

Social Security Restructuring: Tough Decisions Ahead

Social Security is the largest, and perhaps the most popular, government program in U.S. history. Created to help elderly Americans weather the Great Depression, Social Security now pays benefits to more than 50 million Americans each year. It provides more than half the income for 64 percent of America's elderly and is the exclusive source of income for one-fifth.

In recent years, talk of Social Security restructuring has grown because the system offers many current and future workers below-market returns. This means they will retire with less income than they would have had if Social Security had never been established. Some have suggested that workers be allowed to deposit some or all of their Social Security contributions into individual retirement accounts. While a case can be made for individual accounts, such accounts alone cannot solve the problem of Social Security's below-market returns because they do not address the underlying source of the low returns.

Although the textbook economic analysis explaining these below-market returns is well established, it is often ignored in policy discussions. We review this analysis and discuss why large sacrifices by current generations, in the form of tax increases and spending cuts, are the only way to provide higher returns for future generations.

Why Does Social Security Pay Below-Market Returns?

Many people believe Social Security provides below-market returns because it is not just a pension program—it also, for example, redistributes resources from high-wage to low-wage workers. This redistribution certainly causes a high-wage worker's benefit check to be lower than it would have been in a true pension plan. But it also causes low-wage workers to receive higher checks. These monetary transfers from one worker to another do not change the rate of return achieved by the generation as a whole and have

nothing to do with Social Security's low returns.

In fact, the Social Security system would pay below-market returns even in the hypothetical case in which there are no risks in the economy and all members of each generation are identical. We initially focus on that simple case, treating each generation as a group and looking at its aggregate contributions and benefits.

The below-market returns paid to current and future workers are directly caused by the fact that Social Security is (largely) a pay-as-you-go system. In such a system, workers' contributions are not invested to pay their own future benefits but are instead used to provide benefits to current retirees. In other words, each generation's retirement is financed by the contributions of its children rather than its own past saving. Such a system accumulates no assets; it is merely a sequence of transfer payments from young to old.

To see the effects of pure pay-as-you-go financing, suppose a social security system is introduced for the first time, permanently imposing a payroll tax on the working generation's labor income and transferring those funds to pay benefits to retirees. In the first period, the generation that is then retired enjoys a financial windfall, or start-up bonus, because it receives benefits without having contributed to the system. Pay-as-you-go Social Security is an exceedingly good deal for this first generation.

But later generations do not enjoy this windfall because they must pay for their elders' retirement before receiving benefits. The rate of return each generation receives from the system can be computed from the generation's payment to its parents and the payment it receives from its children. (Of course, these are not actually investment returns because nothing has been invested.) Whether Social Security is a good deal for each generation depends on how its return from the system compares with the return it could have earned through capital accumulation.

The central result in the textbook analysis is straightforward. If the tax rate on labor income remains constant, each generation earns a rate of return equal to the growth rate of total labor income.¹ For example, if labor income rises by 50 percent between one generation and the next, each generation receives 50 percent more in benefits from its children than it paid to its parents. Or if labor income doubles between one generation and the next, each generation receives double its contributions when it retires.

Of course, a generation receives better returns if the tax rate is higher when it retires than when it worked. If the system is phased in over several generations, for example, each affected generation can earn an expansion bonus akin to the start-up bonus enjoyed by the first retirees. But because the tax rate can't go up forever (certainly not above 100 percent), a pay-as-you-go system cannot permanently deliver returns higher than the growth rate of total labor income.

What has that growth rate been in the United States? From 1929 to 2002, total labor income (adjusted for inflation) grew at an average rate of 3.4 percent per year. A 3.4 percent real return may seem like a good deal, but it's not. If workers weren't paying into Social Security, they could accumulate capital and earn a return that averages around 6 percent per year (adjusted for inflation).²

In any given year, the difference between 3.4 percent and 6 percent is not very large. But it is quite large when compounded over a lifetime. The lower return cuts the retirement benefit roughly in half. So a generation that faces a constant tax rate throughout its lifetime suffers a net loss from the pay-as-you-go system equal to about half its tax payments.

Low Birthrate Further Pushes Down Returns

Looking ahead, though, the future growth rate of total labor income—and the long-run return that pay-as-you-go Social Security can deliver—is likely to be lower than the 3.4 percent average observed from 1929 to 2002. That growth rate had two components: 2.1 percent average growth in labor income per working-age person and 1.3 percent average growth in the working-age population. Labor income per working-age

person is likely to keep growing at its historical pace or faster. But the growth of the working-age population will be largely halted by a lower birthrate.

The United States has witnessed a dramatic fall in the total fertility rate—the number of children an average woman will bear over her lifetime, based on a given year's birthrates for women at each age. The total fertility rate peaked at 3.68 in 1957, plunged to 1.74 in 1976 and is now around 2.05. The Social Security Administration projects that the fertility rate will slip back to 1.95 and stay there. A reduction in the birthrate slows the growth of the working-age population, with a lag of a few decades. Even with a boost from immigration, the Social Security Administration projects an average growth rate of only 0.2 percent from 2015 to 2080 (*Chart 1*).

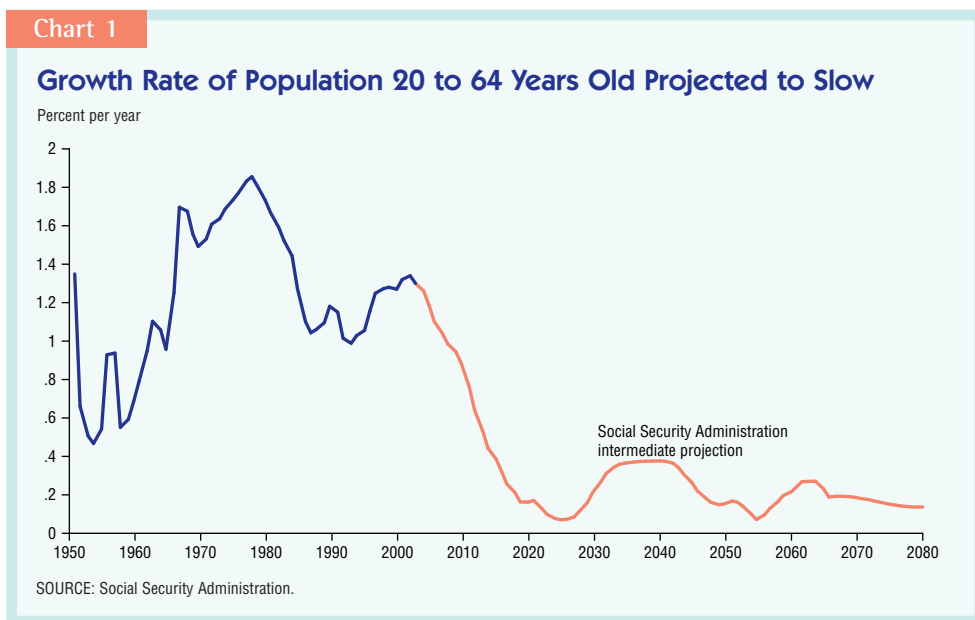
While a low birthrate may not itself be undesirable (many would welcome its environmental implications), it imposes a significant strain on pay-as-you-go Social Security. Slowing the growth of the working population causes U.S. labor income to grow at a slower rate than it otherwise would, further pushing down the system's returns.³

The Closed-Group Liability

Having bestowed above-market returns on earlier participants, a pay-as-you-go system lacks the resources to give market returns to later participants. The losses suffered by later generations are the price of the bonuses paid to the earlier generations; it turns out that their combined losses have a present discounted value equal to the bonus.⁴ Of course, their combined *undiscounted* losses are much larger, even infinite if the pay-as-you-go system lasts forever.

The system allows earlier generations to consume more but forces later generations to consume less. This increase in earlier consumption and decline in later consumption shows up as a smaller capital stock (and in an economy open to international capital flows, as smaller net holdings of foreign assets). The pay-as-you-go system crowds out capital accumulation because each generation "saves" for retirement through the system rather than through investment.

The system's distinctive feature is that at each moment, the past contributions of



the current retirees have been paid to the retirees' parents rather than invested in capital. If the contributions *had* been invested, the accumulated capital would give retirees a market return on those contributions, which would leave current and future workers' contributions available for investment, giving them market returns as well. There would be exactly enough resources on hand to give everyone market returns, with nothing left to spare.

But in the pay-as-you-go system, the retirees' past contributions are irretrievably gone; only current and future workers' contributions are on hand. Their contributions alone are insufficient to provide market returns for both them and the retirees. Because past contributions were not invested to finance the benefits promised to retirees and those approaching retirement, future generations must finance them by accepting below-market returns.

Every pay-as-you-go system has a "closed-group liability" that is equal to the benefit promises for which no assets have been accumulated.⁵ This liability measures the present value of the burden future generations must bear through below-market returns.

This liability turns out to be mathematically equivalent to traditional government debt. The impact of a pay-as-you-go system on each generation is the same as if the government had issued

debt to pay the earlier generations' benefits and taxed later generations to service the debt.⁶ Like government debt, Social Security transfers resources from later generations to earlier ones and crowds out capital formation. In each case, later generations' losses, though painful to them, do not reflect economic inefficiency. Instead, they reflect the fact that resources have been redistributed from them to earlier generations.

Of course, a pay-as-you-go system could pay benefits that provide a market return relative to payroll tax contributions if general government revenue was tapped to make up the difference. But all government revenue comes from the American people. General revenue is just a name for other taxes paid by Americans, such as the income tax. Using general revenue would not give the affected generations a market return on their total contributions (payroll taxes plus general revenue). Instead, each generation would simply bear part of the burden of below-market returns in the form of higher income taxes or fewer government services rather than higher payroll taxes.

The U.S. Experience

Numerous studies confirm that the Social Security system's actual treatment of different generations matches the predictions of the textbook economic analysis. Chart 2 displays Social Security expert Dean Leimer's estimates of the

actual and projected returns Social Security provides to different cohorts of workers if the current tax rate and benefit formula are maintained.

As the chart shows, early cohorts received phenomenally high returns. The initial retirees received a large start-up bonus; although individuals could not receive Social Security benefits unless they paid into the system for at least a brief time, early recipients received far more in benefits than they paid in Social Security taxes. (For example, the first recipient, Ida May Fuller, paid \$25 in taxes but received \$22,889 in benefits over her lifetime.) Because Congress steadily raised the system's tax rate during its first four decades, some of the subsequent cohorts received expansion bonuses.

On the other hand, Leimer estimates that cohorts born after 1950 can expect aggregate returns below 2 percent, one-third of what they could receive by investing in capital. The picture becomes even worse once an additional factor is considered. Because current-law benefits are not adjusted for the ongoing rise in life expectancy, they cannot be sustained over the long term by the current-law tax rate. (See box titled "The Impact of Longer Lifetimes.") Chart 2 also shows Leimer's estimates of expected returns for current and future workers if the sys-

tem's financial imbalance is remedied with a series of tax increases. While these estimated returns (around 1 percent) may be a little low (due to Leimer's pessimistic assumptions about productivity growth), his analysis makes clear the price current and future workers must pay for the bonuses given to earlier generations.

The closed-group liability of the U.S. system is enormous—about \$10 trillion, or a year and a half of the country's labor income. Pay-as-you-go Social Security, in conjunction with pay-as-you-go Medicare, is projected to impose crushingly high burdens on future generations, particularly as these programs expand in response to rising life expectancy and medical costs.⁷

Moving Away from a Pay-As-You-Go System

To forestall this grim outcome, many analysts have proposed a system in which each generation finances its own retirement. Such a system would allow workers to earn market returns on their contributions, boosting their retirement income.

Of course, ending the system does not painlessly erase the closed-group liability. Dealing with that liability—the promised benefits for which no assets have been accumulated—poses an im-

portant obstacle. Abruptly ending the pay-as-you-go system would inflict financial catastrophe on recent retirees, who would receive no benefits after paying taxes for their entire working lives. Workers approaching retirement would also lose their expected benefits, which far exceed their remaining expected taxes. This shutdown penalty from ending the current system is the mirror image of the start-up bonus from introducing the system. Commonly called the transition cost, it is equal to the \$10 trillion closed-group liability.

Even the most ardent proponents of Social Security restructuring do not propose eliminating benefits for current retirees and those approaching retirement. At most, they suggest modest benefit cuts. But if those groups do not bear this \$10 trillion burden, someone else must do so.

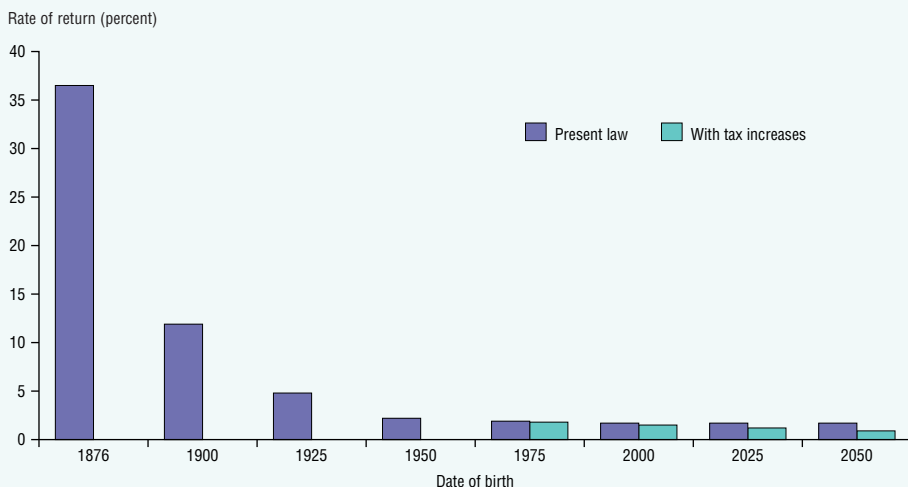
One possible approach, roughly similar to some leading proposals, would require current workers to provide full benefits for their elders but receive a reduced benefit check from their children, who would receive no benefit checks at all from their own children. After this transition period, each subsequent generation would fund its own retirement and receive the higher rate of return afforded by capital accumulation. Each of these generations would enjoy a more prosperous retirement because current workers and their children bore the transition cost and paid off the closed-group liability. Their combined gains would have a present discounted value equal to the \$10 trillion transition cost. (Of course, their undiscounted gains would be much larger.)

Most reform plans would use general government revenues to finance at least part of the transition. But again, all government revenue comes from the American people. Using general revenues wouldn't change the reality or the size of the transitional burden. The first few generations would still bear this burden, but in the form of higher income taxes or fewer government services rather than higher payroll taxes.

Some economists have suggested that the transition cost be spread across all future generations by issuing debt and servicing it forever. But that wouldn't solve the problem; requiring each gener-

Chart 2

Social Security Paid High Returns to Past Workers, Offers Low Returns to Current and Future Workers



SOURCE: Dean R. Leimer (1995), "A Guide to Social Security Money's Worth Issues," *Social Security Bulletin* 58 (Summer), 3–20, at p.12.

ation to service this debt would be just as burdensome as requiring them to explicitly pay for their elders' retirement. Since the closed-group liability is equivalent to government debt, replacing it with government debt wouldn't accomplish anything.⁸

The inescapable reality is that the pay-as-you-go system has promised benefits to current retirees without accumulating any assets to pay them. If the current system is maintained, every future generation must bear below-market returns to service this liability. If the system is shut down, some generations must bear a large transition cost to pay off this liability. Every subsequent generation, freed from the obligation to pay for its predecessor's retirement, could then earn market returns by accumulating capital.⁹

Maintaining Social Protections

The transition cost is the biggest fiscal obstacle to be overcome in moving away from a pay-as-you-go system. If it were paid, the system's closed-group liability would be eliminated and each generation could then invest its own retirement savings in the capital markets. Government's current role in transferring money between generations would end, and the new system could, in theory, operate without any government involvement.

But government's role in the Social Security system extends beyond inter-generational transfers. In particular, government provides three forms of social protection via the current system. Social Security ensures that workers "save" even if they aren't yet thinking about retirement. Social Security also provides workers with benefits that can't be lost through unwise or unlucky investment decisions. Finally, Social Security redistributes money within each generation, giving low-wage workers a more plentiful retirement than their own contributions would have given them. These protections have costs, such as a potential reduction in work effort. But if they are going to be maintained in a restructured system, some government involvement will be required.

Contrary to popular belief, Social Security restructuring need not reduce the benefits of low-wage workers. Each generation in a restructured system

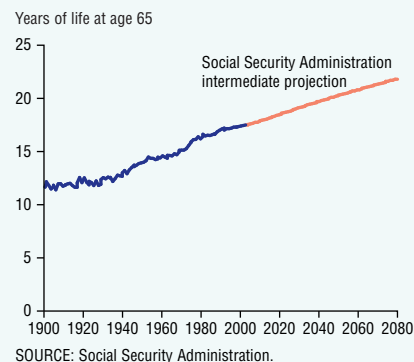
The Impact of Longer Lifetimes

The upward trend in life expectancy at age 65 is steadily increasing the number of years Americans spend in retirement (*chart*). Unlike the lower birthrate, this trend doesn't change the pay-as-you-go system's long-run rate of return, because it doesn't change the growth rate of the working-age population. But with an unchanged rate of return, an increase in the number of months spent in retirement forces participants to choose between higher contributions and lower monthly retirement benefits. Of course, that choice is unavoidable under any system; workers investing in the capital markets would face a similar trade-off. Still, the need to make this choice poses two potentially troubling issues for the Social Security system.

The first concern is due to the design of current law. The law promises members of each generation monthly benefits proportional to wage rates at the time they retire (no matter how long they live), but doesn't raise the tax rate to cover the extra cost of paying benefits over a longer retirement period. In effect, current law promises that the system will pay ever-higher rates of return as life expectancy rises. This unsustainable promise is expected to lead to a solvency crisis around 2042. Social Security benefits would then have to be immediately and permanently cut below current-law levels, initially by 26 percent, unless (as expected) Congress takes other action. By failing to specify a viable response to rising life expectancy and postponing the final decision until a future solvency crisis, current law introduces uncertainty in the decades before the crisis and the potential for political turmoil when it occurs.

The second concern arises if, as is likely, Congress responds to the rise in life expectancy by raising the tax rate to forestall part or all of the post-2042 cuts in monthly benefits. At first glance, such a response might seem similar to a worker's decision to accumulate more capital in preparation for a longer retirement. But because the pay-as-you-go system offers below-market returns, putting more money into it increases the economic burden it imposes on future generations.

Upward Trend in Life Expectancy Projected to Continue (Average of Male and Female Life Expectancy at Age 65)



would be responsible for its own retirement, so the system would no longer redistribute income from young to old. But individuals *within* each generation would not necessarily be completely responsible for their own retirement. Income could still be redistributed from high-wage to low-wage workers within each generation, providing what many view as an important social protection for the elderly poor.

Two major options would allow each generation's savings to be invested in capital while the government regulated the use and distribution of the investment to provide social protections. The first option is a centralized program in which the government would require workers to save and would pool each generation's contributions and invest them in the capital markets. Government would then distribute the proceeds to the generation when it retired. The government would decide how the contributions are invested and how the proceeds would

be distributed within each generation. This government-investment option could maintain all the current system's social protections.

The second option seeks a middle ground between centralization and a completely private pension plan. Under this option, the government would mandate that workers save, but each worker's contributions would be placed in a privately owned individual account, except for a portion the government would redirect to low-wage workers. Each worker would have broad discretion to choose how his or her contributions would be invested, and each worker's retirement benefit would be paid from his or her own account. Although this mandatory-accounts option is often called "privatization," the term is somewhat misleading. The option would actually offer a hybrid of public regulation and private choice.

Government investment would have the lowest administrative costs. But the

government could divert its asset holdings to the current elderly, moving back to a pay-as-you-go system—which essentially describes the early years of the Social Security program. This risk would be largely avoided with individual accounts, where workers' contributions would be their private property and couldn't be used for other purposes. Government investment would also pose the risk of increased political interference in the capital markets. Of course, given the many possible variations on mandatory accounts and government investment, it is important to look at the specific provisions of any proposal.

The Real Issue

Neither mandatory individual accounts nor government investment alters the fundamental economic trade-off discussed above. Abolishing a pay-as-you-go system imposes a transition cost on some generations and offers higher (market) returns to all later generations, regardless of whether each later generation saves on its own, in mandatory accounts or through the government. Neither mandatory accounts nor government investment actually causes the higher returns. Once freed from the obligation to pay benefits to the preceding generation, workers could earn such returns on their own. Instead, mandatory accounts and government saving are ways to maintain social protections while workers earn those returns.

This point is relevant for proposals that would keep the pay-as-you-go system but establish a new system of mandatory accounts or government investment alongside it. Such a new system would impose no transition cost, since it would provide market returns to everyone paying into it. But it would also offer no gains to future generations, who could have earned the same returns by investing on their own. These generations would still face the same burden they do now—below-market returns on their contributions to the pay-as-you-go system.

There may be sound reasons to support “privatization,” but neither it nor any other reform can eliminate below-market returns unless and until the closed-group liability has been paid off and each generation pays for its own retirement. No plan to eliminate below-market

returns can sidestep the need for \$10 trillion of tax increases or spending cuts.

Conclusion

Social Security is a pay-as-you-go system in which each generation pays for the retirement of its elders and receives Social Security benefits from its children. The inescapable result of this design is the payment of above-market returns to the earliest participants and below-market returns to later participants. The low U.S. birthrate will further push down returns for future workers. If the system continues in its current form, the retirement income received by all future generations will be smaller than what the capital markets could provide.

Moving away from the pay-as-you-go system would raise the retirement income of future generations but would require current generations to accept returns even lower than the 2 percent offered by the current system. Their \$10 trillion sacrifice would create a more generous and financially secure retirement system for their descendants. Whether to make this sacrifice is the difficult decision citizens and policymakers face.

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Notes

¹ This result was first stated by Samuelson (1958) and Aaron (1966). For thorough reviews of the textbook analysis, see Geanakoplos, Mitchell and Zeldes (1998); Kotlikoff (2002); and Lindbeck and Persson (2003). For a simplified review with numerical examples, see Viard (2002).

² The reference is to the pretax marginal product of capital, which is the overall payoff from investment. For estimates of its average value, see the sources cited by Viard (2002, p. 4). In the actual economy, both the marginal product of capital and the growth rate of total labor income are subject to risk. The financial markets package the overall return to capital into different securities with different risk characteristics, such as stocks and bonds.

A completely different analysis than that presented in this article (with far more favorable implications for pay-as-you-go Social Security) would apply if the growth rate were greater than the marginal product, but that is not the case for any major industrialized country.

³ In equilibrium, however, a slower growth of the workforce may also reduce the marginal product of capital. This effect is smaller in an economy open to international capital flows.

⁴ This statement refers to the present value, discounted at the marginal product of capital. See Gokhale and Smetters (2003, pp. 14–15); Kotlikoff (2002, pp. 1882, 1886); Viard (2002, pp. 4–5); and Geanakoplos, Mitchell and Zeldes (1998, p. 146).

⁵ This liability equals the present discounted value of current retirees' and current workers' future benefits minus the current workers' future contributions. It is sometimes referred to as the “Social Security wealth” of current retirees and current workers. It is also often called the “unfunded liability,” but that usage can cause confusion because others define that term to refer to the present value (under current law) of future benefits minus future contributions for all participants, including future workers. The latter calculation measures whether current law is sustainable, a separate issue from the burden the system places on future generations.

⁶ The mathematical equivalence of pay-as-you-go Social Security and government debt has been emphasized in the generational accounting literature. See Gokhale and Smetters (2003, p. 12) and Kotlikoff (2002, p. 1887).

⁷ See Gokhale and Smetters (2003).

⁸ Many authors have noted this fact. For a thorough analysis, see Geanakoplos, Mitchell and Zeldes (1998). Also see Lindbeck and Persson (2003, p. 90) and the numerous sources cited by Viard (2002, p. 8, note 10).

⁹ They would earn returns somewhat lower than the currently observed marginal product of capital because the expansion of the capital stock would reduce the marginal product. This reduction would be smaller in an economy open to international capital flows.

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