. 503–10.

5. By 1954, almost all private-sector workers were covered by OASI. Public-sector employees and teachers were covered by other pension programs.

6. See Dean R. Leimer, "Cohort-Specific Measures of Lifetime Net Social Security Transfers," Social Security Administration, Office of Research and Statistics, Working Paper No. 59, February 1994.

7. This figure represents the average compound "total return," including dividends and capital appreciation from 1937 to 1994, computed using the inflation-adjusted, S&P 500 total return index in *Stocks, Bonds, Bills, and Inflation, 1995 Yearbook,* Chicago: Ibbotson Associates, 1995, p. 43 (table B-11).

8. In this example, all dollar figures have been rounded down to the nearest $100.

9. Bankruptcy projections are from *Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance Trust Fund,* April 3, 1995, table II.F20.

10. See Leimer (footnote 6), appendix F and table 1.

11. See S. Jay Levy, "The Economics of Aging: Can We Afford Grandma and Grandpa?" Jerome Levy Economics Institute, Public Policy Brief No. 18, 1995.

12. See *Economic Report of the President, 1995,* chart 3-11, p. 118.

13. See Jagadeesh Gokhale, Laurence J. Kotlikoff, and John Sabelhaus, "Understanding the Postwar Decline in U.S. Saving: A Cohort Analysis," Brookings Papers on Economic Activity, 1996, forthcoming.

Jagadeesh Gokhale is an economic advisor and Kevin J. Lansing is an economist at the Federal Reserve Bank of Cleveland. *The authors thank David Altig for helpful comments and suggestions.*

The views stated herein are those of the authors and not necessarily those of the Federal Reserve Bank of Cleveland or of the Board of Governors of the Federal Reserve System.

Economic Commentary *is now available electronically through the Cleveland Fed's home page on the World Wide Web: http://www.clev.frb.org.*

Liquidity, Monetary Policy, and Financial Intermediation Conference Proceedings Now Available

The papers in the November 1995 issue of the *Journal of Money, Credit, and Banking* (part 2) were presented at a conference held at the Federal Reserve Bank of Cleveland in September 1994. The purpose of this conference was to facilitate research on the structural context of U.S. monetary policy. To order a copy of the proceedings, please send $8.00 (U.S.) in a check or money order drawn on a U.S. bank to the Federal Reserve Bank of Cleveland, Research Department, P.O. Box 6387, Cleveland, Ohio 44101. Make checks payable to the Federal Reserve Bank of Cleveland.

Contents:

The Effects of Real and Monetary Shocks in a Business Cycle Model with Some Sticky Prices
by Lee E. Ohanian, Alan C. Stockman, and Lutz Kilian
Comment: Christian Gilles
John V. Leahy

The Quantitative Analytics of the Basic Neomonetarist Model
by Miles S. Kimball
Comment: Michael Woodford

Financial Intermediation and Monetary Policy in a General Equilibrium Banking Model
by Pamela Labadie
Comment: Deborah J. Lucas
Stephen D. Williamson

Monetary and Financial Interactions in the Business Cycle
by Timothy S. Fuerst
Comment: Charles L. Evans
Mark Gertler

Inside Money, Outside Money, and Short-Term Interest Rates
by V.V. Chari, Lawrence J. Christiano, and Martin Eichenbaum
Comment: Wilbur John Coleman II
Julio J. Rotemberg

Estimating Policy-Invariant Deep Parameters in the Financial Sector When Risk and Growth Matter
by William A. Barnett, Milka Kirova, and Meenakshi Pasupathy
Comment: Stephen G. Cecchetti
David A. Marshall

Liquidity Effects and Transactions Technologies
by Michael Dotsey and Peter Ireland
Comment: Finn E. Kydland
Donald E. Schlagenhauf
and Jeffrey Wrase

Computable General Equilibrium Models and Monetary Policy Advice
by David E. Altig, Charles T. Carlstrom, and Kevin J. Lansing
Comment: Eric M. Leeper
Edward C. Prescott

Federal Reserve Bank of Cleveland
Research Department
P.O. Box 6387
Cleveland, OH 44101

Address Correction Requested:
Please send corrected mailing label to the above address.

Material may be reprinted provided that the source is credited. Please send copies of reprinted materials to the editor.

BULK RATE
U.S. Postage Paid
Cleveland, OH
Permit No. 385

*** In House Delivery ***
# Copies: 1
Lee D Baumbaber
FRB CITY: Cleveland
DEPT: Research
FLOOR: 9