



Bipartisan Policy Center

How Will COVID-19 Affect the Social Security Trust Funds?

NICKO GLADSTONE AND SHAI AKABAS

SUMMARY

An economic downturn can dramatically impact Social Security's short-run finances, accelerating depletion of reserves in the program's trust funds. In this issue brief, we run four stress tests to illustrate how the retirement and disability trust funds would fare under several possible versions of the current recession. Before the pandemic, Social Security's Trustees projected that reserves in the retirement trust fund would be depleted in 2034. In each of the scenarios we model, that date moves at least one year closer—arriving between 2029 and 2033. Meanwhile, the Trustees had projected that the disability trust fund's reserves would be depleted in 2065. In each of our scenarios, disability reserves are depleted at least 10 years sooner—as early as 2023 and 2024 in our two more-pessimistic scenarios and as late as 2054 in our mildest one. The timing of trust fund depletion will ultimately depend on the depth and duration of this recession's toll on the labor market, which remains uncertain.

ACKNOWLEDGMENTS

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SOCIAL SECURITY'S FINANCES AND THE ECONOMY

Even before the COVID-19 pandemic, Social Security's finances were unsustainable. For years, the program's public Trustees had warned that demographic and economic trends—especially aging of the population—would produce a long-term mismatch between revenue and cost.^{1,i} Just as the pandemic hit, that grim future was about to become present reality. The retirement program's annual cost was projected to exceed its annual revenue in 2021 and by a growing amount each year for the next several decades.

While Social Security's long-term health depends on these structural trends, its finances in the short term can change dramatically with the strength of the economy, exemplified by the current downturn. When Social Security's Board of Trustees prepared its latest annual report on the program's finances, however, the economic fallout from COVID-19 had become apparent too recently to be incorporated into its estimates.ⁱⁱ This Bipartisan Policy Center issue brief fills that gap by testing how possible future courses of the recession and its aftermath could affect Social Security's finances.

Below, we list the ways the pandemic and recession might affect Social Security. Where relevant, we also discuss how the Great Recession affected the program's finances as well as preliminary data on the impact of the current crisis. **Appendix A** provides a more detailed account of our methodology.

This brief refines and extends a preliminary analysis that was presented in an April 2020 blog post. **Appendix B** details how our methodology has changed since that initial post.

Revenue

Most of the money Social Security pays out in retirement and disability benefits comes from payroll taxes. Some additional income is generated from the taxation of benefits and interest earned on U.S. Treasury securities held by the trust funds.

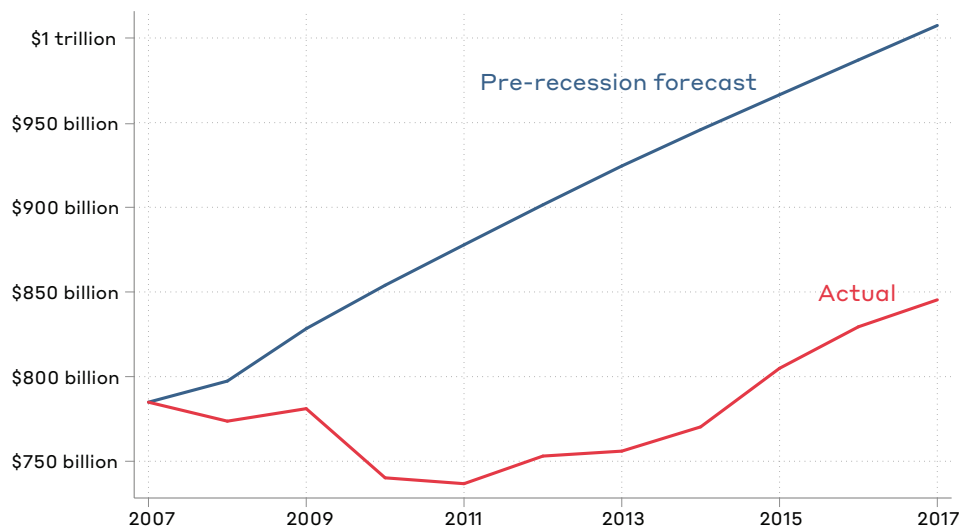
All three revenue sources are threatened by the current recession. A laid-off worker doesn't pay payroll taxes, nor does the employer share of the former worker's payroll taxes get paid. Even among workers who have kept their

1 Social Security's Trustees and the Congressional Budget Office refer to monies that are credited to Social Security's trust funds as "income." Because the term "revenue" clearly distinguishes the trust funds' income from, for example, individuals' income or national income, we mostly use "revenue" throughout this brief to refer to the same concept.

jobs, many have experienced a cut in hours, and a slack labor market slows wage growth, further depressing payroll tax revenue. Meanwhile, Social Security beneficiaries pay taxes on their benefits if their income exceeds \$25,000 (\$32,000 for a couple filing jointly). A deep recession results in fewer beneficiaries meeting these thresholds, meaning their benefits won't be taxed. Finally, the Federal Reserve has responded to the crisis by cutting interest rates, which will lower yields on bonds held by the Social Security trust funds. Because all of these effects reduce revenue flowing into the trust funds, they make the trust funds smaller, which further reduces their interest income.

The Great Recession of 2007-09 and its aftermath illustrate this cumulative impact on program revenue. **Figure 1** compares the Trustees' forecast of real revenue made before the Great Recession with actual real revenue over the ensuing years.

Figure 1: Real OASDI Revenue, Forecast Before the Great Recession Versus Actual



Note: Y-axis does not start at \$0. Pre-recession forecast is from the 2008 Trustees Report. Revenues are constant 2007 dollars that have been adjusted for lower-than-expected inflation in the aftermath of the Great Recession.
Source: Annual reports of the Social Security Board of Trustees.

All our illustrative models of the current recession therefore feature steep reductions, at least initially, in Social Security's interest and non-interest revenue relative to pre-pandemic estimates. Indeed, while recent and complete data on trust fund revenue are not yet available, each month the Congressional Budget Office (CBO) estimates the year-over-year change in withheld payroll and income taxes. From January through March of 2020, withheld tax receipts had been running an average of 5.7% higher than last year. From May through August, however, they plunged an average of 8.4% below last year's levels.ⁱⁱⁱ This abrupt switch from healthy growth to deep reductions suggests that the pandemic and recession are having a sizable effect on Social Security's revenue, at least in the short run.

Additional Claiming

Social Security has a retirement program (Old-Age and Survivors Insurance, or OASI) and a disability program (Disability Insurance, or DI), each with its own trust fund. A recession increases the costs of both.² When the U.S. labor market is weak, claiming rates for disability insurance typically rise. Meanwhile, a wave of older workers who find themselves unemployed may be forced to retire earlier than they had planned, leading to additional claims of retirement benefits and raising costs for the program in the short term. For instance, in the Great Recession and its aftermath, disability claims soared, and more people than expected claimed OASI.

Disability claims often require a lengthy approval and adjudication process, so it is still too early to look for an effect from the current recession. And while data do not yet show a clear and sustained increase in either retirements or claims of Social Security retirement benefits, it may take several months for older workers who have lost jobs to give up looking for new ones and retire.³ Regardless, 2.5 million fewer Americans aged 55 or older had jobs in September than in February of this year, and the employment rate of Americans aged 62 or older, which actually rose during the Great Recession, has plummeted.^{iv,v} This loss of employment will likely lead to more retirements—and more claims of Social Security retirement benefits—sooner or later. When modeling the current recession's effect on the trust funds, we include greater near-term costs from additional claims of disability and retirement benefits.

Additional Deaths from COVID-19

COVID-19 has and will tragically continue to end the lives of many Americans, particularly older ones. These deaths mean fewer OASI beneficiaries, lowering program costs. Based on epidemiological projections, we estimate excess deaths of OASI beneficiaries in each year due to COVID-19 and adjust costs accordingly (see **Appendix A**).

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- 2 OASI faces increased costs because eligible workers claim benefits earlier than they otherwise would have. Since these beneficiaries would have claimed eventually, the increase in OASI costs is only in the near term—a shifting of future costs to current years. Economically induced DI claims, however, come from workers who would otherwise not have claimed disability insurance and nonetheless tend to stay on DI even when the economy improves. Recessions therefore increase DI costs in both the short and long runs.
 - 3 The retirement data so far do not tell a clear story. Growth in the number of retired workers receiving OASI has not accelerated. But the \$600 supplement to unemployment insurance benefits may have made them a more attractive alternative to claiming OASI for laid-off older workers until very recently. If that is the case, the pandemic may cause a noticeable increase in OASI rolls in the next few months. Meanwhile, the share of people aged 62 or older who report being retired in the Current Population Survey has spiked since the start of 2020. The latter series, however, is quite volatile, so the uptick would need to persist for longer before we could draw a conclusion

Recent History and Future Uncertainty

Recent history shows how a recession's combination of lower revenue and higher costs can significantly accelerate the depletion of Social Security's trust fund reserves. At the start of 2008—before it was clear that the United States had plunged into a recession—Social Security's Trustees projected that the combined reserves of the retirement and disability (OASDI) trust funds would be depleted in 2041.^{4,vi} In 2012, after years of a dismal labor market and sluggish economic growth, that projected date had moved up to 2033.^{vii}

The current recession will further accelerate the depletion date of trust fund reserves. How much sooner reserves are depleted will depend on the recession's depth and duration, as well as the rate of post-recession economic growth. This economic trajectory, in turn, will hinge on factors that are currently impossible to predict precisely, such as the future spread of the virus, when a safe and effective COVID-19 vaccine will be developed, and how much more fiscal stimulus will be enacted. Rather than trying to predict the future, we simulate four possibilities and examine how the trust funds would fare under each. We emphasize that these scenarios are not predictions, but instead should be thought of as stress tests that reveal how recessions of varying magnitudes would affect Social Security's finances.

ILLUSTRATIVE SCENARIOS

We model four scenarios that together form a distribution of possible economic futures: One is a severe and prolonged economic crisis, in which this recession is 50% worse than the Great Recession; one is a reasonable but pessimistic outcome, where this recession is of the same magnitude as the Great Recession; one is a forecast that we consider slightly optimistic, CBO's estimated effects of the pandemic; and one is a surprisingly quick rebound, in which the economy only suffers two-thirds of CBO's estimated pandemic effects. That is, in forecasting jargon, we model two intermediate scenarios, downside risk, and upside risk.⁵ Of course, many possible future paths of the economy are not covered by these four scenarios.

We base two scenarios on the Great Recession and its aftermath not because we think the current downturn will repeat its pattern, but to give a numerical sense of the impact on Social Security's trust funds should this recession match familiar benchmarks. We describe our scenarios below.

4 The two trust funds are legally distinct and are not allowed to borrow from one another under current law, so the projected depletion of their collective reserves is illustrative.

5 It is important to note that CBO's pandemic effects are an actual forecast of the current recession while a second Great Recession is not. But as of the time of writing, employment remains further below its pre-recession peak than it was during the trough of the Great Recession. Given the depth and unprecedented nature of this crisis, we consider a downturn similar to the Great Recession quite plausible.

One-and-a-Half Times the Great Recession

This simulation models a deep and prolonged recession—some might call it a “depression”—where the impact on Social Security’s finances is 50% more severe than that of the Great Recession and its aftermath. Specifically, each year the loss of non-interest revenue and the increase in OASI and DI claims relative to projections are 50% greater.⁶ Keep in mind that the annual average unemployment rate remained above 8% as late as 2012, so a recession 50% more severe would be a deep and protracted economic contraction that would require the labor market’s recent improvement to reverse and then stagnate for years. Also note that this simulation includes all the events of 2008 through 2017—including a tepid recovery marked by sluggish productivity growth and stubbornly low labor force participation—and magnifies them by 50%.⁷ Finally, a unique component of the pandemic recession is that many OASI beneficiaries will die of COVID-19. We thus lower OASI costs based on an estimate of the excess deaths of OASI beneficiaries.

A Second Great Recession

In this scenario, non-interest revenue falls relative to projections by the same proportion each year as it did during and after the Great Recession. Costs from additional OASI and DI claims likewise increase at the proportions implied by the Great Recession and its aftermath. Finally, we reduce OASI costs based on the estimated number of excess deaths of OASI beneficiaries due to COVID-19

CBO’s Pandemic Effects

CBO creates its own forecast of each trust fund’s future non-interest revenue and cost, distinct from the projections of Social Security’s Trustees. Our scenario takes CBO’s forecast of how the pandemic will affect the trust funds and applies those effects to the common baseline of the Trustees’ latest projections.⁸ CBO’s assumed pandemic effects are much milder than

6 In every scenario we model, the assumed interest rates the trust funds earn are the same. **Appendix A** explains.

7 The Great Recession officially lasted from December 2007 through June 2009, but we consider its effects on the trust funds through 2017. We make this choice because the Great Recession’s economic toll was visible at least through the end of this time period. The unemployment rate remained above CBO’s estimate of the natural rate of unemployment until March 2017. Gross domestic product, meanwhile, remained below CBO’s estimate of potential output until the fourth quarter of 2017.

8 Note that this scenario is different from CBO’s forecast of the trust funds’ finances, which applies CBO’s estimate of pandemic effects to its own—as opposed to the Trustees’—baseline. CBO’s latest estimate is that reserves in the OASI trust fund will be depleted in 2031; those in the DI trust fund, in 2026. Contrast those results with our CBO pandemic-effects scenario in **Table 1**, which has those dates at 2033 and

a second Great Recession: Over the next 10 years, cumulative non-interest revenue in this scenario only falls by about one-third as much as it does in a second Great Recession.

Two-Thirds of CBO's Pandemic Effects

CBO expects real non-interest revenue to fall furthest below its pre-pandemic projections in 2021 and 2022.⁹ Our optimistic scenario assumes a recession that is less dramatic than CBO expects: Compared to pre-pandemic forecasts, the loss of non-interest revenue through 2022 is only two-thirds as deep. Non-interest revenue then grows at the same rate as in the earlier CBO scenario, returning in 2026 to the level forecast before COVID-19.¹⁰ Likewise, DI costs only increase by two-thirds the amount implied by CBO's pandemic-related revisions.¹¹

Figure 2 shows the shortfall from baseline OASDI non-interest revenue under each scenario—a proxy for the economic path that each assumes. Non-interest revenue is a useful summary for two reasons. First, it drives our results: These scenarios affect Social Security's finances overwhelmingly by changing revenue, and most revenue is earned from non-interest sources. Second, non-interest revenue mostly reflects contemporaneous payroll tax receipts and so proxies for the state of the broader economy.

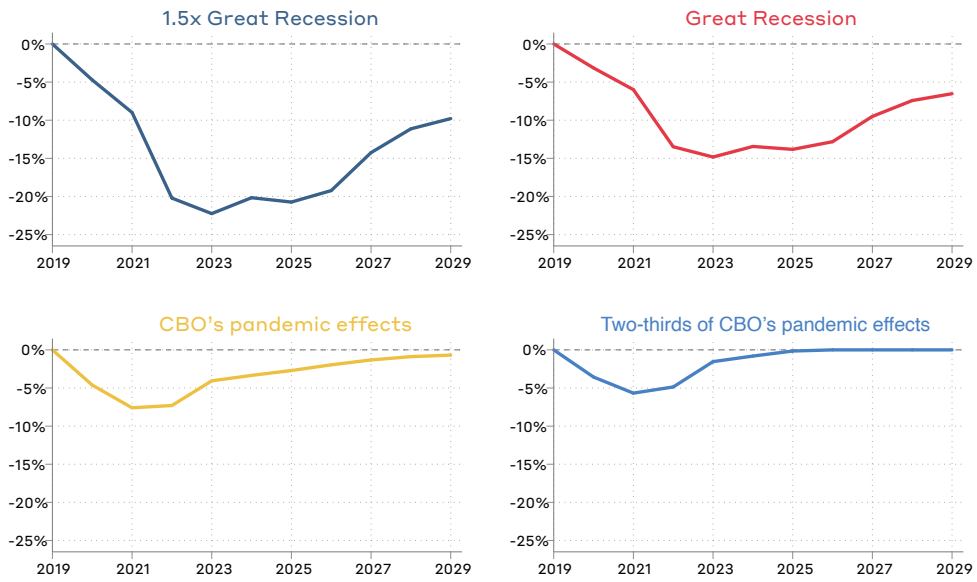
2051, respectively. See Congressional Budget Office, "10-Year Trust Fund Projections," September 2020. Available at: <https://www.cbo.gov/data/budget-economic-data>.

9 CBO's accounting attributes most of the revenue lost in 2020 as lost in 2021. Therefore, the 2021 losses include those from this year.

10 This scenario represents not only a less severe recession, but relatively fast subsequent growth, as well. CBO assumes revenue grows faster after a recession—the deeper the losses, the greater the bounce-back. Thus, this scenario, which features fewer losses but the same bounce-back growth, involves surprisingly fast revenue growth starting in 2023.

11 We do not change OASI costs from the earlier CBO-based scenario. CBO's projected OASI costs over the next 10 years fell from January to September, presumably due to OASI beneficiaries dying of COVID-19. While we could further reduce OASI costs for this scenario, that would imply more COVID-19 deaths, which would be associated with a weaker economy, contradicting the goal of modeling upside risk.

Figure 2: Annual Shortfall from Baseline OASDI Non-Interest Revenue Under Modeled Scenarios



Note: CBO's accounting attributes most 2020 losses to 2021. Therefore in both CBO graphs, we smooth revenue losses in 2020 and 2021.

RESULTS

Table 1 presents reserve depletion dates under each scenario.

Table 1: Trust Fund Reserve Depletion Dates Under Modeled Scenarios

Scenario	Reserve depletion date		
	OASDI	OASI	DI
Baseline	2035	2034	2065
1.5x Great Recession	2028	2029	2023
Great Recession	2030	2030	2024
CBO's pandemic effects ¹²	2033	2033	2051
Two-thirds of CBO's pandemic effects	2034	2033	2054

If reserves in a trust fund were depleted, that portion of the program—OASI or DI—could only pay benefits using the revenue it receives each year, which would not be enough to pay all promised benefits. The share of benefits paid would depend on annual revenue and costs, which would be affected by economic conditions. The share of benefits that could be paid upon trust fund depletion in each scenario is shown in **Table 2**.

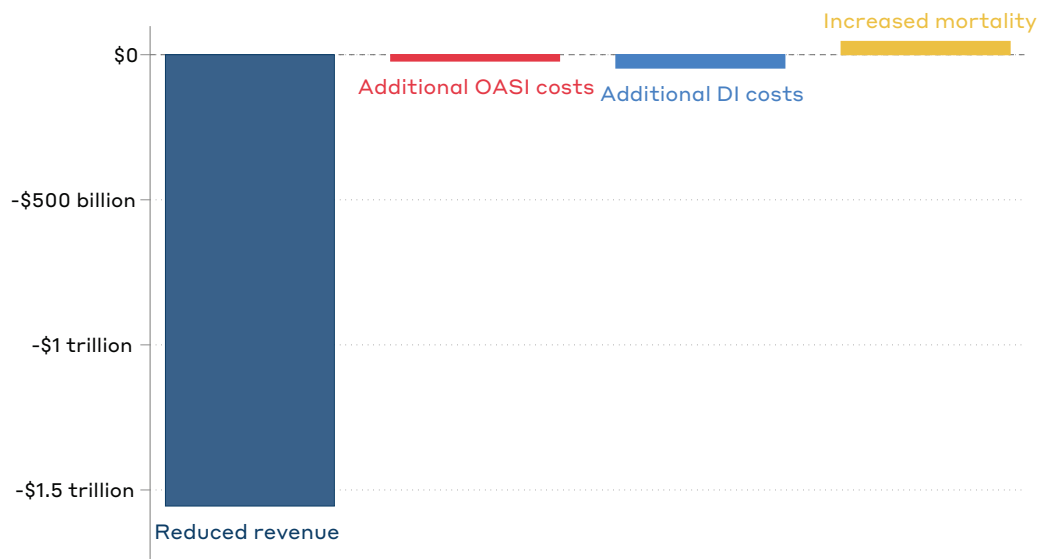
¹² This is different than CBO's estimates of trust fund depletion dates. See footnote 8.

Table 2: Share of Scheduled Benefits That Could Be Paid upon Reserve Depletion

Scenario	Share of scheduled benefits that could be paid	
	OASI	DI
Baseline	76%	92%
1.5x Great Recession	73%	75%
Great Recession	75%	87%
CBO's pandemic effects	75%	93%
Two-thirds of CBO's pandemic effects	78%	92%

What drives faster depletion of the trust funds: lower revenue or greater costs? **Figure 3** presents the cumulative effect of another Great Recession on the OASDI trust fund (compared to baseline) over the next 10 years, broken down by various factors.

Figure 3: Cumulative Effect of Another Great Recession on the OASDI Trust Fund (Compared to Baseline) Through 2029



Note: Reduced revenue includes the effects of lower payroll tax revenue, lower interest rates, and reduced taxation of benefits. Additional OASI costs reflect older workers claiming earlier than planned because of the recession. Additional DI costs reflect elevated DI claims from laid-off workers. Increased mortality reflects deaths of older Americans from COVID-19 and a consequent loss of OASIBeneficiaries.

As **Figure 3** shows, faster depletion of the OASDI trust fund is driven almost entirely by lower revenue. Indeed, the difference in trust fund depletion dates among our scenarios is mostly a function of how much and for how long payroll tax revenue is held down. Therefore, how soon the trust funds run out of reserves will depend on the depth and persistence of the recession’s toll on the labor market.

DISCUSSION

Several findings leap out from the above tables and graphs. First, every modeled scenario accelerates the depletion of both trust funds—and the combined fund. Second, the illustrative possibilities show a wide range of depletion dates. In some, OASI reserve depletion is accelerated by only one year; in others, it looms significantly closer. These two takeaways combine into one primary conclusion: The current recession will accelerate depletion of the trust funds, but it is unclear by how much, and there is a wide range of uncertain outcomes.

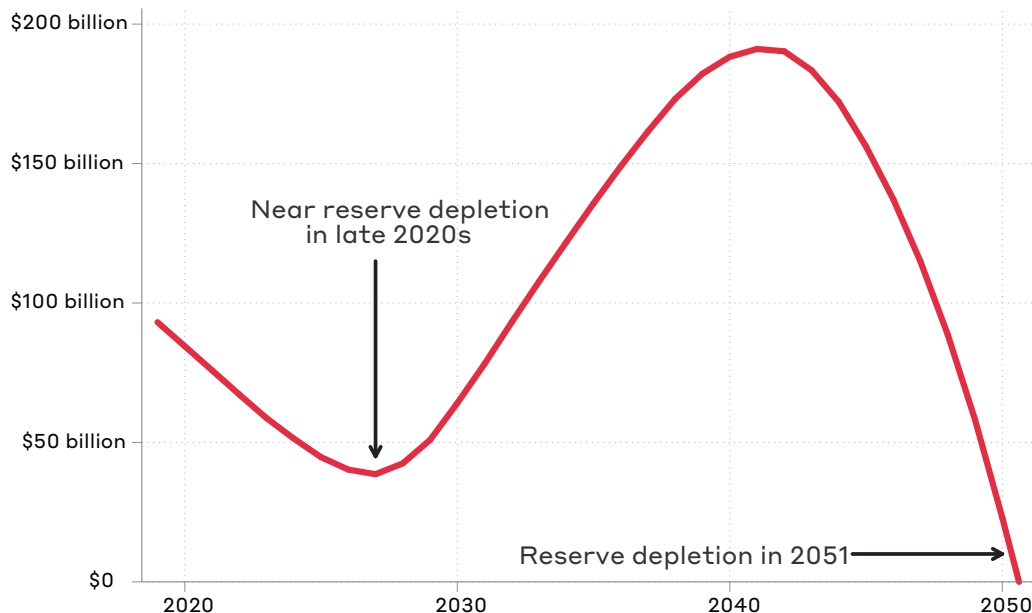
Another takeaway concerns the volatility of the DI trust fund. Even our mildest scenarios—which barely speed up depletion of OASI reserves—cause DI reserves to be depleted more than 10 years earlier than in the latest Trustees Report.

DI is significantly more sensitive than OASI to economic changes because its trust fund reserves are much smaller relative to both its revenue and costs. For instance, if OASI's 2020 revenue came in 15% below expectations, it would only drain 5% of trust fund reserves. By contrast, the same situation would cost DI a whopping 24% of trust fund reserves. Thus, DI can withstand far fewer years of replacing lost revenue with reserves from its trust fund. Similarly, OASI has enough trust fund reserves to cover almost three years of costs even if it received no revenue whatsoever, while the DI trust fund could only pay full benefits for a little over seven months if starved of revenue.

The depletion dates of the DI trust fund cluster into two widely spaced groups—either the 2020s in our more severe scenarios or the 2050s in our milder ones. This divergence comes from DI's combination of vulnerability to a severe crash—described above—and its long-term financial health. Before the coronavirus recession began, DI was in much better financial shape than OASI, with trust fund reserves projected to last 31 years longer. While a recession causes DI's trust fund reserves to dwindle, if they can stay above zero until the recovery kicks in, the program's solid long-term fundamentals lift its finances back to decades of solvency. This wrestling match between short-term vulnerability and long-term strength can be seen in the scenario that incorporates CBO's pandemic effects, shown in **Figure 4.**¹³

13 Before the pandemic, Social Security's Trustees believed DI would be solvent for decades. These projections were more optimistic than those of some other forecasters. For instance, the Trustees expected reserves in DI's trust fund to more than double over the next 10 years, but CBO expected them to decline by more than one-third. The widely spaced clusters of DI depletion dates—either in the next few years or not until the 2050s—that our scenarios produce depend on assuming healthy long-term finances for the program, as its Trustees have. If instead the program's long-term trajectory were closer to the pessimistic projections of CBO, then there would be no wrestling match between a short-term crisis and long-term health, but rather the further financial deterioration of an already imbalanced program. In that case, all four scenarios would probably deplete DI reserves in the 2020s.

Figure 4: DI Trust Fund Reserves Under CBO's Pandemic Effects



Note: CBO's accounting attributes most 2020 losses to 2021. Therefore in this graph, we smooth the trust fund balance in 2020 and 2021.

A COMING CRISIS

In each scenario we model, the reserves in both Social Security trust funds are depleted sooner than the Trustees projected earlier this year. It is important to note that while this brief focuses on reserve depletion dates, we want to avoid giving the impression that policymakers will not need to act until the crisis of trust fund depletion is imminent.¹⁴ The closer these dates draw—particularly for OASI—the more drastic and unpalatable any solution that maintains the traditional financing structure of the program will have to be: Tax increases will be sharper, benefit cuts will be more severe, and the cohorts of workers who bear these changes will have less time to plan their finances accordingly.

14 Other metrics, such as the 75-year actuarial balance, may provide better summaries of the program's financial health and are less influenced by short-run economic swings. The most recent Trustees Report projected a substantial 75-year actuarial deficit for OASI. DI also faces a 75-year actuarial deficit, albeit much smaller than OASI's. See "The 2020 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds," Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Trust Funds, 2020. Available at: <https://www.ssa.gov/oact/tr/2020/>.

Indeed, if policymakers fail to address Social Security's financial imbalance soon, they will be left with only drastic solutions or financing a portion of promised retirement benefits through general revenues—turning Social Security from a self-financing insurance program into a perennial drain on resources that are sorely needed for other priorities. Ultimately, the date that matters is not reserve depletion in 2028 or 2030 or 2034, but *today*—and whether political leaders will step forward with the wisdom and courage to put Social Security on a sustainable path for generations to come.

APPENDIX A: METHODOLOGY

A recession affects Social Security’s non-interest revenue, interest revenue, OASI costs, and DI costs. This particular crisis will also tragically end the lives of many older Americans, lowering the number of OASI beneficiaries. In the sections below, we detail how we estimate the effect of a second Great Recession on the trust funds as well as how we model CBO’s pandemic effects. Other scenarios based on these—such as a more severe Great Recession or a milder version of CBO’s pandemic effects—follow intuitively from the methods described below.

Revenue

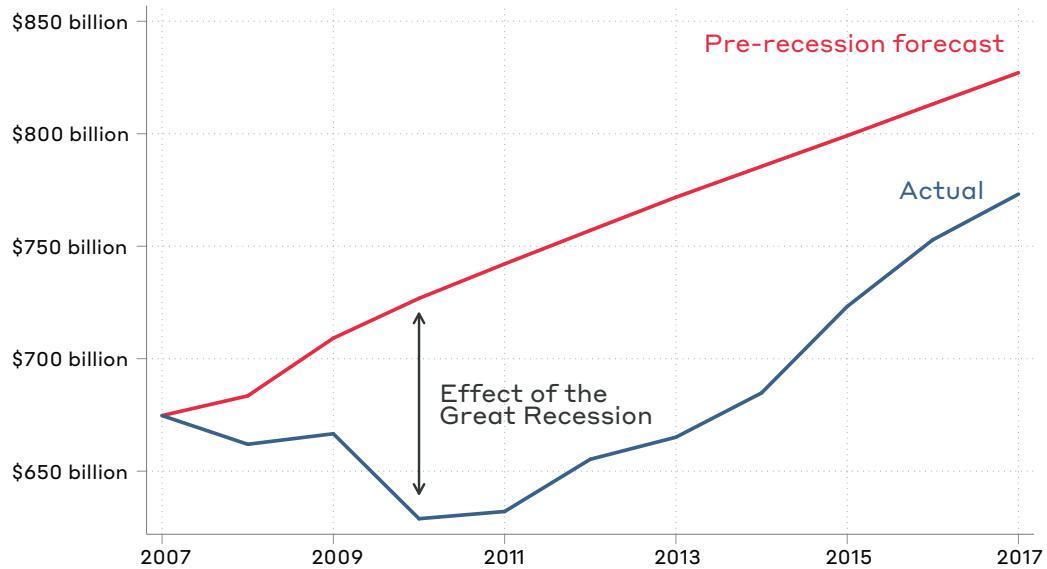
Another Great Recession

We separately estimate effects on Social Security’s interest and non-interest revenue.¹⁵ In both cases, we estimate the effect of the Great Recession using the 2008 Trustees Report. Since this report was the last one published before the economy had clearly entered a recession, we use its projections as a counterfactual to estimate how Social Security’s finances would have evolved if the Great Recession had never occurred. Specifically, we take the real non-interest revenue projected from 2008 through 2017, compare that forecast to the real non-interest revenue the trust funds actually earned over that time period, and attribute the difference to the effect of the Great Recession, as shown in **Appendix Figure 1**.¹⁶ To model the effect of another Great Recession hitting Social Security today, we assume the same proportionate loss of non-interest revenue over each of the next 10 years.

15 Non-interest revenue comes from payroll taxes and taxation of Social Security retirement benefits. See **Appendix B** for a discussion of why it is important to model interest and non-interest revenue separately.

16 During and after the Great Recession, revenue came in lower than projected for two reasons—real economic loss and lower-than-expected inflation. All estimates in this brief purge the effects of unexpectedly low inflation, meaning that we only estimate real effects on revenue.

Appendix Figure 1: Real OASDI Non-Interest Revenue



Note: Y-axis does not start at \$0. Pre-recession forecast is from the 2008 Trustees Report. Revenues are constant 2007 dollars that have been adjusted for lower-than-expected inflation in the aftermath of the Great Recession. Source: Annual reports of the Social Security Board of Trustees.

Likewise, we calculate the effective real interest rates that the Trustees in 2008 expected the trust funds to earn from 2008 through 2017 and compare those rates to the effective rates the trust funds actually received over that time period.¹⁷ We then take the effective interest rates that the Trustees in April 2020 expected the trust funds to earn from 2020 through 2029 and reduce those rates accordingly.¹⁸ We use the effective rates produced by this calculation in every scenario—for three reasons. First, in the aftermath of the Great Recession, short-term interest rates were cut to near zero and remained there for years. Since nominal interest rates cannot fall below zero, our scenario worse than the Great Recession cannot further lower rates. Second, the Federal Reserve has announced plans to keep rates near zero for the next few years, and we expect them to remain accommodative even if this recession is shallow and short-lived. Third, the effective interest rates earned by the trust funds lag prevailing rates by several years (see

17 Effective interest rates fell for two reasons—a fall in real interest rates and slower inflation. We purge changes in inflation to estimate effects on real rates.

18 This circuitous procedure—as opposed to simply comparing forecasted and actual prevailing interest rates during and after the Great Recession—is necessary because the interest rate earned by the trust funds at any given time does not equal contemporaneous interest rates in the broader economy. The trust funds hold U.S. Treasury securities with various origination dates and maturities, and so each year only a portion of old securities mature and are replaced by new ones at prevailing interest rates. Thus, the average interest rate a trust fund earns is a function of many past interest rates, as old securities slowly roll over.

Appendix B). Thus, even if a quick economic rebound caused the Federal Reserve to raise rates in the early 2020s, it would take years for that change to lift the effective rates earned by the trust funds.

These methods—and all simulations based on the Great Recession—rely on the simplifying assumption that any difference between the pre-Great-Recession forecast and subsequent results was caused entirely by the Great Recession itself. In other words, we assume all other economic and demographic developments, changes in methodology, and forecasting errors sum to zero.¹⁹ It is important to note that this scenario does not assume the coronavirus recession will exactly mirror the Great Recession in each year: As long as the accumulated trust fund losses are the same by a given point of time, the distribution of those losses over the preceding years makes no difference to our results.

We use the method outlined above to project non-interest revenue through 2029.²⁰ Starting in 2030, we assume non-interest revenue returns to its long-run growth path—growing at the average rate the Trustees project from 2020-2050 in their most recent report—and the effective interest rates earned by the trust funds also gradually revert to long-run levels.

Scenarios Using CBO's Pandemic Effects

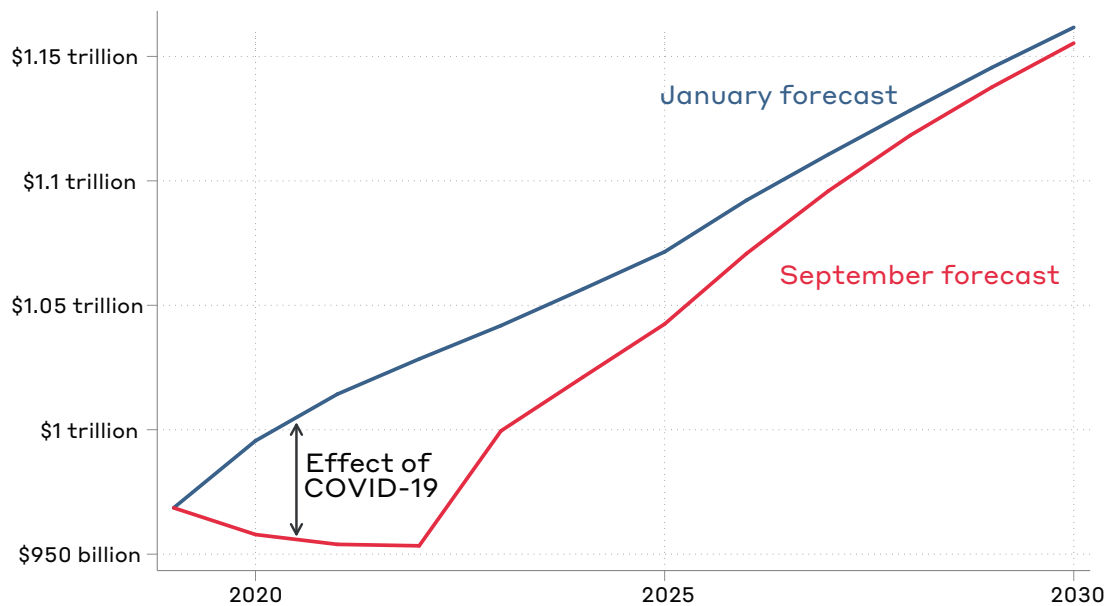
CBO released a forecast of each trust fund's non-interest revenue and cost over the medium term both in January (before accounting for any effects from the pandemic) and again in September (including the pandemic's effects). We compare CBO's projected real non-interest revenue and cost from the January and September projections and attribute the difference to CBO's estimate of the pandemic's effect.²¹ For example, **Appendix Figure 2** visualizes how we calculate CBO's estimated effect of the pandemic on OASDI non-interest revenue; effects on the non-interest revenue and costs of each individual trust fund are calculated analogously.

19 There are clear discrepancies between projections from the 2008 Trustees Report and subsequent outcomes—e.g., older Americans lived longer than expected and thus raised OASI costs. Our modeling, however, only utilizes forecasting misses in non-interest revenue, interest rates earned by the trust funds, and OASI and DI claims. Unless unexpected developments unrelated to the economic downturn affected these variables, they would not be incorporated into our estimates of the Great Recession's effects.

20 We stop using the Great Recession and its aftermath as a proxy after that point because the effects of a recession on the annual changes in variables (as opposed to their levels) have presumably ended, or at least have been swamped by subsequent developments, after 10 years.

21 CBO's forecast of Social Security revenue and costs changed for two reasons—real changes and lower expected inflation. We purge the effect of inflation revisions to estimate real changes.

Appendix Figure 2: CBO’s Forecast of Real OASDI Non-Interest Revenue



Note: Y-axis does not start at \$0. Constant 2019 dollars that have been adjusted for lower inflation expectations since the pandemic began. CBO attributes most 2020 losses to 2021, so in this graph we smooth the September revenue forecast for 2020 and 2021.

Source: Congressional Budget Office.

We calculate annual effects of the pandemic on non-interest revenue and reduce the latest Trustees’ projection of annual non-interest revenue accordingly. CBO only projects trust fund revenue through 2030. After 2030, we grow non-interest revenues for each trust fund at their long-term growth rates.

Cost

In scenarios using CBO’s pandemic effects, we use a procedure identical to the one described above, except for program costs instead of non-interest revenue. This method captures CBO’s expectations about OASI and DI claims as well as deaths from COVID-19.

Below we describe our methodology for modeling another Great Recession.

Additional OASI Claims

To estimate the effect of the Great Recession on OASI costs, we once again turn to the 2008 Trustees Report. We begin by taking the difference between the annual number of OASI beneficiaries that the 2008 Trustees Report forecast and the actual number of beneficiaries during the ensuing years.²² We then scale up this difference to account for the fact that today

22 Note that we use the difference between projected and actual *beneficiaries*, not projected

a greater share of Americans aged 62 or older are eligible to claim OASI but have not, leaving a proportionately larger pool of Americans who could claim after losing a job.

A spike in OASI beneficiaries raises program costs in the short term as more people receive benefits than were expected. However, almost all of these new claimants would have claimed retirement benefits eventually; they are merely doing so earlier than they otherwise would have. Annual Social Security benefits are adjusted based on claiming age with the intent that no matter when somebody claims, their expected lifetime total benefits will be roughly the same. Therefore, we modestly lower OASI costs in subsequent years to keep total OASI costs over the rest of current beneficiaries' lives unchanged.

In both scenarios based on the Great Recession, however, OASI trust fund reserves are depleted before the many years of slightly reduced costs have had time to cancel out the early years of increased costs. The net result is a slight drain on the OASI trust fund from additional claims caused by the COVID-19 recession.

Additional DI Claims

DI rolls tend to swell during recessions. We assume DI costs will exceed projections in the latest Trustees Report by the same relative amount that the number of DI beneficiaries exceeded pre-recession projections during and after the Great Recession.

and actual costs—for both OASI and DI. This is because OASI and DI costs changed during and after the Great Recession because there were more beneficiaries than the Trustees projected and because cost-of-living adjustments differed from those forecast by the Trustees. We do not want our scenarios to include the Great Recession's effect on COLAs for two reasons. First, the 2008 COLA was much larger than the Trustees had projected, and we do not expect that development to be repeated. Additionally, a change in COLAs would reflect a change in inflation, which would reduce nominal program revenue, so the effect of a world with lower COLAs on Social Security's finances is unclear. Staying consistent with the rest of our model, we estimate real effects.

Also note that this difference between actual and projected beneficiaries includes two effects: a difference in claims (more claims means more beneficiaries) and a difference in mortality (fewer beneficiaries dying each year means more beneficiaries). Indeed, the mortality of Americans aged 65 or older was lower from 2008 through 2017 than the Trustees had projected, which biases our estimate of the Great Recession's effect on OASI claims upward. Conversely, mortality among working-age Americans from 2008-17 was higher than the Trustees had projected, which biases our estimated effect of the Great Recession on DI claims downward. Both biases, however, are likely very small.

Additional Deaths Due to COVID-19

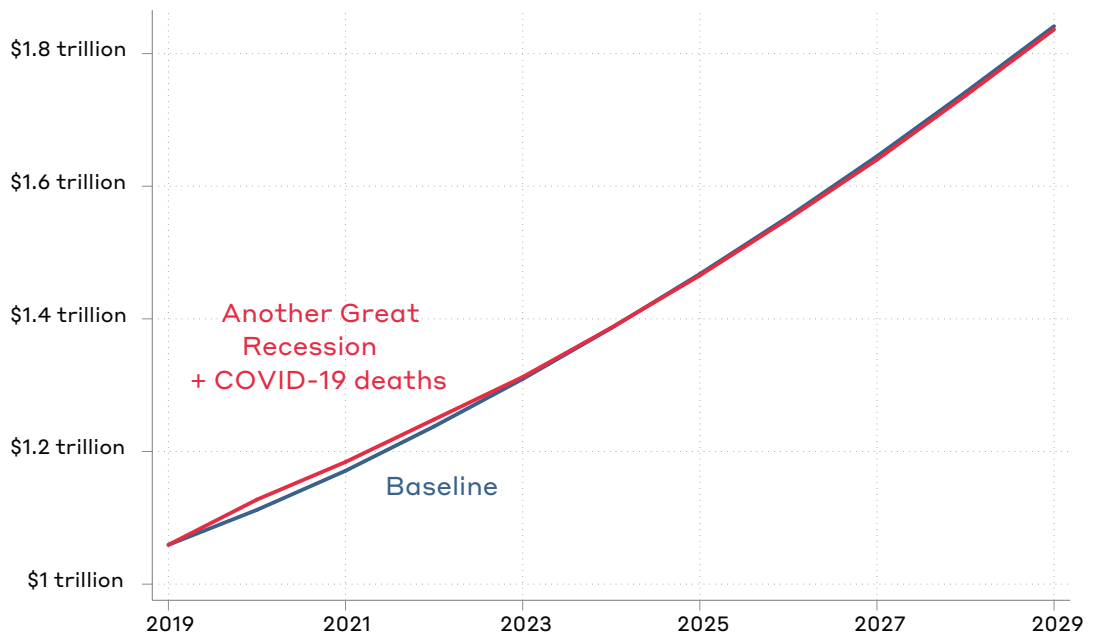
We assume the virus will kill approximately 362,000 older Americans.²³ Even in the absence of COVID-19, many of these older people would have died from other causes over the next several years. Therefore, we adjust our estimated total deaths of OASI beneficiaries to yield the number of excess deaths in each year of our simulations. These forecasts are full of assumptions and uncertainties, but those limitations probably do not materially affect our results: Trust fund depletion dates shown for each scenario would be the same if COVID-19 caused no reduction in OASI costs or if its cost reduction were 75% greater than what we estimate.

Additional OASI claims raise costs in the near term while deaths from COVID-19 lower them. In our model of a second Great Recession scenario, the latter effect dominates so that between today and the year when trust fund reserves are depleted, OASI costs fall on net. In our model of a recession 50% worse than the Great Recession, however, there are so many additional OASI claims that this effect dominates and near-term costs rise on net.

Appendix Figure 3 shows how the cost changes described above, when added together, would affect OASDI costs over the next 10 years if we were to have another Great Recession paired with the elevated mortality from COVID-19. As the figure shows, this scenario would barely raise costs. Total OASDI costs over 10 years would rise by \$23 billion, or 0.1%.

23 We derive this number by assuming COVID-19 will kill 394,693 Americans, the midpoint (when this brief was written) of the Institute of Health Metrics and Evaluation's forecasted deaths by February 1, 2021. We then use data on the share of Americans killed so far by age to estimate how many of these deaths will be people eligible to receive OASI benefits. The fact we use a forecast that ends on February 1, 2021, means we almost certainly underestimate the number of older Americans who will die from COVID-19, which would cause us to underestimate the reduction in OASI cost. On the other hand, it is an unfortunate reality, at least anecdotally, that COVID-19 seems more likely to kill people with lower incomes who therefore have lower potential OASI benefits. Meanwhile, survivors of deceased spouses can often earn more in survivors benefits than in retirement benefits based on their own work record, so their OASI benefits often increase after their spouse dies. These two nuances would cause us to overestimate OASI cost reductions from higher mortality. These upward and downward biases should somewhat offset, but it is impossible to know their relative sizes. More importantly, as explained in the text, our results are robust to a wide range of mortality effects. For mortality forecast, see Institute of Health Metrics and Evaluation, "COVID-19 Projections," n.d. Available at: <https://covid19.healthdata.org/united-states-of-america>. For deaths by age, see Centers for Disease Control and Prevention, "Weekly Updates by Select Demographic and Geographic Characteristics: Provisional Death Counts for Coronavirus Disease 2019 (COVID-19)," n.d. Available at: https://www.cdc.gov/nchs/nvss/vsrr/covid_weekly/index.htm.

Appendix Figure 3: Annual OASDI Costs Through 2029



Note: Y-axis does not start at \$0. Baseline estimate is from 2020 Trustees Report. Source: Annual reports of the Social Security Board of Trustees.

Caveats

Our results do not incorporate any change in inflation from the current recession, which has so far caused disinflation. The effect of inflation on Social Security’s finances is complicated—faster inflation raises wages and thus payroll tax revenue, but it also raises cost-of-living adjustments for current beneficiaries and benefits owed to future ones. Thus, this recession’s effect on inflation may impact Social Security’s finances in ways not modeled here.

Finally, Social Security’s rules were not designed for a collapse in payrolls, which creates a potential bug in the program’s benefit formula this year. Specifically, OASI beneficiaries’ retirement benefits depend on the average wage index (AWI) in the year they turn 60, while DI recipients’ benefits depend on the AWI in the year they become disabled. The AWI could plummet this year, which could cause a permanent 14% reduction in retirement benefits for a typical worker turning 60 in 2020, if the rules are left unchanged.^{viii} All of our scenarios, however, assume Congress legislates an ad hoc fix to this year’s quirky application of the AWI, resulting in no material change in costs. If Congress were to let the AWI fall as scheduled, our results might be different.

APPENDIX B: RELATIONSHIP OF THIS ISSUE BRIEF TO BPC'S PRIOR WORK ON THE PANDEMIC AND THE TRUST FUNDS

This issue brief extends and refines the analysis we presented in a preliminary blog post in April 2020 that estimated how various illustrative possibilities for the current recession would affect the depletion date of Social Security's trust funds.^{ix} Several differences exist between this brief and the earlier blog.

The primary difference is that we model mostly new scenarios. In the initial post, we modeled a recession *twice* as severe as the Great Recession; a second Great Recession; and a repeat of the two or three worst years of the Great Recession, followed by a recovery that was twice as fast. Since spring, a recession twice as bad as the Great Recession has become increasingly unlikely, and so we dialed our worst-case scenario back to a recession that is 50% worse than the Great Recession. CBO also recently published its estimates of trust fund finances for the next 10 years, allowing us to model their implied pandemic effects and to scale down their estimates to develop our upside-risk scenario.

Another key difference from the earlier analysis is that we now model interest and non-interest revenue separately—for two reasons. First, the difference between the trust funds' projected and actual interest revenue depends on the difference between projected and actual interest rates. Because interest rates were far lower at the start of the coronavirus recession than the Great Recession, they have less room to fall below the Trustees' projected rates, so interest revenue must fall by a smaller proportion than it did starting in 2008. Our earlier omission of separately modeled interest revenue therefore overestimated how much the trust funds' interest revenue could fall in the next few years. This difference alone causes our scenario of a second Great Recession to deplete OASI and OASDI reserves one year later than in the blog.

The second reason to model interest and non-interest revenue separately is that they respond to the economy on different timelines. Non-interest revenue depends on contemporaneous payroll and benefit taxes and so reflects immediate economic conditions. In contrast, because the trust funds hold securities purchased in several past years with several different maturities, only a portion of the portfolio matures each year and is replaced by new securities with new interest rates. Thus, the average interest rate a trust fund earns is different from the prevailing interest rate at any one time, and changes in interest revenue lag the economy by many years as old bonds slowly roll over. This point is not material for our results, but it does show why the change made in this brief is an improvement over the preliminary estimates.

We have also changed how we model mortality from COVID-19 and its attendant effect on OASI costs. First, the virus has marched on unabated in ways that would have shocked us in April, so we use a dramatically higher estimate of its death toll. Second, we now account for the fact that many older Americans who die of COVID-19 would have died from other causes over the next several years. We thus estimate the effect of COVID-19 mortality on OASI cost using not total deaths from the disease, but excess deaths in each upcoming year. Increasing the disease's estimated death toll further lowers OASI cost, while swapping our input from total deaths to excess deaths leads to less cost reduction. The two changes largely offset one another and so affect the rigor of our methodology but do not alter the years when the trust funds are depleted in each scenario.

Another change is that we now calculate a second Great Recession's effect on OASI and DI costs by comparing the difference between projected and actual *beneficiaries* during the Great Recession and its aftermath. This contrasts with the earlier blog's method of using the difference in program *costs*. Costs rose more than expected immediately after the Great Recession in part because of an unexpectedly high number of beneficiaries but also in part because of unexpectedly high cost-of-living adjustments that we do not expect to be repeated. We thus consider the increase in claims a better measure of the recession's effects. The result is that OASI and DI costs rise by less in this analysis than in the preliminary blog.

Finally, in our earlier work we assumed the temporary \$600 supplement to unemployment insurance benefits would make UI a more attractive source of income than Social Security retirement or disability benefits for workers who had lost jobs. We therefore scaled down our estimates of additional OASI and DI claims in 2020. Now that those benefits have expired, we no longer reduce the number of additional OASI and DI claims we expect this year.

Endnotes

- i Charles P. Blahous III and Robert D. Reischauer, “A Letter to the Public from the Former Trustees of Social Security and Medicare,” Bipartisan Policy Center, 2019. Available at: <https://bipartisanpolicy.org/wp-content/uploads/2019/07/A-Letter-to-the-Public-from-the-Former-Public-Trustees.pdf>.
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- vi “The 2008 Annual Report of the Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Trust Funds,” Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Trust Funds, 2008. Available at: <https://www.ssa.gov/OACT/TR/TR08/tr08.pdf>.
- vii “The 2012 Annual Report of the Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Trust Funds,” Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Trust Funds, 2012. Available at: <https://www.ssa.gov/OACT/TR/2012/tr2012.pdf>.
- viii Andrew G. Biggs, “How the Coronavirus Could Permanently Cut Near-Retirees’ Social Security Benefits,” Wharton Pension Research Council Working Paper, April 2020. Available at: https://repository.upenn.edu/cgi/viewcontent.cgi?article=1677&context=prc_papers.
- ix Nicko Gladstone and Shai Akabas, “COVID-19 May Deplete Social Security Trust Funds This Decade,” Bipartisan Policy Center, 2020. Available at: <https://bipartisanpolicy.org/blog/covid-19-may-deplete-social-security-trust-funds-this-decade/>.



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