# PENN WHARTON
## UNIVERSITY of PENNSYLVANIA
# Budget Model

**Summary:** The level of Social Security benefit payments that are assumed to be paid after the Trust Fund depletion date play a significant role in projecting how potential Social Security reforms will impact the long-term economy.

**Key Points**

- The Social Security Trust Fund is projected to be depleted between 2032 - 2035, depending on various assumptions.

- Upon Trust Fund depletion, Social Security's "payable" benefits, based on annual payroll taxes collected in each year, will equal between 70 - 75 percent of the "scheduled" benefits, based on the statutory formulas currently used to determine benefit levels.

- Since Social Security's financial projections typically extend beyond the depletion date, a modeling assumption must be made for benefit payments ("payable" or "scheduled") after Trust Fund depletion when projecting the impact of potential Social Security reforms on the economy. This decision plays a major role in projections of different potential reforms on the economy.

# Social Security Projections: Competing Baselines

**Introduction**

Using different projection methods, the Social Security's Trustees, the Congressional Budget Office (CBO) and PWBM project that the Trust Fund will deplete between 2032 and 2035. Upon depletion, Social Security will be able to pay ("payable benefits") around 70 - 75 percent of "scheduled benefits". Scheduled benefits are the benefit amounts that would be paid under the current statutory formula rules if the Trust Fund did not deplete. In contrast, payable benefits correspond to the actual amount that can be afforded each year after the Trust Fund depletes, based on the payroll tax revenue collected each year.

Prior to Trust Fund depletion, scheduled and payable benefits are, of course, the same. After Trust Fund depletion, payable benefits fall to between 25 and 30 percent below scheduled benefits, and this difference grows over time.

Social Security's finances are typically analyzed over a period longer than the usual 10-year budget window, including 75 years or even longer. Most of the 75-year projection period includes years after Trust Fund

depletion. So, a decision must be made as to whether benefits in years after Trust Fund depletion are calculated as "scheduled" or as "payable."

The Social Security's Trustees present various calculations using both payable and scheduled benefits. For example, program costs are shown as both payable and scheduled. The 75-year actuarial balance (present-value shortfall) is calculated assuming that benefits will be paid according to their scheduled levels.

In their 2019 long-term budget outlook, CBO describes (Table 1-2, page 19) their assumptions about Social Security benefits in their "extended baseline" projections as "as scheduled under current law." They footnote "current law" with (emphasis added): "The payment of full benefits as calculated under current law is assumed to continue regardless of the amounts available in the program's trust funds." Put differently, despite their reference to "current law,"[1] CBO does their long-term analysis of Social Security assuming scheduled benefits. Their corresponding macroeconomic projections, therefore, assume that differences between scheduled and payable benefits are financed using additional debt once the Trust Fund is depleted. This assumption reflects a standard scoring convention where debt is assumed to be the residual claimant when a specific policy to avoid additional debt is not specified.

**Penn Wharton Budget Model Typically Focuses on the Scheduled Benefits**

PWBM does not take a position on whether scheduled or payable benefits are more "realistic" upon Trust Fund depletion, as that decision inherently involves a judgement about the course of future political action. In particular, PWBM does not try to predict whether Congress will find another specific revenue source to fund scheduled benefits, or whether Congress will allow benefits to be reduced to their payable levels.

However, like the CBO, PWBM typically assumes scheduled benefits in our Social Security projections, including in our recent analysis of the Social Security 2100 Act. This assumption allows our projections to be more directly compared with CBO projections. Moreover, our reading of the empirical evidence is that the scheduled-benefits baseline appears to be more consistent with expectations of U.S. households, as indicated by their retirement savings behavior. We estimate that many non-poor U.S. households would likely increase their retirement savings if they believe that Social Security benefits would be reduced in the future to their payable levels.[2] However, measuring retirement income adequacy is currently an active area of research at PWBM, and so our reading of the empirical evidence could change over time.

**Conventional Estimates**

Table 1 presents the standard measure of Social Security shortfalls (the Long Range OASDI Actuarial Present-Value Balance Ratio) under three different scenarios: scheduled Social Security benefits; payable Social Security benefits and the Social Security 2100 Act (introduced by Congressman John Larson) that we previously analyzed. All three scenarios shown in Table 1 are "conventional," in that they do not include the effects of these policies on the future economy.

## Table 1: Conventional Estimates of OASDI Finances Under Alternative Policy Scenarios (2019–2093)

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| Policy Scenario | Long Range OASDI Actuarial Present-Value Balance Ratio[3] |
|---|---|
| Scheduled Benefits | -3.96 |
| Payable Benefits | -0.35 |
| Social Security 2100 Act | 0.04 |

Note: The Ratio shows shortfalls as a percent of the present value of future taxable payroll over the next 75 years. However, by convention, the actuarial balance adds one-year of costs at the end of the projection period as an assumed "buffer stock." Thus, current-law baseline shows a small negative balance. The conventional score does not include macro-economy feedback effects.

Under scheduled benefits, PWBM projects that Social Security faces a financial imbalance equal to 3.96 percent of Social Security taxable payroll over the next 75 years. Under payable benefits, benefits are assumed to be reduced to their payable levels, generating an imbalance near zero, except for an accounting convention detailed in the note under Table 1 that requires a small buffer stock of savings. PWBM projects that the Social Security 2100 Act eliminates the entire imbalance on a conventional basis.

**Incorporating Dynamics: Scheduled Benefits**

Figure 1 shows that the assumed policy baseline, however, plays a significant role in projecting the effect that a policy like the Social Security 2100 Act has on the economy.
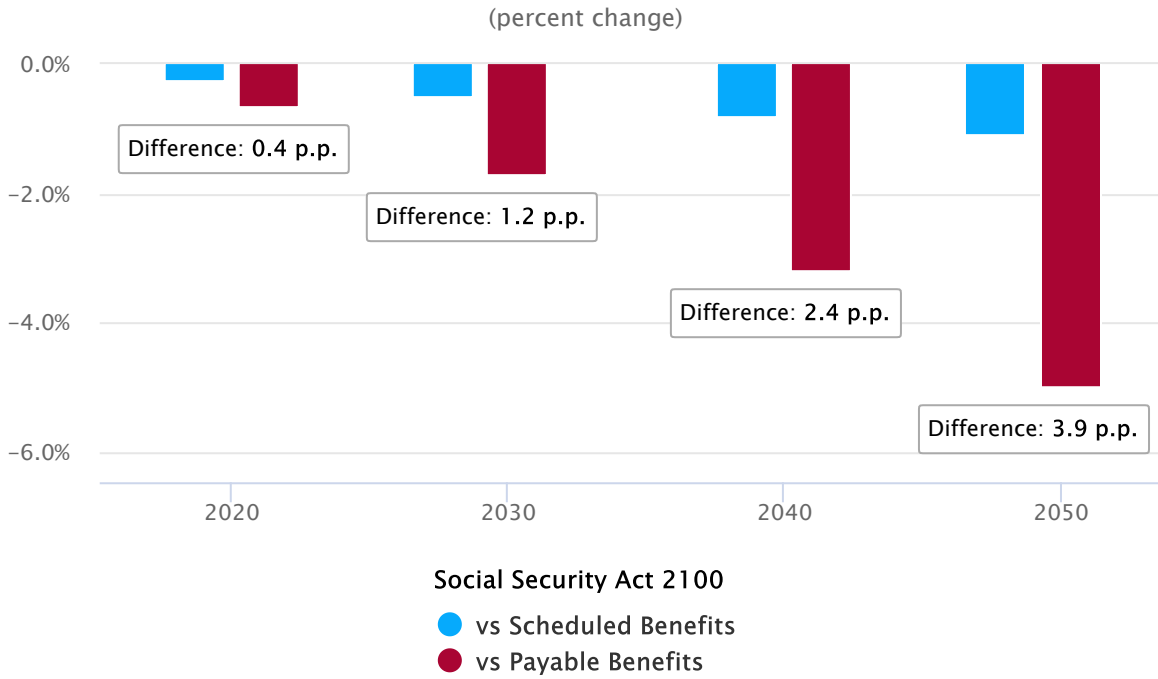
Figure 1: Social Security 2100 Act Effects on Key Macroeconomic Variables Relative to Scheduled Benefits and Payable Benefits

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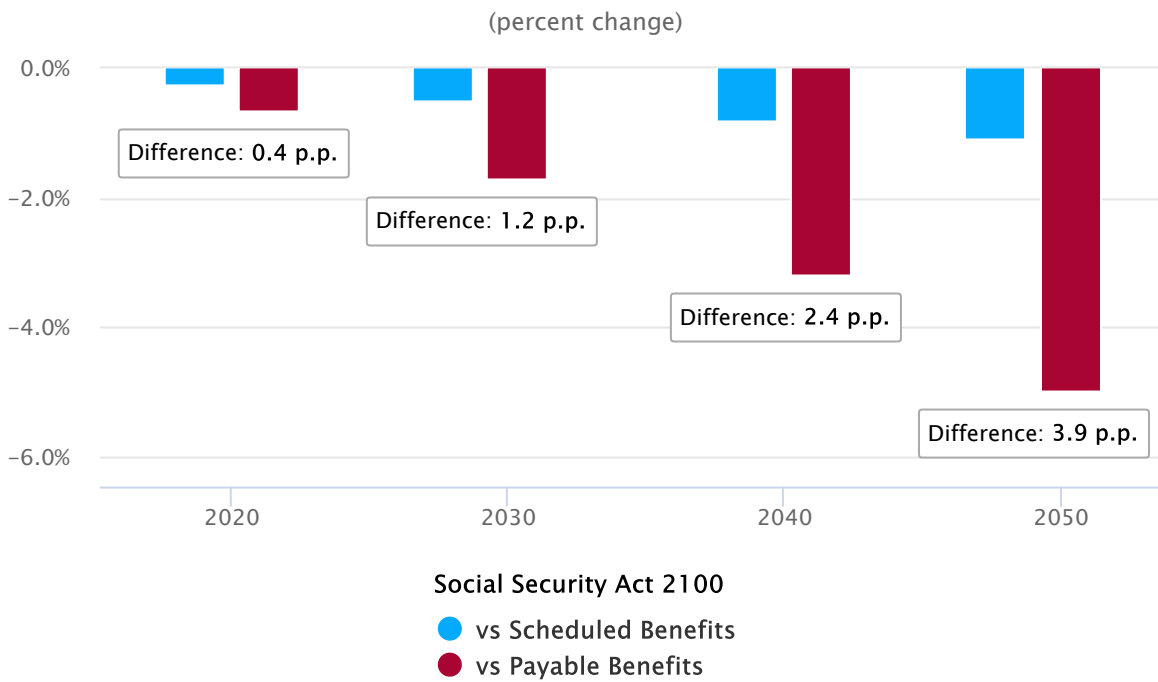**Macroeconomic Variables:**
- ◉ Gross Domestic Product (GDP)
- ○ Labor Income
- ○ Hours Worked
- ○ Capital Services

## Gross Domestic Product (GDP)

(percent change)

Difference: 0.4 p.p.

Difference: 1.2 p.p.

Difference: 2.4 p.p.

Difference: 3.9 p.p.

0.0%

-2.0%

-4.0%

-6.0%

2020          2030          2040          2050

Social Security Act 2100
🔵 vs Scheduled Benefits
🔴 vs Payable Benefits

## Labor Income

(percent change)

Difference: 0.4 p.p.

Difference: 1.2 p.p.

Difference: 2.4 p.p.

Difference: 3.9 p.p.

0.0%

-2.0%

-4.0%

-6.0%

2020          2030          2040          2050

Social Security Act 2100
🔵 vs Scheduled Benefits
🔴 vs Payable Benefits

## Hours Worked

(percent change)



Social Security Act 2100
- vs Scheduled Benefits
- vs Payable Benefits
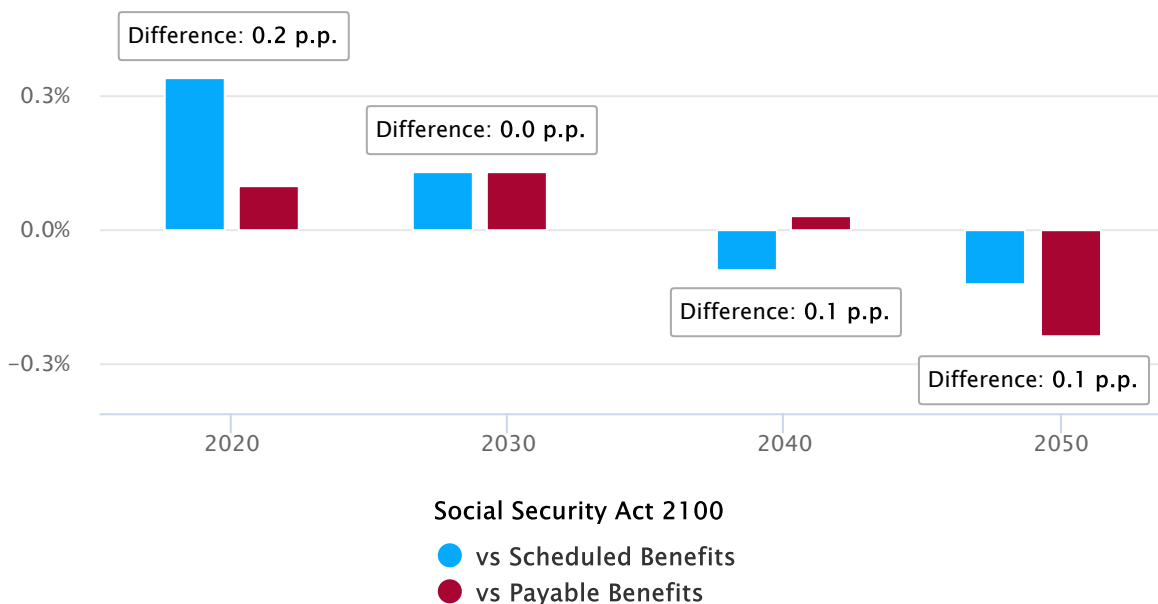
## Capital Services

(percent change)
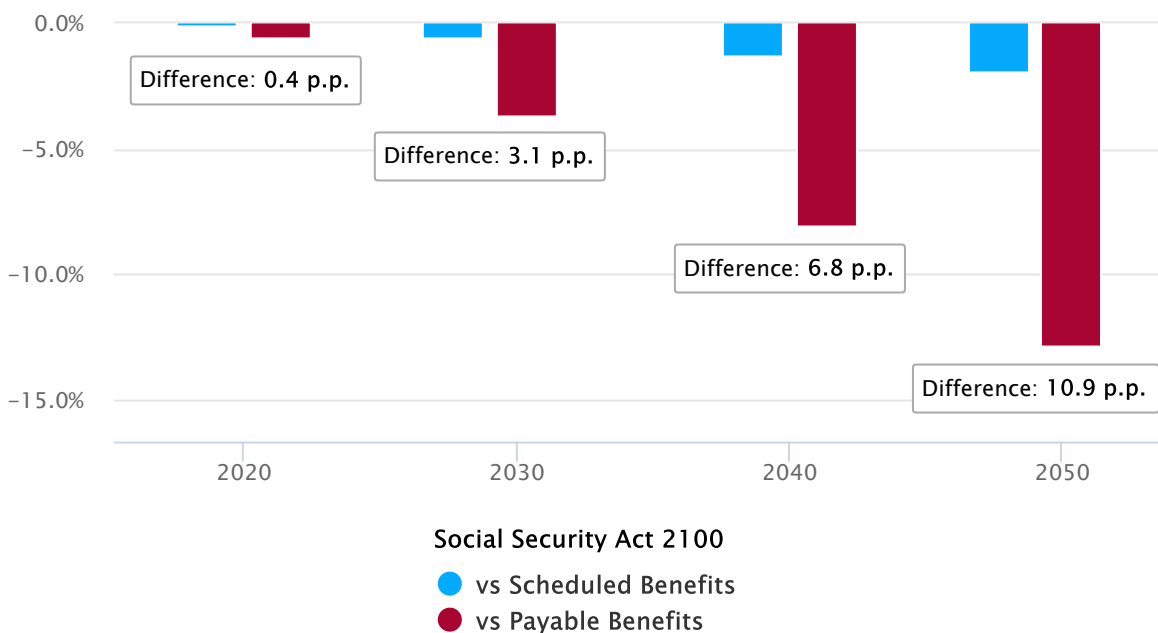


Social Security Act 2100
- vs Scheduled Benefits
- vs Payable Benefits

Note: Consistent with our previous dynamic analysis and the empirical evidence, the dynamic projections above assume that the U.S. economy is 40 percent open and 60 percent closed. Specifically, 40 percent of new government debt is purchased by foreigners. Due to rounding, numbers presented may not add up to the totals provided and percentages may not precisely reflect the absolute figures. On the figure above, "p.p." refers to percentage points.

Relative to the scheduled-benefits baseline, Figure 1 (GDP) shows that PWBM projects that this Act will reduce Gross Domestic Product (GDP) between 0.2 and 1.1 percent over time. The difference between scheduled and payable benefits is assumed to be paid out of the unified budget surplus ("general revenue"), thereby leading to more government debt. Higher government debt reduces capital formation and GDP. In contrast, labor

supply ("Hours Worked") plays very little role in the overall GDP effects, in part, due to the tie between payroll taxes paid (contributions made) and future benefits received.[4]

As previously discussed in our dynamic and distributional analysis, relative to scheduled benefits, the Act increases benefits for retirees, including higher-income earners, which must be financed by younger workers. These inter-generational transfers behave much like government debt. In effect, the Act eliminates Social Security's imbalances on a conventional basis, which would have otherwise have produced more *explicit* government debt in the federal budget under the scheduled-benefits baseline. However, the Act creates even more *implicit* debt in the form of inter-generational transfers financed on a pay-as-you-go basis. This implicit debt is not captured in traditional government debt accounting, which focuses on cash flows.

**Incorporating Dynamics: Payable Benefits**

In contrast, relative to the payable-benefits baseline, Figure 1 (GDP) shows that PWBM projects that the Social Security 2100 Act will reduce GDP by 0.6 and 5.0 percent over time, that is, by more than the comparison against scheduled benefits. The reason for the difference is that the payable-benefits baseline already assumes that Social Security benefits will be reduced to their payable levels upon Trust Fund depletion, thereby generating fewer inter-generational transfers over time relative to the scheduled-benefits baseline. Non-poor households alive today must, therefore, save more for their own retirement and rely less on transfers from future generations.

## Table 2: Comparing the Effects on Key Macroeconomic Variables of Payable Benefits versus Scheduled Benefits

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| Year | GDP (% difference) | Labor Income (% difference) | Hours Worked (% difference) | Capital Services (% difference) |
|------|--------------------|-----------------------------|-----------------------------|---------------------------------|
| 2020 | 0.4 | 0.4 | 0.2 | 0.4 |
| 2029 | 1.2 | 1.2 | 0.0 | 3.1 |
| 2040 | 2.4 | 2.4 | -0.1 | 6.8 |
| 2049 | 3.9 | 3.9 | 0.1 | 10.9 |

Note: Consistent with our previous dynamic analysis and the empirical evidence, the dynamic projections above assume that the U.S. economy is 40 percent open and 60 percent closed. Specifically, 40 percent of new government debt is purchased by foreigners. "% difference" refers to the level of the macroeconomic variable under payable benefits minus the level under scheduled benefits, divided by the level under scheduled benefits.

Indeed, even without the Act, Table 2 shows that the payable-benefits baseline produces greater capital formation and GDP relative to the scheduled-benefits baseline, due to the assumed reduction in benefits from their scheduled levels to their payable levels. Relative to the payable-benefits baseline, the 2100 Social Security Act, therefore, in effect, restores the larger amount of inter-generational transfers found in the scheduled-benefits baseline plus some more, leading to less capital formation and GDP against both baselines.

1. In budgetary parlance, scheduled benefits are commonly referred to as being consistent with "current policy baseline" while payable benefits are consistent with "current law."  ↩

2. The PWBM model contains very rich heterogeneity in households, including lower-income households who have very little savings. These "borrowing constrained" households have high marginal propensities to consume and would not save more in response to a change in future Social Security benefits. PWBM's model explicitly incorporates household optimization decisions, including borrowing-constrained households holding little wealth. Explicit modeling is important for capturing how different policy designs interact with borrowing constrained households.  ↩

3. Actuarial balance as a percent of current-law taxable payroll.  ↩

4. Labor Income (as opposed to Hours Worked) falls with GDP due to changes in wages associated with capital shallowing.  ↩