Unconventional Social Security Solutions

Social Security was enacted during the Great Depression in order to provide financial stability to America's elderly. Today, Social Security provides retirement benefits to over 60 million Americans (SSBT, 2023). Unfortunately, Social Security is now on shaky financial footing as the recent Social Security report projects the trust fund will deplete in 2034 (SSBT, 2023). In addition to the depletion date, the Social Security Board of Trustees report the "actuarial balance." The actuarial balance is the present value of deficits over 75 years as a percentage of the present value of taxable payrolls. The recent report estimates the actuarial balance to be -3.61% and the present value of taxable payrolls to be $655 trillion (SSBT, 2023). This means that for each 1 basis point (0.01%) increase in the actuarial balance, solvency improves by $65.5 billion. Fundamentally, the trust fund balance is represented by the following recursive equation (TF = trust fund and t = calendar year)

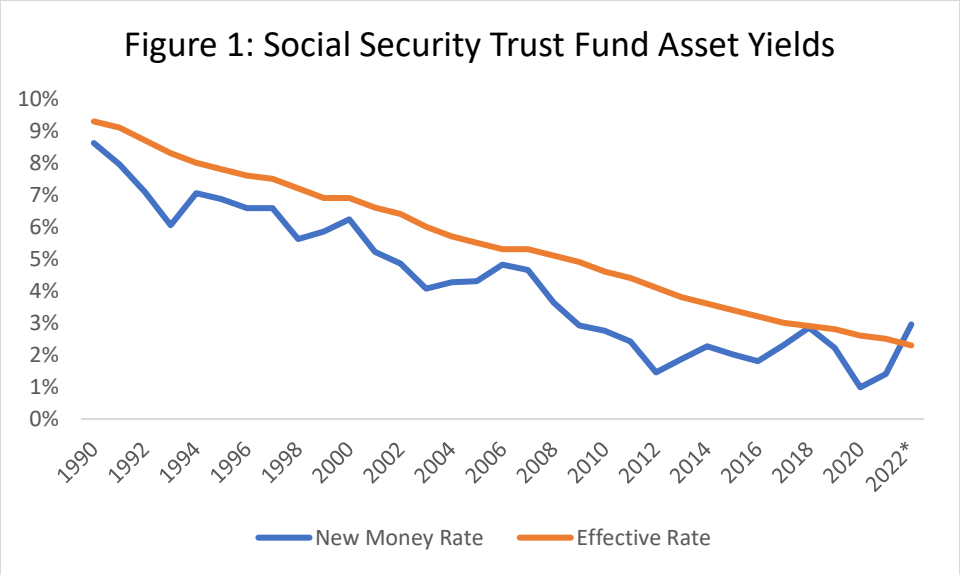
$$TF\ Balance\ (t) = TF\ Balance\ (t-1) + Taxes(t) - Benefits(t) + Interest(t)$$

Based on the equation above, there are three levers to pull in order to improve solvency; increase taxes, reduce benefits or increase interest rates. The first two are challenging to implement as both tax hikes and benefit reductions are not popular with the electorate (Turner, 2017). In this paper, I explore methods that indirectly impact the tax and benefit side of the equation. I also explore the third lever, which is interest. Specifically, I offer these three solutions: 1) increase fertility rates, 2) increase immigration and 3) invest in higher yielding assets. Before going any further, I must concede that I do not believe that these solutions alone are enough to make Social Security solvent. However, by implementing these unconventional methods, the magnitude of the necessary tax hikes or benefit reductions eases.

Before discussing the solutions, I will quickly cover how the trust fund's solvency deteriorated. Two drivers explaining Social Security's woes are the aging population and interest rates. The aging population can further be split into the Baby Boom generation and the decline in fertility rates. Members of the Baby Boom generation were born after World War II, and are America's largest generation[1]. Members of this generation have begun to reach retirement age and thus, America's retiree ratio[2] has ticked up. Based on CBO estimates, this "retiree ratio" is projected to rise from 17.1% in 2021 to 21.5% in 2042 (CBO, 2022). This is problematic for Social Security. As the Baby Boom generation retires, Social Security loses out on collecting payroll taxes and must now pay these people their benefits. This would be a non-issue if the U.S. has enough young people joining the workforce to replace these retirees. However, this is not the case thanks to the decline in fertility rates. The fertility rate represents the average number of children per women over their life time (Roser, 2023). To provide historical context, fertility rates declined from 3.7 in 1957 to 2.0 in 1990 to 1.9 in 2011 (SSBT, 2023). The rate now sits at 1.66 as of 2021 (SSBT, 2023).

[1] Note that America is not alone in its aging population. Other countries experienced post World War II baby booms and subsequently experienced declines in fertility rates (Roser, 2023).
[2] I define this ratio as people aged 65 and older divided by the total population.

Adding insult to injury, interest rates declined in combination with adverse population demographics. In 1990, the 10-year treasury was about 8% and fell to below 2% in 2012 (USDT). The rate currently sits at 3.77%[3] (USDT). Treasury rates are directly linked to interest earned on the special issue treasury securities owned by Social Security (42 U.S.C. § 401(d)). Figure 1 below, summarizes the interest rates for Social Security since 1990. Notice that interest rates started to creep up in recent months. You might think this is favorable, but, Social Security is not capitalizing on these rising rates and because it cannot turnover its portfolio quickly. This is because its portfolio is locked into low rates from securities purchased years ago. To make matters worse, higher interest rates were accompanied by high inflation. Since Social Security benefits are linked to inflation[4], the program is being pressed on two fronts: it cannot turnover its portfolio quickly for higher yielding securities and benefits per retiree is increasing.



Sources: SSA Historical Interest Rates, https://www.ssa.gov/OACT/ProgData/intRates.html & SSA Effective Interest Rates, https://www.ssa.gov/OACT/ProgData/effectiveRates.html

Now that we have put the underpinning for Social Security's woes behind us, I will turn to my optimistic side and focus on solutions for the remainder of this paper. Solution one is to increase fertility rates, solution two relates to immigration and solution three seeks to increase interest rates earned by the trust fund. I will start with solution one which is reversing the troubling trends of declining birth rates. The most recent report indicates the fertility rate[5] stands at 1.66 as of 2021 (SSBT, 2023). As for how to increase fertility rates, there are likely several policy options. However, the general approach is we must make it easier to have children in the United States. A 2018 mourning consult poll found that financial constraints such as cost of childcare, were a key driver as to why Americans are having few children (Miller, 2018). While fertility rates currently sit at 1.66 (SSBT, 2023), the Social Security Board of Trustees expect

[3] As of the writing of this paper.
[4] The cost-of-living adjustment for Social Security benefits was 8.7% for 2023 (OCAc).
[5] I use fertility rate and birth rate interchangeably.

them to increase to 1.99 which aligns with historical averages. However, if fertility rates stay low, at 1.69 (the Trustees' worst-case scenario), the Trustees estimate the actuarial balance will deteriorate to -4.32% (SSBT, 2023) which equates to roughly $(4.65) trillion in present value. With U.S. fertility rates sitting at 1.66, and the fact that fertility rates have plummeted across the globe, this worst-case scenario seems plausible. If fertility rates rise to 2.19 (the Trustees' best-case scenario), the actuarial balance will improve to -3.14% ($3.08 trillion in present value in the good direction) (SSBT, 2023).

Solution two is to increase immigration. By increasing immigration, more working age people enter the population which in turn, increases the tax base. This means that cumulative taxes will increase without the need to increase tax rates. Further, if the people who immigrate into the country start new businesses, then the growth in the tax base will be even higher (as jobs and wages grow). The Social Security Board of Trustees estimate that total immigration will be 1.245 million people per year (SSBT, 2023). If this number increases to 1.683 million, then Trustees estimate that the actuarial deficit will improve from -3.61% to -3.21% (SSBT, 2023).

The third solution is to increase interest rates. As I mentioned before, Social Security invests in special issue U.S. treasury securities whose yields are linked to treasury rates. Thus, the borrower and investor are the same entity, the U.S. government.[6] My proposal is for Social Security to invest in semi-private sector securities going forward. My proposal is different than the traditional privatization proposals that Social Security should simply become a 401k. The key word here is "semi." To be more clear, I am proposing that the U.S. government should invest in key industries to further the country's economic interests. If we are able to invest in riskier assets, the interest earned by the trust fund will increase. The Trustees estimate that if interest rates increase by 0.5%, the actuarial balance will increase by 0.18% to -3.43% (SSBT, 2023). Now we will turn to how we can increase interest rates with "semi-privatization."

Supply chain problems revealed in 2020-2022 that the U.S. is economically dependent for various products. One such key industry is microchips, which power everything from cars, to phones, and to the computer I am typing this on (Miller, 2023). In addition, microchips power Artificial Intelligence ("AI"), which now needs little introduction for its disruptive potential to the economy. AI models are trained on ginormous datasets (Miller, 2023) and this process is memory intensive. Microchips undergird the machines that perform calculations that train these sophisticated AI models.[7] If Social Security were to invest in bonds of microchip companies, the United States could further its economic interests and benefit Social Security with higher interest. Some may argue that my strategy puts retiree benefits at risk. While this argument is true, I would counter that having a strong microchips industry is in the country's best interests.

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[6] The government is lucky in that it does not receive significant scrutiny for its affiliate investments like a typical U.S. insurer.

[7] Thanks to parallel processing, calculations on different data inputs are performed simultaneously rather than sequentially which speeds up runtime. Some papers indicate that GPU-parallel processing can speed up processing times by a factor of 50 (Tan et al, 2021, Santos et al, 2023). This reduction in runtime is made possible by Graphic Processing Units ("GPU") which are a microchip traditionally used for graphics (Miller, 2023). Nvidia dominates the market for GPU which when combined with the emergence of AI in 2023 explains why its stock price has almost tripled year to date (Yahoo!).

This is because these chips undergird our technological world. Further, we would not be alone in subsidizing our microchips industry as Taiwan, China, South Korea and Japan have provided subsidies to their chips industry (Miller, 2023). While microchips are one example, there are other industries that Social Security could invest in as well. Medical products, energy and infrastructure come to mind based on recent events.

To summarize my three proposals; increase birth rates by making it easier to raise children, increase the working age population through immigration and invest in key industries to yield higher interest rates. The three solutions I have proposed are not an exhaustive set but, they do improve solvency without increasing tax rates or reducing benefits. Further these proposals may interact positively with one another. For example, easing the cost of child bearing could lead to immigrants having more children in the US. In addition, a stronger economy (by investment in key industries) could make it easier to have children and attract immigration. Table 1, below summarizes the estimated impacts of the three proposals on a standalone basis. Based on the table, the cumulative impact is unlikely to be sufficient to achieve a positive actuarial balance. However, these solutions would ease the burden of the necessary future legislative tax hikes and benefit reductions.

Table 1: Summary of Non-Traditional Proposals

Proposal	Description	Actuarial Balance	PV Impact ($ Trillions)
Baseline		-3.61%	-
Fertility Rates	Fertility rates increase from 1.99 to 2.19	-3.14%	3.08
Immigration	Immigration increases from 1.245 to 1.683 million people per year	-3.21%	2.62
Key Industry Investment	Interest rates increase by 0.5%	-3.43%	1.18

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