SOCIAL SECURITY'S MISSING INCOME

An Evaluation of Proposals to Change the OASI Taxable Income Limit

Prepared by **Jacob Moore** for the
National Academy of Social Insurance

UVA | FRANK BATTEN SCHOOL of LEADERSHIP and PUBLIC POLICY

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Disclaimer:

The author conducted this study as part of the program of professional education at the Frank Batten School of Leadership and Public Policy, University of Virginia. This paper is submitted in partial fulfillment of the course requirements for the Master of Public Policy degree. The judgments and conclusions are solely those of the author, and are not necessarily endorsed by the Batten School, by the University of Virginia, or by any other agency.

Honor Pledge:

On my honor as a student, I have neither given nor received unauthorized aid on this assignment.

Jacob Moore

Executive Summary

Background

This policy analysis project addresses the current funding shortfall of the Old Age & Survivors (OASI) program—the part of the Social Security system that provides crucial retirement insurance to 50 million retirees. This document serves to inform policymakers, think tanks, interest groups, and activists of the impending problem and the core findings from the full project. Policy options must be carefully explored to avoid disruptions to promised benefits.

The OASI program is expected to run out of reserve revenue in 2033, which is stored in a dedicated trust fund. Once this occurs, the program would only be able to pay out as much in benefits as it receives as payroll tax revenue, or an estimated 79 percent of promised benefits. With an average monthly Social Security retirement benefit of $1,975 as of January 2025, the average loss in income would total $415 for the average beneficiary. The program is crucial for keeping the elderly out of poverty, with about 40 percent of people over 65 relying on its benefits for half or more of their income.

Methods

While many mechanisms exist for either increasing revenues or decreasing the cost of the program, this project analyzes three policy alternatives to change the maximum income that is subject to the OASI payroll tax. This maximum, currently set at $176,100, increases each year in line with average wages. No OASI taxes are paid on income over this limit. The policy alternatives below assume that no benefit credits would be provided for taxes paid above the maximum, with a 2025 implementation date:

- **Alternative 1 (No maximum)**: **Eliminate the taxable maximum** in years 2025 and later and apply full 12.4 percent payroll tax rate to all earnings.
- **Alternative 2 (90 percent):** Increase the taxable maximum such that **90 percent of earnings** in the aggregate would be subject to the payroll tax in 2025.
- **Alternative 3 ($400K "donut hole"):** Apply 12.4 percent payroll tax rate on **earnings above $400,000** starting in 2025, and tax all earnings once the current-law taxable maximum exceeds $400,000.

Four criteria used for evaluation sought to understand the impact of each alternative on both individuals, businesses, and the health of the Social Security system. For each alternative, 2023 American Community Survey (ACS) data allowed for projections of the OASI tax revenues generated from 2025 to 2035. Key assumptions for the modeling come from the Social Security Administration (SSA) and include factors such as average wage growth, trust fund interest rates, and rate of inflation. These projections served as the basis for all criteria:

- **Taxes Paid by Employees and Employers**: Expressed as the additional payroll tax revenue paid under each alternative compared to current law
- **Opportunity Cost to Employees**: Expressed as the forgone return on investment had additional tax revenue been invested into the S&P 500
- **Effectiveness**: Expressed as both the OASI trust fund depletion year and the percent of benefits that would be payable after depletion
- **Equity**: the ratio of the additional tax burden under each alternative for women compared to men, and Black taxpayers compared to White taxpayers

Key Findings

Eliminating the Taxable Maximum Raises $658 Billion in Revenue from 2025-2035

The taxation of projected wages from 2025 to 2035 reveals that eliminating the maximum taxable income of $176,100 would cost employees and employers an **additional $658 billion each** for a total of **$1.316 trillion**. This number can also be thought of as additional revenue received by the OASI program. Compared to the other two alternatives, this option imposes at least three times the cost—or brings in three times as much revenue.

Eliminating the Taxable Maximum Extends Solvency by the Most Years

Subjecting all income to the OASI payroll tax **extends solvency** by the most years out of all three alternatives. Conservatively, this alternative has the **potential to increase solvency by 5.5 years** compared to the 90 percent option or the $400K donut hole option.

All Three Policy Alternatives Advance Equity based on Sex and Race

Comparing the total additional taxes paid by males compared to females, the increased tax burden for females is **between 44 and 49 percent** of the increase for males, depending on the policy. As for race, the increased tax burden for Black taxpayers is **between 43 and 44 percent** of the increase that White taxpayers would experience. Since the percent increase in taxes paid by females and Black taxpayers is smaller than the increase expected for males and White taxpayers, increasing the taxable maximum in any of the three ways advances equity.

Recommendation and Implementation

Lawmakers should immediately **pass legislation to eliminate the taxable maximum**. Each year without action, trust fund reserves decrease even more, making it harder to address the funding gap and avoid depletion. Under no maximum, the Social Security system will take in the most revenue out of the three alternatives to offset the growing cost of benefits.

Successful implementation will require widespread and clear messaging to key stakeholders by the SSA, the IRS, and supportive elected officials through official channels, like mail, and the media:

- **Beneficiaries**: Send notices that while their benefit amounts will not increase, the policy change ensures they will receive full benefits for longer
- **Employees**: Communicate that no one making under $176,100 will pay more in taxes and that the change ensures longer-term Social Security financial sustainability
- **Employers**: Send notices to ensure that payment systems are updated in line with new taxation structure

Conclusion

With the OASI trust fund projected to deplete in just 8 years, the financial security of over 50 million retirees is at stake. Inaction threatens to cause a 21 percent reduction in benefits across the board. Complete elimination of the maximum taxable income threshold is a policy change that inherently advances gender and racial equity while delaying Social Security trust fund depletion. By subjecting higher earnings to the payroll tax, it benefits from posing no new burden on the middle class, ensuring fairness in the taxation structure. The major tradeoff between this alternative and the other two is the much higher tax burden on employees and employers and the greater opportunity cost it imposes on employees.

Acknowledgements

Since the Fall of 2024, I have been working alongside several professionals and academics in crafting this applied policy project. Their continued support, guidance, and expertise has been critical in increasing the depth and rigor of my analysis.

I want to thank Rebecca Vallas—and the entire team at the Academy by extension—for her willingness to serve as my client for this capstone project and for the opportunity to serve as an intern in the Summer of 2024. Special thanks must also be given to Tyler Bond—and Dan Doonan—at NIRS for his subject knowledge, guidance, and the learning experiences provided in the Summer of 2024. Thanks likewise go out to Rusty Toler and Cortney Sanders for their willingness to shed light on different aspects of the Social Security system.

Academically, I want to thank Annie Rorem and Noah Myung for serving as my advisors for this project over the past two semesters. Their feedback and knowledge from their professional work were crucial in pushing me to produce my best possible work. Lastly, I would like to thank Michelle Claibourn for her continued technical support that was critical in the planning and completion of my analysis.

Dedication

I dedicate this project to my grandparents, Judy and Gary McGann. Throughout the entire process and since the Summer of 2024, my focus has been on ensuring that my work might create lasting retirement security for them and the millions of other current and future retirees.

Introduction

About this Project

This technical report is the final product of an Applied Policy Project (APP), a capstone requirement of the Frank Batten School's Master of Public Policy (MPP) program. An APP challenges MPP candidates to provide evidence-based policy analysis on a real-world problem to a client—typically an advocacy or governmental organization—that has a stake in solving the issue at hand. While APPs do not constitute original research, they do draw on the existing literature to evaluate policy solutions, or "alternatives," to address the selected policy problem. It contributes to the larger policy conversation by crafting tailored solutions and issuing actionable recommendations to the problem.

In the case of this report, the goal was to analyze solutions to current funding shortfall facing the Social Security system on behalf of the **National Academy of Social Insurance** ("the Academy"). The analysis follows a predetermined framework which involves:

1) identifying, framing, and scoping the problem;
2) situating the client's perspective within the analysis framework;
3) assessing the background and consequences surrounding the problem;
4) compiling, assessing, and synthesizing available evidence on solutions;
5) selecting policy alternatives and evaluative criteria;
6) recommending a policy alternative;
7) discussing implementation specifics and challenges; and
8) providing key conclusions.

Client Orientation

The National Academy of Social Insurance is a nonpartisan think tank dedicated to educating lawmakers and the public about the important role that social insurance plays in the United States (*History & Mission*, n.d.). Rebecca Vallas, their Chief Executive Officer, served as the client for this project. Under the agreement, this technical report serves to provide the organization with analysis on evidence-based solutions to address the OASI funding shortfall in a manner that does not alter the fundamental nature of the system (i.e. no privatization). Vallas' continuous support and feedback has shaped the final report to align with the mission of the Academy.

Social Security Basics

The United States Social Security system, in its current form, is a collection of social insurance programs that seek to insulate individuals from financial hardship due to unexpected and expected life events. As social insurance programs, the system functions by pooling money through dedicated or general taxes. Just like private insurance, they distribute the accumulated money when misfortune befalls a covered participant.

Payroll Tax Revenues

The program that most people think of when they hear "Social Security" is the Old Age and Survivors Insurance (OASI) program, which provides benefits to retirees. Once beginning to work, almost every worker pays 5.3 percent of their paycheck into the system (Aubry et al.,

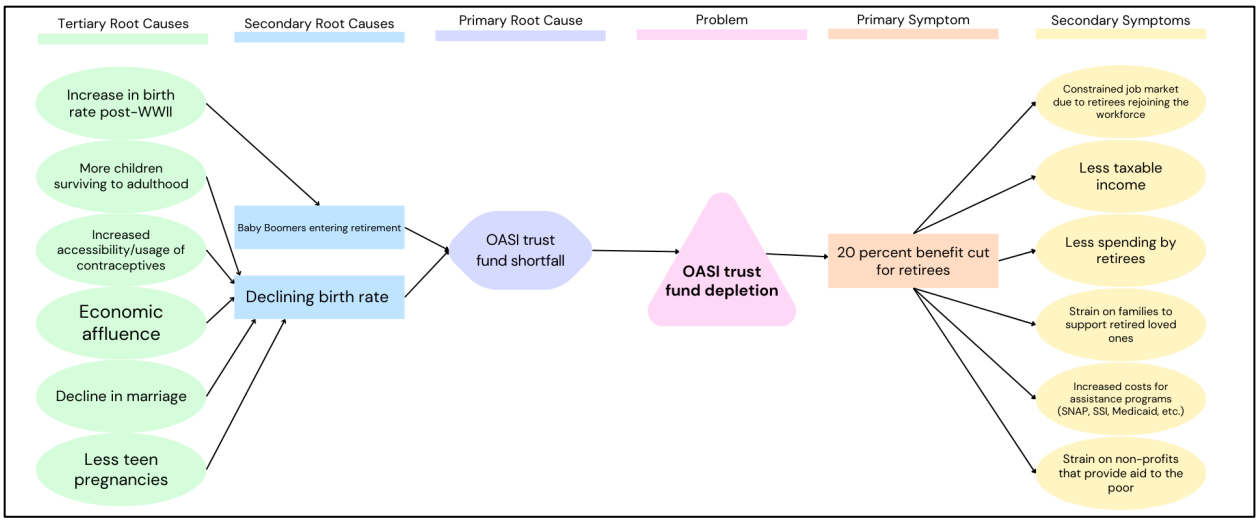
2022; Kunkel, n.d.).[1] This amount paid by workers is then matched by their employers. Importantly, there is an income threshold above which no taxes are paid, referred to as the maximum taxable income. This threshold increases annually in line with average wages and is currently set at $176,100 for 2025. What this means, for example, is someone making $176,100 pays the same dollar amount in OASI payroll taxes as someone making $1 million.

Benefits

Money paid into the system is immediately distributed to beneficiaries, with any surplus left to accumulate interest in a dedicated trust fund (*Old-Age & Survivors Insurance Trust Fund*, n.d.). An individual's work history—encompassing years worked and salary earned—ultimately determines the benefit amount they will be entitled to upon retirement (*Social Security Benefit Amounts*, n.d.). Likewise, workers must accumulate enough benefit credits throughout their lifetime to be eligible to collect benefits, which are awarded based on how much money you earn annually (*Social Security Credits*, n.d.). Workers have the choice of when to start collecting benefits, which can be done as early as 62 or as late as 70 (*Benefits Planner*, n.d.).[2] Retiring early will decrease monthly benefits and delaying retirement will increase monthly benefits. By law, OASI cannot go into debt. This means that if the program does not have enough money—both through payroll tax revenue and reserves in the trust fund—to pay out benefits, it cannot loan money to cover the shortfall.

Background and Root Cause Analysis

In 2021, the Old Age & Survivors trust fund paid out more in benefits than it received in payroll taxes for the first time in decades (*A Summary of the 2024 Annual Reports*, n.d.). It has only been able to continue paying full benefits due to the reserves it has built up since the early 1980s from revenue surplus (*OASI Trust Fund, a Social Security Fund*, n.d.).



Graph 1: Root Cause Analysis, OASI Trust Fund Depletion

While on the surface it may appear as if the projected OASI trust fund depletion in 2033 is caused by a simple actuarial imbalance, root cause analysis reveals a story of a changing

[1] Millions of state and local employees are not covered under OASI, instead relying on government pension systems.
[2] For those born in 1960 or later, the full (normal) retirement age is 67.

population pyramid, social advancement, and widespread economic ramifications (*A Summary of the 2024 Annual Reports*, n.d.). **Graph 1** breaks down the root cause analysis of OASI trust fund depletion, revealing a much more complicated picture of the demographic and economic causes underlying the problem.

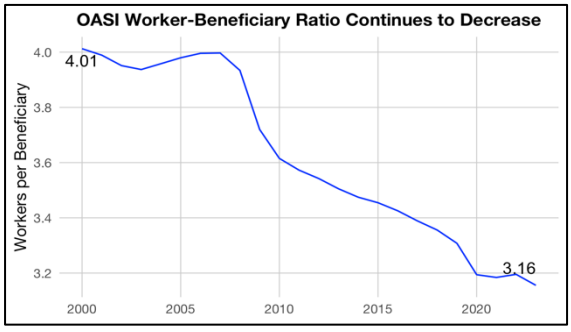
Primary Root Cause

The primary root cause of OASI trust fund depletion is the funding shortfall that has been occurring for years. The OASI trust fund receives most of its money from a 5.3 percent payroll tax on employers and employees, with a smaller portion of funding coming from taxes on OASI benefits and interest earned on the trust fund balance (*A Summary of the 2024 Annual Reports*, n.d.). The first year of the OASI trust fund shortfall was in 2010, excluding revenues from interest, and 2021 including revenues from interest (*A Summary of the 2024 Annual Reports*, n.d.). This process is due to the increasing cost of benefits that has outpaced the growth of revenue, not due to decreasing net interest. From 2022 to 2023, for example, the OASI trust fund took in $1,166.9 billion (including interest) in 2023 but spent $1,237.3 billion in benefits and administrative costs, leading to a $70.4 billion or 2.6 percent decline in reserves.

Secondary Root Causes

Contributing to the primary root cause of OASI trust fund depletion are two factors: the retirement of the large Baby Boomer generation and a historically decreasing fertility rate in the United States.

Pew Charitable Trusts defines the Baby Boomer generation as those born between 1946 and 1964 (Defining Our Six Generations, 2019). This generation contains an estimated 73 million individuals, much larger than the 50 million members of the Silent Generation that precede them (Bureau, n.d.-a; Wallenfeldt, 2024). This has and will continue to have a large impact on the number of OASI beneficiaries in the coming years. The yearly percentage change in the number of OASI beneficiaries jumped from 0.955 percent to 2.89 percent from 2006 to 2009, around the time that the Baby Boomers began retiring. Since 2009, the yearly percentage change in the number of OASI beneficiaries has only dropped below 2 percent once, hovering around 2.5 percent consistently (*Social Security Beneficiary Statistics*, n.d.). A decrease to approximately 1.4 happened in 2021, most likely due to increased elder mortality rates due to the COVID-19 pandemic.



Graph 2: OASI Worker-to-Beneficiary Ratio, 2000-2023

The total fertility rate in the United States, defined as the number of live births an individual is expected to have if they live through the end of their childbearing years, has decreased from 3.7 births per woman in 1960 to 1.7 births per woman in 2022 (*Child Mortality Rate in the US*, n.d.). A simultaneous increase in the number of beneficiaries and declining birth rates have introduced a situation where there are not enough workers paying into the OASI trust fund to support the large number of beneficiaries. In 1945, there were roughly 42 workers paying into the OASI trust fund per beneficiary, whereas in 2023 there were slightly more than 3 workers paying into the trust fund per beneficiary; the ratio is expected to decrease to about 2 workers per beneficiary by

the end of the century (2024 Annual Report, 2024). **Graph 2** shows that the worker-to-beneficiary ratio was 3.16 as of 2023—a decline from 4.01 workers per beneficiary in 2000.

Tertiary Root Causes

The two secondary root causes explained above come from a variety of historical factors that can be hard to causally measure. In the case of Baby Boomers reaching retirement age, this process was caused by an increase in birth rates post-WWII. Economic prosperity during the 1950s, higher rates of marriage, and fewer employment opportunities for younger women after the war help to explain the increase in births during this period (Bump, 2024). As for declining fertility rates in the United States, five factors help to paint a clearer picture of the dynamics behind this trend. The United States has seen a drastic decrease in child mortality, decreasing from about 26 deaths of children under the age of one per 1,000 live births in 1960 to just 6 deaths per 1,000 live births in 2023 (*Child Mortality Rate in the US*, n.d.). Researchers have previously uncovered an association between fertility rates and the following factors: (1) usage of contraceptives, (2) child mortality rates, (3) economic affluence, (4) marriage rates, and (5) teen pregnancies (*The Decline in Fertility*, 2022; *The Link between Fertility and Income*, n.d.; *Trends in Teen Pregnancy and Childbearing*, n.d.; World Fertility and Family Planning 2020: Highlights, 2020).

Primary Symptoms

If the OASI trust fund were to deplete in 2033, the immediate impact would be a 21 percent, across the board benefit reduction for OASI beneficiaries, as projected by the Social Security Administration (*A Summary of the 2024 Annual Reports*, n.d.). This is because the SSA cannot pay out more in OASI benefits than money it receives from payroll taxes and has in trust fund reserves under current law (Goss, 2010). Such a reduction in benefits would represent a significant decrease in financial resources for older Americans, especially considering that among those 65 years or older, half of the households they belong to depend on Social Security benefits for at least 50 percent of their income (Dushi et al., 2017). For the average beneficiary receiving about $1,976 per month, a 21 percent reduction in benefits would translate to a loss of $415 in monthly income (*What Is the Average Monthly Benefit for a Retired Worker?*, 2025). Considering the USDA's cheapest recommended food plan in 2025 costs about $270 a month for someone above the age of 51, this reduction in benefits represents 1.5 months' worth of food for a retiree (*Official USDA Thrifty Food Plan*, 2025).

Secondary Symptoms

The 21 percent OASI benefits cuts projected to start in 2033 will not only impact the incomes of retirees but will also send ripples throughout the economy. Considering that almost 44 percent of people between the aged 65 and up have a disability, many those retired as of 2035 and beyond will be unable to work out of necessity, leaving them to survive on decreased Social Security benefits (*CDC Newsroom*, 2024). Among the multitude of downstream impacts, six stand out as significant: (1) constraint placed on the job market due to retirees rejoining the workforce, (2) less taxable income from retirees, (3) additional strain on families and non-profits in supporting retirees, (4) less spending by retirees, and (5) increased costs for assistance programs such as SNAP.

Problem Statement

Without legislative action, **the Social Security Old Age & Survivors (OASI) trust fund will deplete in 2033, leading to a 21 percent cut in benefits across the board. If no action is taken correct this actuarial imbalance, millions of retired individuals will be unable to access their expected retirement income.** Facing a reduction in benefits, many of the millions of would-be and the 65 million current retirees will either have to delay retirement, come out of retirement, or, if not physically feasible, live through retirement with a decreased income (*Social Security Beneficiary Statistics*, n.d.).

With the new Republican control of government in 2025, dynamic changes to the Social Security system are within the realm of possibility. At hand is the issue of the system running out of reserve revenue to cover full scheduled benefits in 2033 (*A Summary of the 2024 Annual Reports*, n.d.). Interest groups, like the Academy, must now prepare for the window of opportunity to address this looming issue. Policy alternatives must be considered and evaluated according to the best available evidence to achieve an actuarially sound, beneficial outcome for the nation. The subsequent content of this report will seek to provide the Academy with the objective, qualitative analysis necessary to inform and drive policymakers to action.

Evaluative Criteria

Having adequately scoped and framed the problem at hand, four criteria were selected to align with the role of revenue in solving the actuarial imbalance with a specific focus on key stakeholders such as workers, businesses, and marginalized groups. These criteria ultimately will be used to judge the feasibility and efficacy of the policy alternatives at addressing the policy problem defined above.

- **Taxes Paid by Employees and Employers**: Expressed as the additional payroll tax revenue paid under each alternative compared to current law
- **Opportunity Cost to Employees**: Expressed as the forgone return on investment had additional tax revenue been invested into the S&P 500
- **Effectiveness**: Expressed as both the OASI trust fund depletion year and the percent of benefits that would be payable after depletion
- **Equity**: the ratio of the additional tax burden under each alternative for women compared to men, and Black taxpayers compared to White taxpayers

Policy Alternatives

The policy alternatives chosen to address the Social Security funding shortfall all involve methods for altering the current maximum taxable income threshold, above which no taxes are paid on income. None of the alternatives provide benefit credits for the additional taxes paid and each assumes an implementation date of 2025.

- **Alternative 1 (No maximum)**: **Eliminate the taxable maximum** in years 2025 and later and apply full 12.4 percent payroll tax rate to all earnings.
- **Alternative 2 (90 percent):** Increase the taxable maximum such that **90 percent of earnings** in the aggregate would be subject to the payroll tax in 2025.
- **Alternative 3 ($400K "donut hole"):** Apply 12.4 percent payroll tax rate on **earnings above $400,000** starting in 2025, and tax all earnings once the current-law taxable maximum exceeds $400,000.

Evaluation

In order to evaluate the three policy alternatives based on the criteria outlined above, 2023 American Community Survey (ACS) data was leveraged to project revenues from 2025 into the future. The ACS, collected by the U.S. Census Bureau, consists of a nationally representative sample of U.S. households, containing information about incomes and demographics (Bureau, n.d.-b).

Incomes for individuals in the dataset were first projected for at least a decade into the future expressed in constant 2024 dollars. From there, estimated OASI payroll taxes under current law and each alternative could be projected. Assumptions required for this analysis, like wage growth rates, come from the SSA, along with assumptions required for projected program costs. This yielded projected OASI revenues due to the alternatives that could then be used to assess the tax burden on taxpayers, the opportunity cost for workers, estimated impacts on trust fund depletion, the percent of promised benefits that are payable upon depletion, and the relative impact on females compared to males and Black taxpayers compared to Whites.

Findings

Criteria	No Maximum	90 Percent	$400K Donut Hole
Taxes Paid by Employees and Employers	$14.692 trillion	$13.774 trillion	$13.88 trillion
Opportunity Cost to Employees	$459 billion	$175 billion	$147.5 billion
Effectiveness: Solvency	End of 2037	Mid-2034	End of 2034
Effectiveness: Percent Unpayable	9.4%	19.7%	15.4%
Equity: Sex	46%	49%	43.8%
Equity: Race	43.2%	43.8%	42.6%

Table 1: Outcomes of Evaluation based on Criteria

Recommendation and Implementation

Despite imposing the greatest opportunity cost on employees, the No Maximum alternative is best positioned to address the impending OASI trust fund depletion. Compared to the other two alternatives, eliminating the maximum:

- **raises the most revenue** both initially and over ten years,
- **delays trust fund depletion** by the most years,
- maintains the **highest percent of promised benefits that are payable** after depletion, and
- **advances gender and racial equity** to the second highest degree.

The two big tradeoffs associated with eliminating the maximum completely is the high opportunity cost to employees and the marginally higher tax burden imposed on high earners. Although only those making over $176,100 and their employers will be subjected to OASI payroll taxes, eliminating the maximum imposes a nearly $1 trillion greater cost than the next most costly alternative—the $400K Donut Hole. Likewise, since the No Maximum option immediately begins collecting much more revenue, the opportunity cost is much higher than the 90 Percent option. In the end, it cannot be overstated that eliminating the maximum yields the best outcome on the two measures of effectiveness, maximizing fund solvency and the percent of

promised benefits that are payable upon trust fund depletion. It ultimately means this option will keep promised benefits payable for the longest time into the future, as well as minimize financial impacts to retirees if depletion does occur.

Successful implementation of this policy will require impact evaluation of outcomes and clear messaging to stakeholders to head off attempts to repeal the changes and preempt confusion.

Internally, the SSA will need to internally study the impact of the policy change on the health of the OASI trust fund and the economy more largely. While much information on this topic will already be included in the 2025 Trustees Report, it is crucial that the agency prepare standalone documents one year and five years out from implementation to compile evidence. Areas for study need to include trust fund reserves; revenue from payroll taxes; demographic information on those who were subject to higher taxes; and the hiring, investment, and compensation changes by companies in response to the change.

As for messaging, the SSA and Internal Revenue Service (IRS) will need to coordinate closely to reach key stakeholders, namely workers, beneficiaries, and employers.

- **Workers**: Targeting the public in general, the SSA must communicate the need for the change—fixing the actuarial imbalance—and likewise highlight that no one making less than $176,100 will be subjected to higher taxes. The public must be informed that the changes allow the OASI system to remain solvent for longer, which benefits everyone.
- **Beneficiaries**: The SSA must send a letter to all current beneficiaries to inform them that their benefit payments will not increase. However, they must also be informed that the policy change ensures they will receive their benefits for years into the future. Discussion of changes to the payable amount of benefits upon trust fund depletion is to be avoided.
- **Employers**: The IRS must send notices to all employers with covered workers about the change to the taxation structure so that internal accounting systems can be updated for withholding. It is crucial that they are aware that they will only pay more taxes if any of their employees make above $176,100.

Summary and Limitations

With just eight years before the OASI trust fund depletes, time is running out to address the funding shortfall facing the system. As a system that ensures financial security for millions of retirees, the stakes in solving this issue are drastic. This project leveraged 2023 ACS data on millions of individuals in the United States to develop novel revenue projections for three policy alternatives that have not been, in this form, been evaluated by the SSA. Crucially, the costing analysis done here specifically projects OASI depletion, whereas SSA projections of policy alternatives look at policy impacts on the combined Old Age & Survivors and Disability Insurance trust funds (OASDI). The costing framework undertaken here can likewise be adapted in the future to encompass any policy alternative imaginable, making it widely applicable and accessible to researchers.

Based on its ability to advance equity, maintain solvency and minimize reduction in benefit payments, and the large revenue stream it provides, eliminating the maximum taxable income threshold serves as the most viable path forward. While the above analysis represents an informed projection of outcomes based on the three policy alternatives, there are several methodological limitations worth discussing.

Firstly, all cost projections for this analysis are based on a static 2023 dataset. Although the ACS dataset comprehensively includes information from nearly 3.5 million individuals, it does not account for people leaving or entering the workforce. This likely results in an underestimation of OASI payroll tax revenue because it does not account for the workforce growing.

Similarly, projections from the SSA for OASI costs in US dollars are only available up to 2033. Beyond this date, costs are expressed as a percentage of taxable payroll. To fit the gap in this data, polynomial regressions allowed for interpolation of values. While the models had r-squared values close to 1, it is likely that the interpolated values overstate OASI costs.

Client Overview

The **National Academy of Social Insurance** is a non-profit, non-partisan organization working to advance policy solutions to protect and improve social insurance programs in the United States, such as the Social Security system, Medicare, and Medicaid (*History & Mission*, n.d.). As the Academy places a heavy focus on the role of social insurance programs in ensuring economic security for all Americans, OASI trust fund depletion is an unacceptable outcome for the organization. The original founder of the organization, Robert Ball, was the longest-serving Commissioner of the Social Security Administration, helping the nation avoid an imminent OASI trust fund depletion in the early 1980s (Havemann & Neuman, 2008). In his memory, the Academy has fought for decades to protect essential social programs such as Social Security that tie Americans together via a shared commitment to the common welfare.

In January 2025, the Academy published a report based on survey data collected on the favorability of proposed policy solutions to the OASI funding shortfall (Social Security at 90, 2025). This applied policy project aligns with this project in that I will be analyzing those Social Security adjustments as potential solutions to the funding shortfall, informed by their popularity with the public. Keeping in mind the Academy's current mission statement, their founding principles, and their current work on the looming Social Security funding crisis, the policy problem laid out in this project serves as a perfect companion.

Rebecca Vallas, the current chief executive officer of the Academy, also serves membership and fosters partnerships with adjacent organizations outside of reporting to the Academy's board. The Academy regularly collaborates with other organizations in the retirement security and economic justice policy sphere, such as the National Institute on Retirement Security, Social Security Works, and AARP. Together, these organizations publish joint reports, learn from one another, and host conferences and events. Likewise, the Academy relies on the policy analysts and researchers that make up their membership to help write reports and publish research that inform social insurance policy solutions. My problem statement and future APP contribute to the broad goals of not only the Academy leadership, but also of their membership and think tank ecosystem.

Existing Evidence on Problem Consequences

OASI, OASDI, and Poverty

Many studies over the years have sought to determine the impact of the Social Security System on overall poverty and elder poverty, whether causal or otherwise. The poverty reduction power of the Social Security system, both in terms of causality and estimated effects, will help project the outcomes of any alternative solution that seeks to decrease benefits to address the actuarial imbalance.

Studies within the past decade have sought to determine the anti-poverty effects of both OASI, the Old Age & Survivors program, and OASDI, OASI and the Disability Insurance program combined, payments by using survey data or linked survey and administrative data through a simple comparison of income with and without the benefits.

One study compared pre-tax, pre-transfer income to post-transfer income via the Survey of Income and Program Participation (SIPP) to conclude that OASI reduced the total poverty rate by 26 percent (Scholz et al., 2009). OASI by itself likewise filled 27.6 percent of the poverty gap, which measures the difference—for all families with incomes below the federal poverty line—between their market income and this threshold. For the elderly specifically, the authors estimate that the post-transfer poverty rate of 8 percent was primarily decreased by Social Security (OASDI) and Medicare. While the SIPP is considered the most accurate survey that measures poverty, income, and transfer programs, the authors did have to use data imputation for some benefit receipts due to missing data and underreporting. Overall, the authors provide a thorough analysis of the estimated would-be poverty rate in the absence of OASI and OASDI, but factors such as uncertain causality and behavioral changes due to transfer income are not accounted for or explored.

A follow up study built off the methodology used by Scholz et al. estimated a 38 percent reduction in the total poverty rate associated with OASI when using 2004 SIPP data (Ben-Shalom et al., 2012). They estimate a decrease in the poverty rate from 29 percent to 13.5 percent when looking at the effect of all transfer programs, eight percentage points of which being a result of OASI. They found that OASI has the second largest effect on poverty levels, with only Medicare having a greater impact. For the elderly, the program reduces deep poverty and the poverty gap almost completely. As with Scholz et al., the authors of this study use what is considered the most accurate data available and likewise account for underreporting in their data when calculating their estimates. Unlike Scholz et al., however, Ben-Shalom et al. run a series of simulations to assess the impact of OASI benefits on labor force participation, finding that the benefits likely serve as a work disincentive. In this model, they once again use the 2004 SIPP data, but instead look at recipients of OASI only instead of all families and individuals. They estimate that the pre-transfer poverty rate for the elderly and/or retirees and survivors is 48.6 percent, reducing to 12.5 percent after factoring in OASI benefits and work disincentive effects. Confidence intervals are not provided for these simulations, but overall, the study benefits by considering work disincentives in their estimates, leading to a more robust and accurate estimation.

Two studies that analyze the supplemental poverty measure (SPM) done by the U.S. Census Bureau likewise estimate the poverty reduction of OASDI with similar methodologies. The data used come from the Current Population Survey Annual Social and Economic Supplement (CPS ASEC), a survey used in government statistics that often under-reports key metrics (Meyer &

Wu, 2018). Using income information about 2012, the first study estimates that the OASDI reduced the total poverty rate by 34.02 percent, and the second from 2017 estimates that it reduced the total poverty rate by 36.84 percent using 2016 data (Meyer & Wu, 2018). As before, these two studies did not seek to establish causality, but instead sought to create estimates of the anti-poverty effect of OASDI. While the data meets the standards for use in official government statistics, the issue of under-reporting of transfer income receipt could suggest that the poverty reduction associated with OASDI is even larger than estimated.

Meyer and Wu likewise looked at the poverty reduction effect of the Social Security program, employing a similar methodology as the two above surveys (2018). While they too employ a before and after comparison of income levels when considering taxes and sources of income, their study has the added benefit of linking Survey of Income and Program Participation (SIPP) and the Social Security Administration's Payment History Update System (PHUS) to create a highly accurate dataset. They likewise employ a "bias-corrected" version of the CPI-U that handles its well-documented biases. The authors find that OASDI has the largest poverty reduction effect out of all the transfer programs they evaluated. They estimate that it decreased pre-transfer poverty by one-third and made up for 45 percent of the poverty gap by itself. For the elderly, they estimate that OASDI decreases the poverty rate by 75 percent alone. Like previous studies evaluating the accuracy of survey data, the authors found that survey data underestimates OASDI receipts slightly when compared to other programs, which can reach levels as high as 30 percent. While the authors use a highly accurate dataset, their methodology still does not account for behavioral changes sparked by transfer income, meaning that the anti-poverty effect is static.

Lastly, one study set out to establish causality between OASI benefit amounts and decreases in elder poverty from 1968 to 2001 (Engelhardt & Gruber, 2004). While it makes intuitive sense that providing cash transfer would lift individuals out of poverty, most studies simply estimate their poverty reduction effects (Meyer & Wu, 2018; Scholz et al., 2009). The authors use the March Current Population Survey (CPS) to generate measures of income for elderly families and households. They employ an instrumental variable strategy to remove endogeneity in the relationship between Social Security benefits and elder poverty. This ensures that factors such as survey reporting errors and behavioral changes due to benefits changes do not bias the results. Their results suggest that growth in OASI benefits can explain all the decline in poverty among the elderly during the period studied. The regression model predicted a decrease in elder poverty of 17.8 percentage points, whereas the poverty of their sample decreased by 16.7 percentage points.

Summary

The broad takeaway from this set of studies is that if benefits were to be cut, the rate of elder poverty very likely would increase by a significant amount. Findings suggesting that the Social Security system alone fills between 28 to nearly 100 percent of the poverty gap reveal that its programs are not marginally lifting retirees above the poverty line but instead providing a significant source of income—especially considering about 15 percent of individuals 65 and above rely on Social Security benefits for 90 percent or more of their income (Fact Sheet, n.d.). Any proposal to fix the Social Security system that involves cutting benefits to fix the actuarial imbalance would put more elders into poverty and significantly decrease their income. Allowing the status quo to continue would have the same result.

Evidence on Potential Solutions

Each year, the Board of Trustees of OASI and DI trust funds—which includes the SSA, Department of Labor, Department of Health and Human Services, and the Department of Treasury—publishes their annual Trustees Report, which provides the House of Representatives, Senate, and the President with crucial information about the current and future actuarial status of the funds. In the report, they establish three different sets of long-range demographic assumptions ("alternatives") upon which the projections rely. The demographic assumptions are created using the best data available to the government each year and include measures such as the total fertility rate, annual rates of death reductions, and immigration levels. Alternative I expects lower, move favorable costs and alternative III represents higher, less favorable costs. Alternative II, thus, represents the intermediate estimation by the Trustees and is used for the primary projections (Office of the Chief Actuary, 2024b). Using the annual demographic assumptions, the Office of the Chief Actuary estimates the long-term impacts of policy proposals on the solvency of the OASDI trust fund.[3] Researchers evaluating the accuracy of the SSA's projections, however, have criticized the agency for its lack of methodological transparency (Kashin et al., 2015).

For SSA's total fertility rate (TFR) assumptions, the agency looked at data such as: (1) the trends in the TFR in other developed nations that has likewise seen similar decreases, (2) historical TFR trends in the United States, (3) historical birth rates by age cohort in the United States, and (4) multiple years of survey data on how many children women expected to have in their lifetime (Office of the Chief Actuary, 2024b). They also factored in the impact of the overturn of Roe v. Wade on fertility. For their mortality assumptions, the agency relies on (1) historical data on deaths by cause; (2) expected factors in the future that have been recommended by leading experts at institutions such as the National Institutes of Health, the Center for Disease Control and Prevention, and leading universities; and (3) factors identified to influence changes in the mortality rate. They have also been diligent about considering the continuing impacts of the COVID-19 pandemic. For immigration assumptions, the agency relies almost entirely on historical data on different types of immigration, considering the impacts of the COVID-19 pandemic. This, however, is the extent of the methodological approach revealed (Office of the Chief Actuary, 2024b).

It is worth noting that Kashin et al. (2015) likewise found evidence of systematic underestimation of life expectancy since 2000 in the SSA's projections by comparing yearly SSA projections to observed data. This in turn has led to cost projections that are lower than reality, which makes the OASDI trust fund insolvency seem further away. This fact does not hinder the evaluation of the SSA's policy projections below, however, since the year of trust fund depletion under current law and the year of depletion under the alternatives will both be biased in the same direction.

Outside of the specific projections provided by the SSA, Pellechio and Goodfellow (1983) sought to estimate the impacts of the 1983 Social Security Amendments on gains and losses from the OASDI system. The authors specifically considered payroll tax increases and increasing the retirement age. Their estimates are based on the 1983 SSA Trustees Report projections. Their data relies on calculating OASDI taxes paid and benefits received for hypothetical individuals

[3] The OASDI trust fund is currently set to deplete in 2035.

based on the old and new laws. While this strategy does not allow for estimations of the poverty rate before and after, it does allow for robust analysis of how the changes will impact individuals of different demographics, sine OASDI taxes and benefits are set in law. The key takeaway from their findings is that while the ratio of OASDI benefits to OASDI payroll taxes will decrease for all age cohorts, younger cohorts will face greater losses from the amendments.[4]

Increasing the Retirement Age

Projections have been made for various schemes for raising the normal and early retirement ages by the Social Security Administration (Office of the Chief Actuary, 2024a). The key takeaway for this suite of policy alternatives is that changing the retirement age by itself will likely not be sufficient to delay the insolvency of the OASDI system for any meaningful amount of time. These proposals only delay insolvency by 1 to 2 years. They do not decrease cashflow out of the trust fund quickly enough to cover the shortfall.

Proposals to Increase the Retirement Age	OASDI Trust Fund Depletion
Increase the normal retirement age (NRA) 3 months per year for those age 62 starting in 2025 and ending in 2032. Increase the age up to which delayed retirement credits may be earned from 70 to 72 on the same schedule. Increase the widow(er) NRA in the same manner.	**2036**
Increase the earliest eligibility age (EEA) by 2 months per year for those age 62 starting in 2026 and ending in 2043.	**2036**
Increase the normal retirement age (NRA) 3 months per year for those age 62 starting in 2025 and ending in 2036. Thereafter, index the NRA to maintain a constant ratio of expected retirement years to potential work years. Increase the earliest eligibility age (EEA) from 62 to 64 at the same time the NRA increases from 67 to 69. Keep EEA at 64 thereafter.	**2036**
Increase the normal retirement age (NRA) and the earliest eligibility age (EEA) for those age 62 in 2025-2026 to 68 and 63, respectively, and then by 3 months per year in 2027-2030 to 69 and 64, respectively.	**2037**
Increase the normal retirement age (NRA) and the earliest eligibility age (EEA) for those age 62 starting in 2025 by 3 months per year until EEA reaches 64 in 2032 and NRA reaches 69 in 2032.	**2036**

Table 2: Projections for the Impact of Adjustments to Full Retirement Age on OASDI Trust Fund Depletion

In an analysis of the 1983 OASDI Amendments, the authors estimated that increasing the retirement age will reduce the total benefits paid to younger generations (Anthony J. Pellechio et al., 1983). The intuition behind this finding is that, under the assumption of a fixed age at death, younger generations will face an older retirement age, translating into less years of benefits and more years of paying taxes.

Increasing Payroll Tax Rates

The SSA has created projections for schemes for increasing the payroll tax rates (Office of the Chief Actuary, 2024a). Phased in increases in the payroll tax rate can extend solvency for a few years on average but will most likely not raise revenues quickly enough to make up for the

[4] The specific estimates for each amendment will be discussed in their respective section.

shortfall. Immediate payroll tax increases, by comparison, likely have the potential to provide long-term solvency to the OASDI program by immediately raising revenues.

Pellechio and Goodfellow likewise estimated the impact of raising the OASDI payroll tax rate over time on the ratio of benefits received and taxes paid. Just as with raising the retirement age, younger individuals will end up paying more in payroll taxes over time compared to older individuals; this is because they will be subjected to the higher tax rates for longer periods of time before retirement (Anthony J. Pellechio et al., 1983).

Proposals to Increase Payroll Tax Rates	OASDI Trust Fund Depletion
Increase the payroll tax rate (currently 12.4 percent) by 0.1 percentage point each year from 2027-2032, until the rate reaches 13.0 percent for 2032 and later.	**2037**
Increase the payroll tax rate (currently 12.4 percent) by 0.1 percentage point each year from 2030-2049, until the rate reaches 14.4 percent in 2049 and later.	**2036**
Increase the payroll tax rate (currently 12.4 percent) to 16.0 percent in 2025 and later.	**2099**
Increase the payroll tax rate (currently 12.4 percent) by 0.1 percentage point each year from 2028-2051, until the rate reaches 14.8 percent in 2051 and later.	**2037**
Increase the payroll tax rate by 0.1 percentage point per year for 2026 through 2035 so that it equals 13.4 percent for 2035 and later. The increase would be split evenly between the employer and employee share, and would be split between OASI and DI in proportion to currently scheduled payroll tax rates.	**2038**
Increase the payroll tax rate (currently 12.4 percent) to 15.9 percent in 2035-2064, and to 19.4 percent in years 2065 and later.	**2099**

Table 3: Projections for the Impact of Adjustments to Payroll Taxes on OASI Trust Fund Depletion

Eliminating the Taxable Maximum

Projections have been made for two proposals to eliminate the taxable maximum for income (Office of the Chief Actuary, 2024a). Eliminating this taxable maximum would mean that all income from covered individuals is subject to OASDI payroll taxes. The first proposal suggests eliminating the taxable maximum starting in 2025 and providing no benefit credit for the taxed earnings above the current-law maximum. The SSA projects that this proposal would delay the OASDI trust fund depletion to 2067. If instead benefit credits were to be provided for earnings above the current-law taxable maximum, depletion would be delayed until 2059, reflecting additional beneficiaries due to accumulating sufficient credits.

The Urban Institute ("Urban") has likewise projected the impact of eliminating the taxable maximum and providing benefit credits on the OASDI trust fund's solvency, but it instead assumes a 2016 implementation. The organization estimates that the date of OASDI trust fund depletion would increase from 2034 to 2055, an increase of 21 years (The Fiscal Health of Social Security, 2017). Urban's projection provides a more conservative estimate of the policy's impact because earlier implementation means the additional revenue is collected over more years; despite this, Urban still projects a smaller impact on OASDI solvency.

Raise the Taxable Maximum to Cover 90 Percent of Earnings

This alternative involves raising the maximum taxable income threshold to a dollar amount that would result in 90 percent of all earnings in the aggregate being subject to the OASDI payroll

tax. CBO estimates that this dollar amount would be roughly $305,100 in 2024 (Options for Reducing the Deficit, 2024).

SSA projects that this proposal would delay OASDI trust fund depletion by four years if implemented in 2025, changing from 2035 to 2039 (*Long Range Solvency Provisions*, 2025). It assumes a 10-year phased in approach, in effect accelerating the existing annual increases to the maximum taxable income threshold.

CBO, however, estimates a three-year delay in OASDI insolvency if implemented in 2025, going from 2034 to 2037. Importantly, however, their projection is under the assumption of an immediate increase in taxable maximum rather than a phased in one.

Lastly, Urban likewise created projections for this alternative, assuming a 2016 implementation date that occurs over 10 years. Based on their model, the OASDI insolvency date increases from 2034 to 2041, delaying depletion by 7 years.

Summary

The existing literature highlight the link between poverty and OASI/OASDI and the expected outcomes from three policy alternatives: increasing the full retirement age, increasing payroll taxes, and eliminating the taxable maximum. Increasing the full retirement age gradually over time likely does not have a large impact on the trust fund depletion date. Increasing payroll taxes, if implemented immediately, has the potential to maintain OASDI solvency for decades. Eliminating the taxable maximum income could extend the solvency of OASDI for about 21 to 30 years. Lastly, raising the taxable maximum to subject 90 percent of earnings combined to the payroll tax has the potential to delay insolvency by three to four years depending on whether the increase is immediate or phased in.

Criteria

In line with the Academy's values and purpose, this section lays out four criteria that will be used in the evaluation of selected policy alternatives. Broadly, the criteria can be described as assessing the tax burden, opportunity costs, effectiveness, and equity impacts of each alternative.

Taxes Paid by Employees and Employers

To evaluate this alternative and the others, I will be relying on data from the American Community Survey (ACS) microdata from 2023. This dataset contains a representative sample of individuals living in the United States with self-reported annual incomes. By estimating the dollar amount of payroll taxes that covered workers contribute under current law (status quo) and the dollar amount of payroll taxes that they would pay under each alternative, I can form a conclusion about the additional cost that each alternative would incur to workers compared to the status quo. This involves estimating incomes from 2025 to at least 2035 using projected real average wage growth rates laid out in the 2024 OASDI Trustees Report published by the SSA.

The combined, estimated cost paid by all individuals in the ACS dataset in 2023 under current law, to start, is $532,303,306,442, or just above $532 billion in 2024 dollars. The provided individual level weights were applied to the dataset of approximately 3.4 million to get an accurate representation of the entire US population of 16 years or older. Considering that OASI received about $527 billion in 2024 dollars in payroll taxes from employees in 2023, the $532 billion estimate above from the ACS data above is quite accurate, with a difference of less than

one percent. Nevertheless, it is important to note that further calculations will likely be an overestimation. This is the starting point from which costs under each alternative will be compared (*A Summary of the 2024 Annual Reports*, n.d.).

Opportunity Cost to Employees

With all three alternatives to change the maximum taxable income for OASI, employees end up paying more in payroll taxes. This additional money, now being taken in as OASI revenue, could have been spent by employees in different ways, such as investments in the stock market. Opportunity cost will thus be expressed as the return to investment of the additional taxes paid were they invested in the S&P500. Using the historical real average return rate (ARR) for the S&P500 from 1928 to 2024, I employed a Monte Carlo simulation across a normal distribution to estimate the future S&P 500 ARR for 2025 through 2035. Applying these median projected ARRs, I can then estimate how the additional OASI taxes under each alternative could have grown through investment.

Keep in mind that these projections rely on the median real ARR found from the Monte Carlo simulation, representing an intermediate outcome. Likewise, the projected opportunity cost is made more conservative given that it assumes all higher earners would have instead invested every additional dollar in taxes into the stock market. Furthermore, this estimate is made more liberal because it assumes that all payroll taxes for the year would be invested at the start of each year rather than with every paycheck. Lastly, since this criterion assumes all money would be invested in the stock market, it does not account for other methods of investing that individuals can choose, such as 401Ks and IRAs. These plans have tax benefits that can boost net returns in the long term, which will cause the estimated opportunity cost to be more liberal than reality.

Effectiveness

With the express purpose of preventing OASI trust fund depletion, each of the three proposals serve to raise more revenue than the current setup. While altering the same provision of the OASI tax structure, the proposals do not achieve the same increases, realistically leading to different delays of the depletion date. Effectiveness will thus encompass two measures:

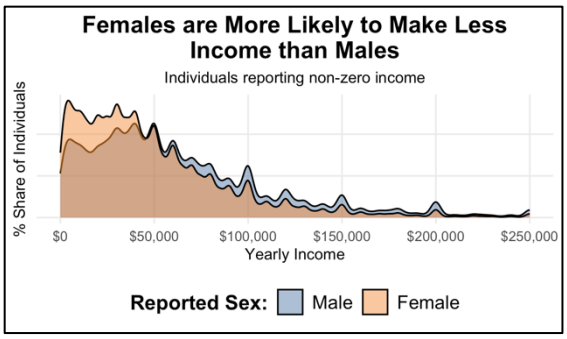
1. Delay to trust fund depletion in years
2. The percent of promised benefits that are payable upon trust fund depletion

To accomplish this, I will once again be employing the 2023 ACS dataset. Whereas prior I already projected OASI tax revenues into the future, I will be utilizing projected OASI benefit costs laid out in the 2024 OASDI Trustees Report published by the SSA. This will allow me to add projected OASI revenues and subtract projected OASI costs from the current OASI trust fund balance to estimate a projected depletion year. Projected nominal wage growth rates from the Social Security Administration's (SSA) 2024 Trustees Report were used to calculate future wages up to 2035 for all individuals in the dataset. Once calculating wages, estimated tax revenues for each alternative was estimated. From there, the percentage difference between the cost of benefits and tax revenue will represent the percent of promised benefits that are payable.

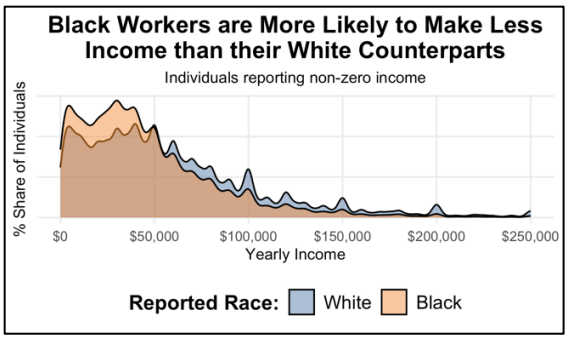
Equity

Considering that each alternative involves increasing payroll taxes on high earners, none of the three are a source of concern in terms of *fostering inequity*. Instead, each will be evaluated for their potential to *increase equity*. **Graph 4** and **Graph 5** demonstrate the equity stakes in this

policy area since the incomes of females and of Black workers are more likely to be lower than that of males and White workers, respectively. If any of the policy alternatives result in female and Black workers paying less in additional taxes than male and White workers, respectively, it would advance gender and racial equity.



Graph 4: Distribution of Income by Reported Sex, 2023.



Graph 5: Distribution of Income by Reported Race, 2023.

Since income is often tied to other demographic characteristics such as sex and race, any changes to the taxation structure of wages under OASI must be analyzed for differences across groups. Disparate Impact Analysis will be the framework for evaluating equity. This is a method for identifying inequities caused by disproportionate effects based on certain protected characteristics, such as race or sex. For the purposes of comparing the three alternatives on equity, the disparate impact ratio for each alternative will be calculated as follows using American Community Survey (ACS) microdata:

1) Calculating the OASI taxes paid by each individual in the dataset under current law
2) Calculating the additional OASI taxes that would be paid under each alternative by each individual in the dataset
3) Calculating the total OASI taxes under current law paid for both sexes, respectively, and for white workers and Black workers, respectively
4) Calculating the percent change in total OASI taxes paid under each alternative, as compared to current law, for both sexes, respectively, and for both racial groups, respectively

Once calculating the percent change in total OASI taxes paid under each alternative compared to current law for each demographic group, we can then divide this percent for a marginalized group by the percent for its corresponding majority group. This ratio represents how females, for example, are impacted by the change in the maximum taxable income compared to males. In this case, a lower disparate impact ratio will indicate a lower level of impact from the policy change on the marginalized group compared to the dominant group. The alternative that performs the best on equity, thus, will have the lowest disparate impact ratio. Disparate impact ratios can be interpreted by multiplying the ratio by 100. For example, a ratio of 0.5 for sex means that females were impacted 50 percent as much as males.

Alternatives

Each of the three alternatives selected for evaluation below involve changes to the maximum dollar amount of income that can be subjected to OASI payroll taxes. This number is calculated

using the Average Wage Index and is thus updated each year accordingly (*What Is the Current Maximum Amount of Taxable Earnings for Social Security?*, 2025). For 2025, this limit is set at $176,100.

In this analysis, all alternatives for evaluation would undergo instant implementation at the start of 2025 and none of them provide additional benefit credits to reflect the higher payroll taxes that higher earners will face.[5]

ALTERNATIVE 1: No Maximum

Eliminate the taxable maximum in years 2025 and later, and apply full 12.4 percent payroll tax rate to all earnings. Do not provide benefit credit for earnings above the current-law taxable maximum.

This alternative involves completely removing the limit on earnings that are subject to the OASI payroll tax. At the beginning of 2025, all income—including income above $176,100—would be subject to OASI taxes. This does not change the tax rate of 5.3%; it only makes all income subject to the tax.

ALTERNATIVE 2: 90 Percent

Increase the taxable maximum such that 90 percent of earnings would be subject to the payroll tax in 2025. Do not provide benefit credit for earnings up to the revised taxable maximum.

This alternative would involve a one-time increase in the maximum taxable income to $305,100 with no further adjustments. This $305,100 estimate is based on the Congressional Budget Office's prediction of the maximum taxable income threshold needed to subject 90 percent of all wages in the aggregate to the OASI payroll tax (Options for Reducing the Deficit, 2024).

ALTERNATIVE 3: $400K Donut Hole[6]

Apply 12.4 percent payroll tax rate on earnings above $400,000 starting in 2025, and tax all earnings once the current-law taxable maximum exceeds $400,000. Do not provide benefit credit for additional earnings taxed.

This alternative would create a portion of income, ranging from $176,101 to $399,999, where income would not be subject to the OASI payroll tax. This structure is sometimes referred to as a "donut hole."

Evaluation

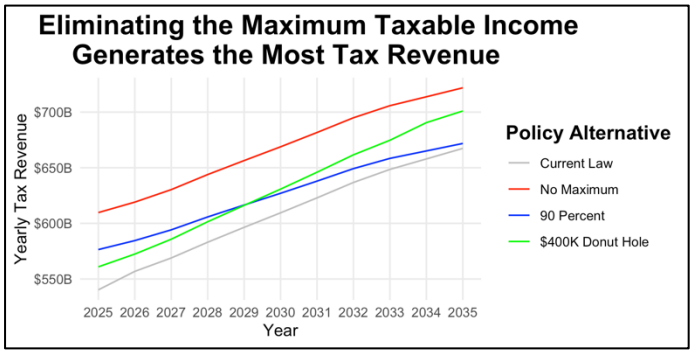
For the evaluation of each alternative according to the criteria outlined above, all dollar amounts will be expressed in constant 2024 dollars using the consumer price index (CPI).

[5] Individuals earn benefit credits when they work and pay OASI payroll taxes on their earned income. Individuals need to accrue 40 lifetime benefit credits to be eligible for OASI benefits in the future. (*Social Security Credits*, n.d.)
[6] "Donut Hole" here refers to the portion of income between $176,100 and $400,000 that would not be taxed.

Taxes Paid by Employees and Employers

Under the status quo condition, calculations based on the ACS data estimate that the cost to employees and employers, respectively, would be $6,688,320,000,965, or $6.668 trillion, from 2025 to 2035. **Graph 6** shows the yearly OASI revenue generated under each alternative. Importantly, the No Maximum alternative generates the most revenue consistently, whereas the 4400K Donut Hole alternative eventually generates more revenue than the 90 Percent alternative.

The total cost that will be paid by employees and employers, respectively, by eliminating the taxable maximum in Alternative 1 is $7,346,381,023,479, or $7.346 trillion, from 2025 to 2035.[7] Compared to the status quo, this is an increase in tax revenue of $658 billion over the 10-year period. The alternative results in an immediate estimated increase in tax revenue of $69.48 billion in 2025. The No Maximum alternative generates the most additional payroll tax revenue in the first year in effect and over the ten-year period.



Graph 6: Estimated OASI Revenue under Alternatives and Status Quo, 2025-2035

From 2025 to 2035, the 90 Percent alternative would generate an estimated $6,886,893,574,700, or $6.887 trillion, in payroll tax revenue from employees and employers together. This represents an increase in tax revenue of $198.6 billion over ten years, with employees and employers each contributing half of the amount. In 2025 alone, this alternative would increase payroll tax revenues by approximately $36.2 billion. The 90 Percent alternative thus has the second biggest immediate increase in payroll tax revenue out of the three alternatives but the smallest increase in overall tax revenue over the ten-year period.

The $400K Donut Hole alternative generates an estimated $6,941,289,162,947, or $6.94 trillion, from 2025 to 2035. Over the ten-year period, employer and employees together would pay approximately $253 billion more in payroll taxes, the largest increase behind the No Maximum alternative. In 2025, this alternative increases taxes paid by both groups together by about $20.689 billion—the smallest immediate increase in revenues by any alternative.

Opportunity Cost to Workers

If all additional payroll taxes from the No Maximum alternative had been invested immediately into the S&P500, those workers could have collectively accrued a return of $459,104,025,065.31, or $459 billion, from the start of 2025 to the end of 2035. For the more than 9.5 million workers who would pay additional taxes under this alternative, each would have an opportunity cost of around $48 thousand.

The estimated total opportunity cost of paying the additional payroll taxes under the 90 Percent alternative is $176,144,684,603.46, or $175 billion, from the start of 2025 to the end of 2035 if those employees had invested the extra taxes into the S&P500. Given that approximately 9.5

[7] Employees and employers pay the same in OASI payroll taxes based on each employee's earned income.

million employees would pay higher taxes under this alternative, the individual level opportunity cost is around $18.4 thousand.

$147,506,391,442.47, or about $147.5 billion, is the total opportunity cost of paying additional payroll taxes under the $400K Donut Hole alternative rather than investing that money into the S&P500. For the more than 9 million employees that would pay additional taxes under this alternative, the opportunity cost for each is approximately $16.2 thousand. While this alternative results in higher taxes paid than the 90 Percent alternative, it causes a smaller opportunity cost due to the smaller initial cost in the first five years.

Effectiveness

Novel projections built upon SSA analysis and 2023 American Community Survey data estimate that the OASI trust fund will deplete in mid-2032 under current law and will at that point have sufficient revenue to cover 78 percent of promised revenues; SSA currently projects the trust fund will deplete in 2033 and at that point only be able to pay out 79 percent of promised benefits.

Compared to the estimated projection year of mid-2033 for the status quo, the analysis reveals that the No Maximum alternative could extend solvency through the end of 2037. Analysis projecting future OASI payroll tax revenue suggests that the 90 Percent alternative could increase solvency by one year compared to the status quo projection, depleting instead in mid-2034. Compared to the estimated status quo depletion date of mid-2033, the $400K Donut Hole alternative would increase solvency of the OASI trust fund by a year and a half, depleting instead at the end of 2034.

Upon depletion, all alternatives generate enough revenue to pay out a higher percentage of promised benefits than the status quo. The No Maximum alternative allows for nearly 91 percent of promised benefits to be paid out, whereas the 90 Percent and $400K Donut Hole alternatives bring in enough revenue to cover about 80 and 85 percent, respectively.

While these projections represent extremely conservative projections of the year of trust fund depletion, the analysis reveals their comparative ability to extend solvency and generate enough revenue to cover a larger portion of promised benefits upon depletion.

Equity

Under the No Maximum alternative, the total OASI taxes paid by males collectively would increase by 16.48 percent, whereas for females it would increase by 7.6 percent. This yields a disparate impact ratio of 0.46. As for race, the total OASI taxes paid by whites collectively would increase by 13.88 percent, whereas for Black people it would increase by 6 percent. This yields a disparate impact ratio of 0.432. Intuitively, this means that the additional payroll taxes paid by females was 46 percent of that paid by males, and the additional taxes paid by Black workers was 43.2 percent of their White counterparts.

Under the 90 Percent alternative, the total OASI taxes paid by males collectively would increase by 8.37 percent, whereas for females it would increase by 4.14 percent. This yields a disparate impact ratio of 0.49, meaning females experienced 42 percent of the payroll tax increase that males did. As for race, the total OASI taxes paid by whites collectively would increase by 7.06 percent, whereas for Black people it would increase by 3.09 percent. This yields a disparate

impact ratio of 0.438; this means Black workers paid 43.8 percent of the payroll tax increase that Whites did.

Under the $400K Donut Hole alternative, the total OASI taxes paid by males collectively would increase by 10.6 percent, whereas for females it would increase by 4.64 percent. This yields a disparate impact ratio of 0.438. Females, therefore, paid 43.8 percent as much in additional taxes as males did. As for race, the total OASI taxes paid by whites collectively would increase by 8.92 percent, whereas for Black people it would increase by 3.8 percent. This yields a disparate impact ratio of 0.426, meaning the additional taxes paid by Black workers was 42.6 percent of the amount paid by Whites.

Recommendation

All three were evaluated according to a novel modeling process that combined SSA cost and wage growth projections and 2023 American Community Survey data. With data on over three million individuals, wages and OASI revenue under the status quo and three alternatives were calculated for each. This was instrumental in determining the impact on solvency, opportunity cost, equity, and revenue from each.

Criteria	No Maximum	90 Percent	$400K Donut Hole
Taxes Paid by Employees and Employers	$14.692 trillion	$13.774 trillion	$13.88 trillion
Opportunity Cost to Employees	$459 billion	$175 billion	$147.5 billion
Effectiveness: Solvency	End of 2037	Mid-2034	End of 2034
Effectiveness: Percent Unpayable	9.4%	19.7%	15.4%
Equity: Sex	46%	49%	43.8%
Equity: Race	43.2%	43.8%	42.6%

Table 1: Outcomes of Evaluation based on Criteria

Based on the evaluation of the three alternatives using tax burden to employees and employers, opportunity cost of the additional taxes paid, the effectiveness maintaining trust fund functioning and equity based on disparate impact analysis, **Alternative 1, No Maximum, is best suited to address the OASI funding imbalance.** It fairs best for both measures of Effectiveness, yielding a delay to insolvency until the end of 2037, at which point the alternative generates enough revenue to pay out 90.6 percent of promised benefits. Compared to the status quo, this alternative delays solvency by 5.5 years at a minimum and raises enough revenue to pay out an 11.6 percent higher share of promised benefits upon depletion. This is significantly better than the other two alternatives, which delay insolvency by a year at most and would allow for only 80 to 85 percent of benefits to be paid out upon depletion. No Maximum likewise has the second highest propensity for advancing equity based on gender and race, evidenced by two findings: the additional tax burden on females is 46 percent of the burden on males, and the burden on Black taxpayers is 43.2 percent of the burden on their White counterparts.

Tradeoffs

The biggest trade off with the No Maximum alternative is the opportunity cost to workers. This cost is $459 billion over 10 years, which is two and a half times larger than it is under the 90 Percent alternative, totaling $175 billion. When looking at the opportunity cost per worker, the

difference becomes slightly larger, with the No Maximum option imposing a $48 thousand opportunity cost on the 9.5 million impacted workers. This is 2.6 times larger than the second highest cost alternative—90 Percent—which creates an opportunity cost of $18.4 thousand for 9.5 million workers. The $400K Donut Hole has the lowest opportunity cost at $147.5 billion, or $16.2 thousand per impacted worker, which is nearly three times smaller than the No maximum option.

Likewise, the additional taxes that will be paid by employees and employers deserves further consideration between alternatives. While the additional taxes collected by each alternative can be thought of as additional revenue, which is a positive for solvency, it does place additional burden on high earners. Thus, the high quantity of revenue generated by the No Maximum alternative must be considered as a drawback as well. Compared to the other two alternatives, the No Maximum alternative is nearly $1 trillion more expensive over a decade.

For equity, there is not much of a tradeoff between any of the three alternatives, with the disparate impact ratios only differing by a few percentage points. Because sex and race both correlate with income, all three alternatives result in more additional taxes paid by males and White taxpayers. This results in a smaller relative impact on females and Black taxpayers.

Implementation

Messaging

To effectively implement Alternative 1—No Maximum—messaging and communication will be crucial to head off confusion and preempt misinformation. SSA and IRS will need to institute prompt and clear communication with key stakeholders: taxpayers, beneficiaries, and businesses. This should be done via three methods:

1. Create a dedicated landing page on the SSA website that discusses what the policy change entails, centers all the key talking points outlined below, and includes answers to frequently asked questions.
2. Add a banner to the SSA website that grabs the attention of visitors and directs them to the landing page described above.
3. For beneficiaries and employers, SSA and IRS, respectively, will send letters through the US Postal Service.

Workers

The Social Security Administration will need to communicate to workers about the removed limit for taxable income and the benefits of the changes. Part of the goal in messaging to workers, who make up the largest stakeholder group, is instilling confidence in the Social Security system. While confidence in the system typically grows with age, confidence from each age cohort has dropped since 2015 (Moore & Bond, 2025). The key talking points will center on three facts:

1. No one making less than $176,100 will pay more in OASI taxes. It only subjects incomes above this limit to the normal 5.3 percent payroll tax.

2. Eliminating the maximum ensures that all individuals pay the same 5.3 percent tax rate on their income. Under current law, those making over $176,100 pay a lower effective tax rate than everyone else.
3. Further information can be found on the SSA website.
4. Eliminating the maximum ensures that full benefits can be paid out for longer. The messaging here should focus not on the specific projected year of depletion, but instead on the fact that it raises crucial revenue needed for solvency. Do not mention that this change allows for a higher percentage of promised benefits to be paid out upon depletion; discussion of eventual depletion will cause unneeded confusion and reduce confidence in the system.

Businesses

Messaging to businesses, which will be done by IRS via traditional mail, must highlight two key points:

1. Employees making over $176,100 will now pay OASI taxes on all their income. This will result in corresponding higher taxes for the business.
2. Employers must update their payment systems before the effective date of the policy change to apply the OASI payroll tax to all wages.

Beneficiaries

Like the communications with businesses, SSA must send letters through traditional mail to current beneficiaries that explain the following:

1. Benefit amounts will not be changing. The policy does not alter the benefit calculations in any way.
2. Further information can be found on the SSA website.
3. Eliminating the maximum ensures that full benefits can be paid out for longer. The messaging here should focus not on the specific projected year of depletion, but instead on the fact that it raises crucial revenue needed for solvency. Do not mention that this change allows for a higher percentage of promised benefits to be paid out upon depletion; discussion of eventual depletion will cause unneeded confusion and anxiety.

Impact Evaluation

To measure the success of the policy change, the Social Security Administration should internally collect and publicly disseminate on their website information about the impacts of eliminating the maximum on the health of the OASI trust fund and the economy more largely. While much information on this topic will already be included in the 2025 Trustees Report, it is crucial that the agency prepare standalone documents one year and five years out from implementation to compile evidence. Areas of study include:

1. Changes in tax burden across income cohorts measured in aggregate taxes paid,
2. Increases to the OASI trust fund balance and its solvency based on internal data,
3. Changes to revenue collected via payroll taxes,

4. Demographic breakdowns of who pays additional taxes under the policy, and Hiring, investment, and compensation changes by companies in response to the change via data collected by other federal agencies.

After one year of this policy change, the Administration will be able to break down payments received in this manner to ensure that individuals and interest groups can see that the policy achieved its goal of improving trust fund income and targeting higher earners. When it comes to impacts on trust fund solvency, the stakes are high because SSA can provide more accurate assessments based on their internal data that is not publicly available. All information collected and the results of the analyses should be released publicly on the SSA website.

Conclusion

For millions of Americans, the Old Age and Survivors Insurance program provides a vital source of retirement income. The program alone keeps millions of elders out of poverty as they age. Slowing birth rates paired with the retirement of the large Baby Boomer generation has caused a funding imbalance that began in 2010 and continues to the present day in 2025.Without any changes to the way that the program functions, the system will be forced to cut benefits by 21 percent across the board. This would have a major impact on the elderly, leading to downstream effects that would ripple across the economy.

The analysis conducted in this technical report contributes to the existing literature on the financial health of the OASI trust fund by leveraging 2023 American Community Survey data. The survey allowed the construction of a representative projection of future incomes and OASI revenues from three tailored policy alternatives over more than a decade. The methodology allows for great flexibility in projecting future revenues and subsequent OASI trust fund reserves for any imaginable policy changes, including groups of policy packages. Findings from this report contribute to the available evidence on methods for altering the maximum taxable income threshold under current law.

Takeaways

The most promising path forward is to eliminate the cap on income that is subject to the OASI payroll tax. It extends solvency until the end of 2037 at least, according to this report's conservative estimate, and upon depletion, it raises sufficient revenue to pay for 90.6 percent of scheduled benefits. Compared to current law, this extends solvency by a minimum of 5.5 years and allows for a 10 percent higher share of promised benefits to be paid out. This alternative likewise works to advance equity based on race and sex, with females being subjected to 46 percent of the additional tax burden of males and Black taxpayers being subjected to 43.2 percent of the burden of their White counterparts. Eliminating the maximum fully raises the most revenue out of all considered options, raising nearly $1 trillion more than the others over a decade.

Limitations

While the analysis in this technical report represents a novel methodological approach for evaluating changes to the Social Security tax system, the power of the method to model future income and revenues is limited.

Because the analysis relies on 2023 ACS data, it assumes a static set of workers that are contributing payroll taxes to OASI. In reality, workers leave and enter the workforce across their lifetimes, new workers enter the workforce due to maturation, and older workers leave the workforce for retirement. There are numerous imaginable dynamics that contribute to the income profile of US workers, and this project only considers annual wage growth. Because of this inherent issue with projecting future incomes, projecting future revenues suffers from the same problems.

Besides ACS data, the estimates calculated in this report similarly rely on projections of many key measures from the 2024 Board of Trustees Report from SSA. For example, projected annual wage growth rates and OASI benefit costs come directly from SSA. This constrains the model by aligning it closely with the opaque methodology employed by SSA.

Likewise, dollar amounts for projected OASI benefit costs into the future are interpolated after 2033 using polynomial regression. This is because SSA only shows these costs in US dollars up to 2033. SSA has projected the cost of benefits up to 2100, but these values are expressed as a percentage of taxable payroll, which is incompatible for use with the projected incomes and revenues estimated in this project. For this reason, the future costs of OASI benefits are higher than the true cost. Further study on this topic should seek to obtain projected OASI benefit costs in US dollars from SSA to get a more accurate assessment of trust fund health.

References

A Summary of the 2024 Annual Reports. (n.d.). Social Security Administration. Retrieved October 2, 2024, from https://www.ssa.gov/oact/trsum/

Anthony J. Pellechio, Pellechio, A., Gordon P. Goodfellow, & Goodfellow, G. (1983). Individual Gains and Losses from Social Security before and after the 1983 Amendments. *Cato Journal*, *3*(2), 417–442.

Aubry, J.-P., Liu, S., Munnell, A., Quinby, L., & Springstead, G. (2022). State and Local Government Employees Without Social Security Coverage: What Percentage Will Earn Pension Benefits That Fall Short of Social Security Equivalence? *Social Security Administration Research, Statistics, and Policy Analysis*, *82*(3). https://www.ssa.gov/policy/docs/ssb/v82n3/v82n3p1.html

Benefits Planner. (n.d.). Social Security. Retrieved October 2, 2024, from https://www.ssa.gov/benefits/retirement/planner/agereduction.html

Ben-Shalom, Y., Moffitt, R., & Scholz, J. (2012). An Assessment of the Effectiveness of Antipoverty Programs in the United States. *The Oxford Handbook of the Economics of Poverty*. https://doi.org/10.1093/oxfordhb/9780195393781.013.0023

Bump, P. (2024, September 13). *Baby boomer*. Encyclopedia Britannica. https://www.britannica.com/topic/baby-boomers

Bureau, U. C. (n.d.-a). *2020 Census Will Help Policymakers Prepare for the Incoming Wave of Aging Boomers*. Census.Gov. Retrieved October 2, 2024, from https://www.census.gov/library/stories/2019/12/by-2030-all-baby-boomers-will-be-age-65-or-older.html

Bureau, U. C. (n.d.-b). *About the American Community Survey*. Census.Gov. Retrieved February 21, 2025, from https://www.census.gov/programs-surveys/acs/about.html

CDC Newsroom. (2024, July 16). CDC. https://www.cdc.gov/media/releases/2024/s0716-Adult-disability.html

Child mortality rate (under five years old) in the United States, from 1800 to 2020 [Graph]*. (n.d.). [Dataset]. Statista. Retrieved October 3, 2024, from https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=US

Dushi, I., Iams, H., & Trenkamp, B. (2017). *The Importance of Social Security Benefits to the Income of the Aged Population*. Social Security Administration Office of Retirement and Disability Policy. https://www.ssa.gov/policy/docs/ssb/v77n2/v77n2p1.html#

Engelhardt, G. V., & Gruber, J. (2004). Social Security and the Evolution of Elderly Poverty. *National Bureau of Economic Research*. https://doi.org/10.3386/w10466

Fact Sheet. (n.d.). Social Security Administration. https://www.ssa.gov/news/press/factsheets/basicfact-alt.pdf

Goss, S. C. (2010). The Future Financial Status of the Social Security Program. *Social Security Bulletin*, *70*(3).

Havemann, J., & Neuman, J. (2008, January 31). *Head of Social Security under three presidents*. Los Angeles Times. https://www.latimes.com/archives/la-xpm-2008-jan-31-me-ball31-story.html

History & Mission. (n.d.). National Academy of Social Insurance. Retrieved September 19, 2024, from https://www.nasi.org/about/mission/

Kunkel, S. (n.d.). *Social Security Tax Rates*. Social Security. Retrieved November 14, 2024, from https://www.ssa.gov/oact/progdata/oasdiRates.html

Long Range Solvency Provisions. (2025). Social Security. https://www.ssa.gov/oact/solvency/provisions/payrolltax.html

Meyer, B. D., & Wu, D. (2018). The Poverty Reduction of Social Security and Means-Tested Transfers: *Industrial and Labor Relations Review*, *71*(5), 1106–1153. https://doi.org/10.1177/0019793918790220

Moore, J., & Bond, T. (2025). *Social Security's First 90 Years: A History of Bipartisan and Intergenerational Support*. National Institute on Retirement Security. https://www.nirsonline.org/wp-content/uploads/2025/01/NIRS-25-History-of-SS_R2.0_FINAL.pdf

OASI Trust Fund, a Social Security fund. (n.d.). Social Security. Retrieved April 4, 2025, from https://www.ssa.gov/oact/STATS/table4a1.html

Office of the Chief Actuary. (2024a). *Estimates of Individual Changes Modifying Social Security*. Social Security Administration. https://www.ssa.gov/oact/solvency/provisions/index.html

Office of the Chief Actuary. (2024b). *THE LONG-RANGE DEMOGRAPHIC ASSUMPTIONS FOR THE 2024 TRUSTEES REPORT*. Social Security Administration.

Official USDA Thrifty Food Plan: U.S. Average, March 2025. (2025, April). U.S. Department of Agriculture. https://fns-prod.azureedge.us/sites/default/files/resource-files/cnpp-CostFood-TFP-March2025.pdf

Old-Age & Survivors Insurance Trust Fund. (n.d.). Social Security. Retrieved April 28, 2025, from https://www.ssa.gov/oact/progdata/describeoasi.html

Options for Reducing the Deficit: 2025 to 2034. (2024). Congressional Budget Office. https://www.cbo.gov/system/files/2024-12/60557-budget-options.pdf

Scholz, J., Moffitt, R., & Cowan, B. (2009). Trends in income support. *Focus*, *26*(2). https://www.columbia.edu/~rr2165/pdfs/incomesupport.pdf

Social Security at 90: A Bipartisan Roadmap for the Program's Future. (2025). National Academy of Social Insurance. https://www.nasi.org/wp-content/uploads/2025/01/NASI_SocialSecurityat90.pdf

Social Security Beneficiary Statistics. (n.d.). Social Security. Retrieved April 4, 2025, from https://www.ssa.gov/oact/STATS/OASDIbenies.html

Social Security Benefit Amounts. (n.d.). Retrieved January 31, 2025, from https://www.ssa.gov/oact/cola/Benefits.html

Social Security Credits. (n.d.). Social Security. Retrieved April 3, 2025, from https://www.ssa.gov/benefits/retirement/planner/credits.html

The 2024 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds. (2024). The Board of Trustees. https://www.ssa.gov/OACT/TR/2024/tr2024.pdf

The Decline in Fertility: The Role of Marriage and Education. (2022, July 8). Penn Wharton Budget Model. https://budgetmodel.wharton.upenn.edu/issues/2022/7/8/decline-in-fertility-the-role-of-marriage-and-education

The fiscal health of Social Security. (2017). Urban Institute. https://www.urban.org/policy-centers/cross-center-initiatives/program-retirement-policy/projects/dynasim-visualizing-older-americans-future-well-being/fiscal-health-social-security

The Link between Fertility and Income. (n.d.). Retrieved October 3, 2024, from https://www.stlouisfed.org/on-the-economy/2016/december/link-fertility-income

Trends in Teen Pregnancy and Childbearing. (n.d.). Office of Population Affairs. Retrieved October 3, 2024, from https://opa.hhs.gov/adolescent-health/reproductive-health-and-teen-pregnancy/trends-teen-pregnancy-and-childbearing

Wallenfeldt, J. (2024, August 16). *Silent Generation*. Encyclopedia Britannica. https://www.britannica.com/topic/Silent-Generation

What is the average monthly benefit for a retired worker? (2025, January 2). Social Security. https://www.ssa.gov/faqs/en/questions/KA-01903.html

What is the current maximum amount of taxable earnings for Social Security? (2025, January 2). Social Security Administration. https://www.ssa.gov/faqs/en/questions/KA-02387.html

World Fertility and Family Planning 2020: Highlights. (2020). United Nations. https://www.un.org/en/development/desa/population/publications/pdf/family/World_Fertility_and_Family_Planning_2020_Highlights.pdf

Zuberi, T. (2001). *Thicker than Blood: How Racial Statistics Lie*. University of Minnesota Press. https://www.jstor.org/stable/10.5749/j.cttttcnc.5

Appendix A: Methodology for Estimating Taxes Paid by Employees and Employers

All calculations for this criterion were done using R on RStudio Version 2024.12.0+467. The core data used for the analysis is 2023 American Community Survey data from IPUMS USA.

Determining Income

The INCWAGE variable formed the basis for income earned from labor in the dataset. The first step in determining income was to exclude missing values and individuals who were too young to work from the sample (younger than 16). I then imputed values for self-employed individuals from INCEARN into INCWAGE if they had a value of $0 for INCWAGE (income from labor).

The next step was to use projected nominal wage growth rates from the Social Security Administration's (SSA) 2024 Trustees Report to calculate future wages up to 2035 for all individuals in the dataset. Afterwards, historical consumer price index (CPI) data and projected percent increase in CPI data from the Trustees Report was used to convert all future wages to constant 2024 dollars. 314.4 was used for the 2024 CPI.

Determining Future Maximum Taxable Income

The Average Wage Index (AWI) is a measure employed by SSA to set the maximum dollar amount of income that can be subject to OASI taxes. Projections in the 2024 Trustees Report for the AWI were utilized to calculate the maximum taxable income for years 2026 through 2035 based on an initial 2025 value of $176,100.

Determining Taxes Paid

Once wages were projected from 2025 to 2035, I was able to calculate the taxes paid under current law and each alternative per individual in each of those years using the calculated maximum taxable income levels. Individual taxes paid were then summed up while applying the provided person-level weight from IPUMS USA. This ensures that the total taxes paid accurately represent the entire US population. Lastly, the totals for each alternative and the status quo were multiplied by two to reflect the total taxes paid by employees and employers together.

Appendix B: Methodology for Estimating Opportunity Cost to Employees

All calculations for this criterion were done using R on RStudio Version 2024.12.0+467 and Microsoft Excel. The core data used for the analysis is 2023 American Community Survey data from IPUMS USA.

Accounting Cost to Employees

The accounting cost to employees is represented by the previously calculated additional taxes that would be paid by employees from 2025 to 2035 for the prior criterion.

S&P500

Opportunity cost was expressed as the money that could have been accrued by investing 100 percent of the additional OASI taxes paid into the S&P500. To project future S&P500 real annual return rates (ARR) from 2025 to 2035, a Monte Carlo simulation was employed with 1,000 iterations and a seed set for reproducibility. Because the S&P500, like other stock indices, continues to grow in the long run but not at a set rate, Monte Carlo simulation was chosen to account for this apparent randomness. The inputs for the simulation included historical average return rates for the index spanning from 1928 to 2024. The range of inputs varied from a minimum of -38 percent to a maximum of 53.7 percent. The median projected real ARR was used for each year, ranging from about 7.86 percent to 10.1 percent.

Determining Opportunity Cost

Once the real ARR for the S&P500 from 2025 to 2035 was projected, those rates were applied iteratively to the additional employee payroll taxes for each alternative. Returns were calculated on a yearly basis as if additional payroll taxes had been paid all at once on the first of each year. A year's return was calculated as follows:

1. Calculate that year's principal by adding up that year's investment, the previous year's principal, and the previous year's return.

$$\boldsymbol{Principal_{Year} = Investment_{Year} + Principal_{Year-1} + Return_{Year-1}}$$

2. Multiply that year's principal by that year's real average return rate.

$$\boldsymbol{Return_{Year} = Principal_{Year} * ARR}$$

Appendix C: Methodology for Estimating Effectiveness

All calculations for this criterion were done using R on RStudio Version 2024.12.0+467 and Microsoft Excel. The core data used for the analysis is 2023 American Community Survey data from IPUMS USA.

Assumptions

For my projections on depletion year of the OASI trust fund, many of my key economic assumptions are based on those developed by the Social Security Administration's (SSA) 2024 Trustees Report. Key projections from the Report include cost of benefits, administrative costs, Railroad Retirement program transfers, revenue from the taxation of benefits, real interest rates for the trust fund reserves, nominal wage growth rates, percent change in consumer price index (CPI), and average wage index.

Estimating Trust Fund Balances

The yearly cost projections developed previously for the cost to employees and employers criterion served as the starting point for projecting the OASI trust fund balance for the status quo and three alternatives. The starting 2024 trust fund balance of $2,538,285,000,000 used in this analysis comes from the SSA, reflecting the actual amount.

Trust fund balances were calculated twice for every year: once for mid-year and once for the end of the year. This is due to the way that the OASI trust fund accrues interest. Invested in special-issue securities, interest on trust fund revenue is collected biannually—once in the middle of the year and once at the end of the year.

To calculate the trust fund balance for a year, the process is as follows:

1. Calculate the mid-year reserves by adding one half of the revenues to and subtracting one half of the costs from the prior year's ultimate reserves.

$$\boldsymbol{MidYear\ Reserves = Prior\ End\ of\ Year\ Reserves + \frac{Revenue}{2} - \frac{Costs}{2}}$$

2. Calculate the interest paid on the mid-year reserve using projected real interest rates from the SSA.

$$\boldsymbol{MidYear\ Interest = MidYear\ Reserves * Real\ Interest\ Rate}$$

3. Calculate the end of year reserves by adding one half of the revenues to and subtracting one half of the costs from the mid-year reserves

$$\boldsymbol{End\ of\ Year\ Reserves = MidYear\ Reserves + \frac{Revenue}{2} - \frac{Costs}{2}}$$

4. Calculate the interest paid on the end of year reserve using projected real interest rates from the SSA.

$$\boldsymbol{End\ of\ Year\ Interest = End\ of\ Year\ Reserves * Real\ Interest\ Rate}$$

5. Add the end of year reserves to the interest calculated in Step 4.

$$\boldsymbol{End\ of\ Year\ Final = End\ of\ Year\ Reserves * End\ of\ Year\ Interest}$$

Estimating Percent of Promised Benefits Payable after Depletion

After estimating the depletion date under each alternative, the percent difference between the projected revenues and costs determined the percent of benefits payable after that point. Since trust fund calculations were done on a biannual basis, the percent difference between revenues and costs were likewise calculated in the specific half of the years when the trust fund is projected to deplete.

The estimates operate under the assumption that SSA would continue covering administrative expenses and transferring OASI revenues to the railroad retirement program, which are much smaller costs. Calculations were as follows:

1. Divide the cost of benefits and other costs (railroad transfer, administrative) by 2
2. Divide the payroll tax revenue and revenue from the taxation of benefits by 2
3. Subtract the mid-year other costs from the combined mid-year revenue from Step 2

$$\boldsymbol{Revenue\ Left\ for\ Benefits = MidYear\ Revenue - Railroad - AdminCosts}$$

4. Subtract the number from Step 3 from the mid-year cost of benefits, divide that amount by the mid-year cost of benefits, and then multiply by 100, yielding the percent of benefits that cannot be covered by revenue

$$\boldsymbol{Percent\ of\ Benefits\ Unpayable = \frac{|CostBenefits - Remaining\ Revenue|}{CostBenefits} * 100}$$

5. Subtract the percentage from Step 4 from 100 to get the percent of benefits payable after depletion

$$\boldsymbol{Percent\ of\ Benefits\ Payable = 100 - Percent\ of\ Benefits\ Unpayable}$$

Appendix D: Methodology for Estimating Equity

All calculations for this criterion were done using R on RStudio Version 2024.12.0+467. The core data used for the analysis is 2023 American Community Survey (ACS) data from IPUMS USA.

Selecting of Comparison Groups

The two axes of marginalization focused on for the equity analysis was sex and race. Since this data was self-reported through the ACS, these categories are referred to as reported sex and reported race. Reported sex was used instead of a measure such as reported gender due to a lack of data. This inherently minimizes any differences based on gender identity. Considering the inherent methodological challenges in collecting and analyzing data based on race, individuals who self-reported as White and those who self-reported as Black served as comparison groups (Zuberi, 2001). The rationale behind comparing White individuals to Black individuals is to note the difference in impact between the dominant racial category and the most marginalized category in the United States.

Disparate Impact Ratio Calculations

A disparate impact ratio was employed to measure differences in impact between the two selected groups in sex and race. The first step was to calculate the aggregate additional taxes that would be paid by males and females and White individuals and Black individuals. Then, the percent increase in taxes paid by each of the four self-reported identities. Finally, the percent increase in taxes for the marginalized identity (for example, females) was divided by the percent increase for the dominant identity (in this case, males). This yields a disparate impact ratio, estimating the impact on the marginalized group expressed as a proportion of the impact on the dominant group.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