EXCELLENCE IN SOCIAL SECURITY

21st International Conference of Social Security
Actuaries, Statisticians and Investment Specialists
ACT2023
Mexico City, Mexico, 5–7 December 2023

Illustrating Uncertainty for US Social Security Projections

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Outline

- Background

- Uncertainty Illustrations

- Examples of Unexpected Outcomes

Background

Nature of the Social Security Program in the United States

- Provide basic benefits for retirement, disability, and survivors
  - Floor of protection—to be augmented with employer benefits and/or savings
  - Employer "defined benefit" plans have been replaced with "defined contribution" plans—"de-risking" for employers
- Financing and actuarial status
  - Financing primarily from payroll tax of 12.4% on up to $160,200 in 2023
  - Benefits based on career-average earnings level "wage-indexed" to eligibility
    - Indexed by price increases after initial eligibility
  - "Pay as you go" financing dependent on workers per beneficiary

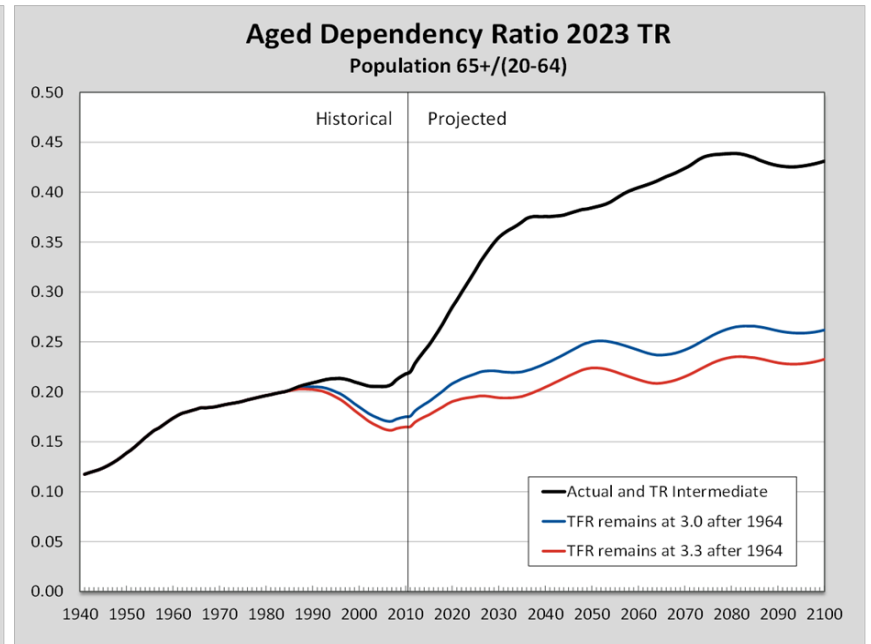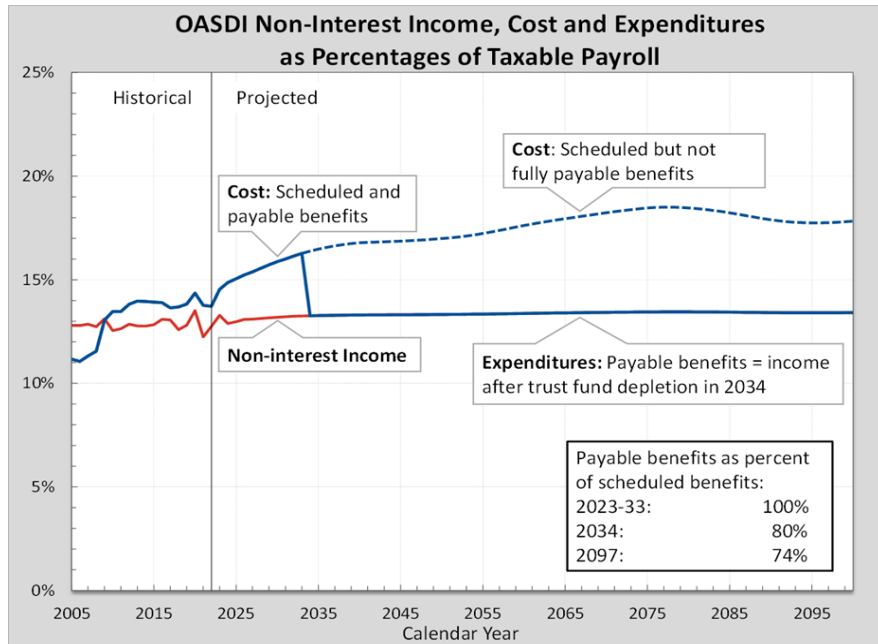# Office of the Chief Actuary's Core Policy and Analytical Functions

- The Office of the Chief Actuary (OCACT) develops analysis of and projections for actuarial status for the US Social Security Old-Age, Survivors, and Disability Insurance (OASDI) program
  - Annual reports on current-law status since 1941 for the Board of Trustees
  - Semiannual projections for President's Budget
- OCACT works with policymakers on developing potential changes and estimating effects
  - Changes in law to improve "solvency" of the program—increase revenue or reduce benefits
  - Changes in regulations to modify implementation of current law

Baseline (Current-Law) Long-Term Assumptions and Projections

- OCACT develops assumptions and proposes them to the Board of Trustees
    - Subject to approval by the Trustees
    - Actuarial opinion required in the report attesting to "reasonableness"
- OCACT develops methods for projections
    - We use multiple models
        - Macro (deterministic)
        - Stochastic
        - Microsimulation

The Current Financial/Actuarial Status of the OASDI Trust Funds

Cost is rising as a percent of payroll from 2008 to 2035, mainly due to birth rates affecting the population age distribution

OASDI Non-Interest Income, Cost and Expenditures as Percentages of Taxable Payroll

Aged Dependency Ratio 2023 TR — Population 65+/(20-64)

Uncertainty Illustrations

Why Is Showing Uncertainty Important?

- Projecting into the future is hard!

- Understanding that changes in law to address inadequate financing will generally be based on the "best estimate" projection

- It is important that policymakers and the public understand that future experience will never match projections exactly, and they should plan accordingly

Illustrations of Uncertainty for the Future

- Three main ways uncertainty is illustrated in the annual reports:
    - Alternative scenarios—intermediate (best estimate), low-cost, and high-cost
    - Stochastic projections—5,000 simulations reflecting randomly assigned annual values and central tendencies for key parameters
    - Sensitivity analysis on key individual assumptions—for example, fertility, mortality improvement, and real wage growth

- The next few slides show selected examples of results presented in the annual reports

Alternative Scenarios

- Under alt II (best estimate), the OASI Trust Fund reserves are projected to become depleted in 2033 (in 2039 for alt I and 2031 for alt III)

- The DI Trust Fund is adequately financed through 2097 and beyond under alt II and alt I

- The combined OASI and DI Trust Fund reserves would become depleted in 2034 under alt II and in 2031 under alt III

Figure IV.B1.—Long-Range OASI and DI Annual Income Rates and Cost Rates
[As a percentage of taxable payroll]
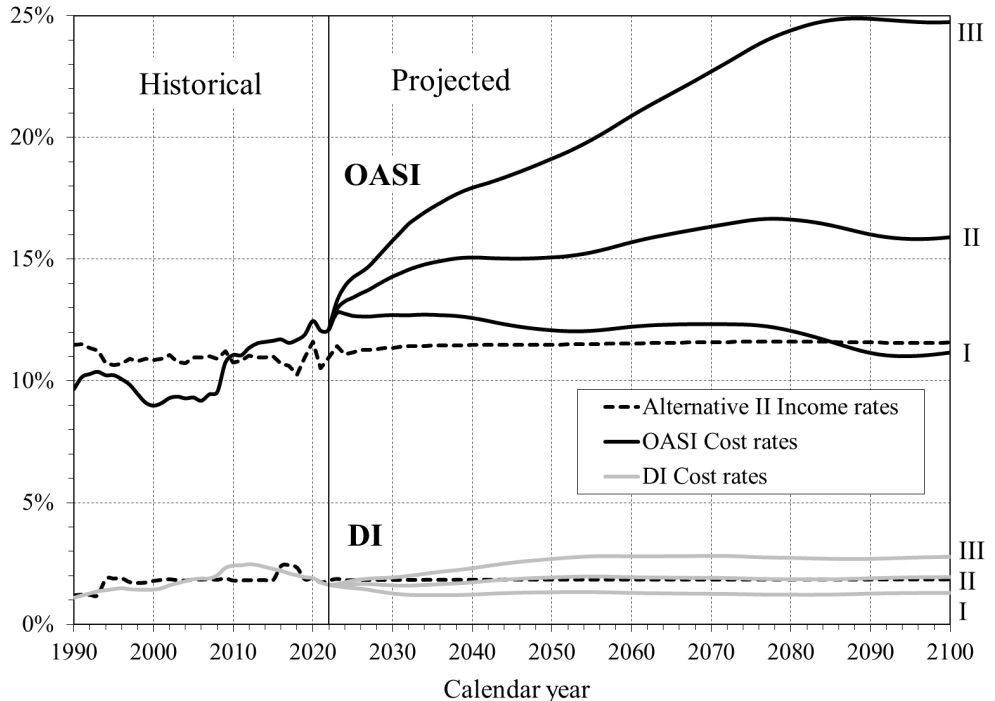
Stochastic Projections

- The fluctuation of each key variable is simulated using historical data and standard time-series techniques

- Incorporates variation in the central tendency of each variable

- The range of outcomes for program cost in the 95-percent confidence interval is very close to the range for the three alternative scenarios

Figure VI.E3.—OASDI Cost Rates: Comparison of Stochastic to Low-Cost, Intermediate, and High-Cost Alternative Scenarios

[As a percentage of taxable payroll]
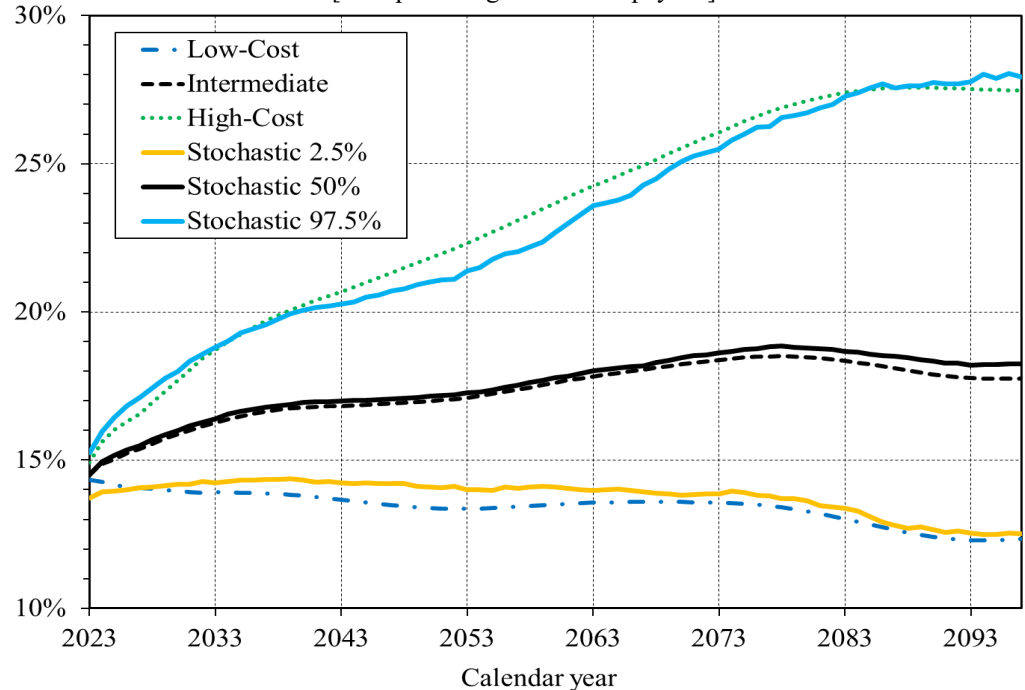
Sensitivity Analysis

Table VI.D1.—Sensitivity of OASDI Measures to Fertility Assumptions
[As a percentage of taxable payroll]

Valuation period	Average total fertility rate [a][b]		
	1.69	1.99	2.19
Summarized income rate:			
25-year: 2023-47	14.34	14.34	14.34
50-year: 2023-72	13.93	13.90	13.88
75-year: 2023-97	13.85	13.78	13.73
Summarized cost rate:			
25-year: 2023-47	16.83	16.85	16.85
50-year: 2023-72	17.47	17.14	16.92
75-year: 2023-97	18.17	17.38	16.87
Actuarial balance:			
25-year: 2023-47	-2.49	-2.50	-2.51
50-year: 2023-72	-3.54	-3.24	-3.04
75-year: 2023-97	-4.32	-3.61	-3.14
Annual balance for 2097	-6.69	-4.35	-3.07
Year of combined trust fund reserve depletion	2034	2034	2034

[a] The total fertility rate for any year is the average number of children that would be born to a woman if she were to experience, at each age of her life, the birth rate observed in, or assumed for, the selected year, and if she were to survive the entire childbearing period. The average total fertility rate shown is for the period 2033 through 2097.

[b] The total fertility rates used for this analysis are consistent with those assumed for the three alternative scenarios. All other assumptions used for this analysis are from alternative II.

- The intermediate assumption for the total fertility rate averages 1.99 children per woman in 2033 through 2097

- Increasing this assumption by 0.20 percentage point or reducing it by 0.30 percentage point has large effects on the 75-year actuarial balance measure

- But larger effects on the annual balance for the 75th projection year, 2097

Examples of Unexpected Outcomes

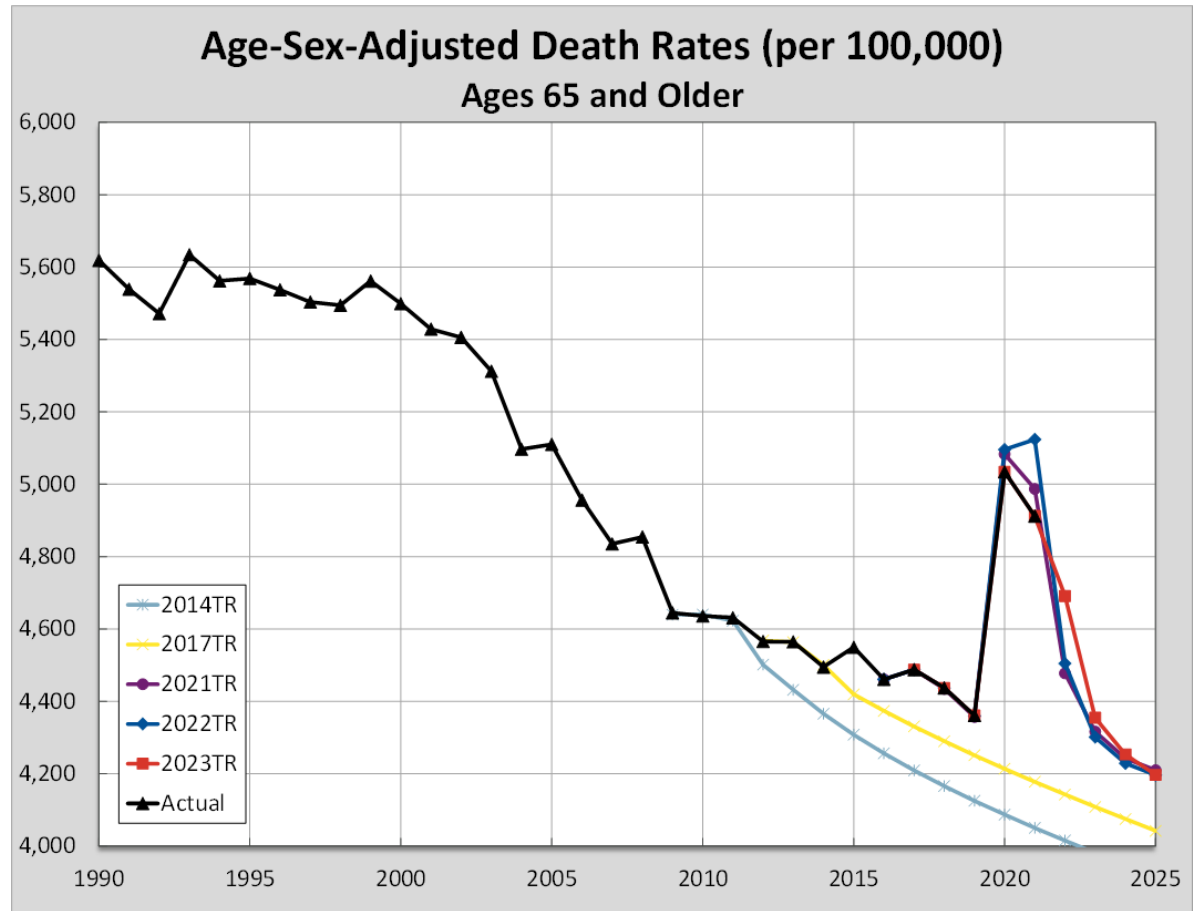# Examples of Unexpected Outcomes due to Past Uncertainty

1. Since 2009, mortality decline has slowed substantially
   - And the COVID-19 pandemic has greatly affected uncertainty for the future

2. Since 2010, disability incidence rates have declined substantially
   - Uncertainty is increased with the changing nature of work

3. While lower birth rates were well understood by 1983, economic developments after 1983 were unanticipated and substantially affected the actuarial status of the OASDI program

1. Mortality Experience: Ages 65+

Increased mortality in the near-term to reflect the effects of the COVID-19 pandemic.

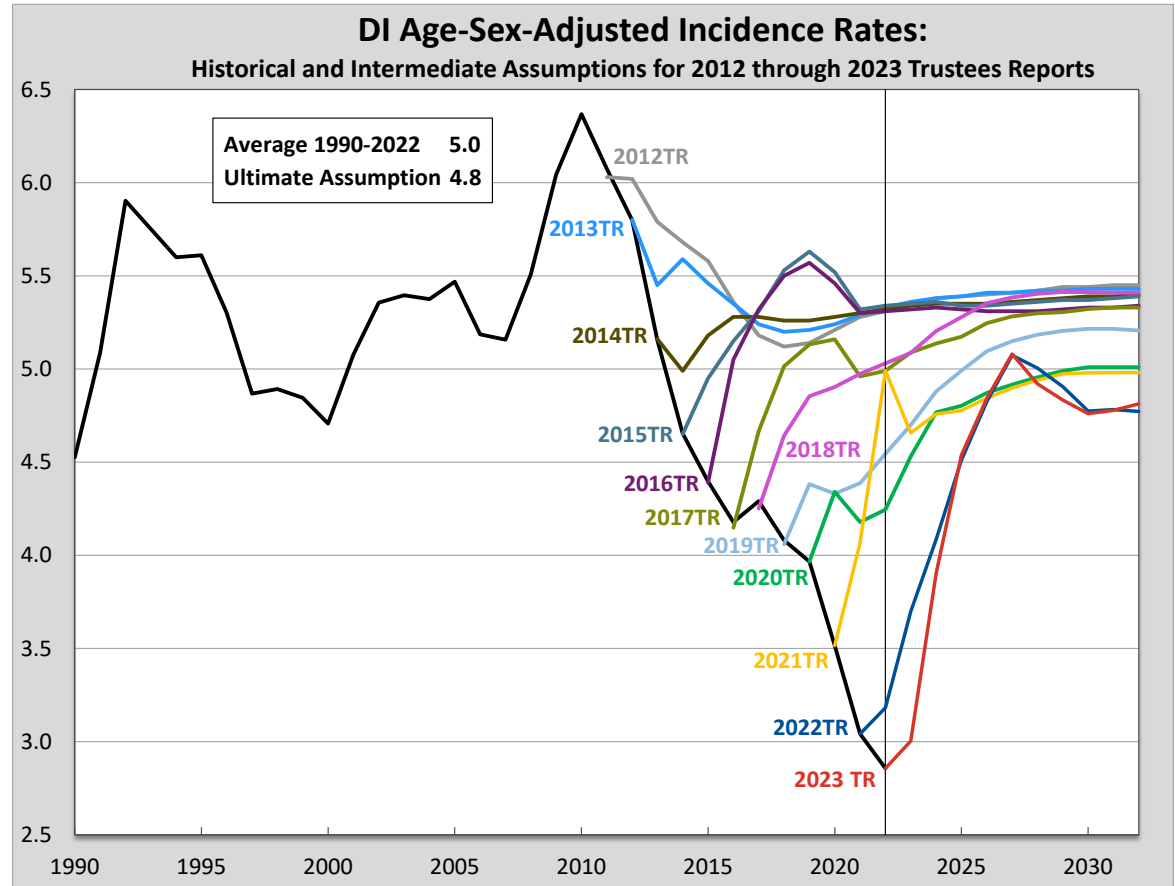What will the net effect of the pandemic be on mortality in the future?

We assume offsetting effects for the residual population after the pandemic, around 2025.

Age-Sex-Adjusted Death Rates (per 100,000)
Ages 65 and Older

Legend:
- 2014TR
- 2017TR
- 2021TR
- 2022TR
- 2023TR
- Actual

2. Disability Incidence Rate Remains Historically Low

DI disabled worker incidence rate rose sharply in the 2008 recession and has declined since the peak in 2010 to extraordinarily low levels in 2016 through 2022.

What will be the NET effect of COVID and post-COVID conditions?

DI Age-Sex-Adjusted Incidence Rates:
Historical and Intermediate Assumptions for 2012 through 2023 Trustees Reports

Average 1990-2022   5.0
Ultimate Assumption 4.8

3. After the 1983 Amendments (Last Major Program Changes), the 1983 Trustees Report Projected Reserve Depletion in 2063
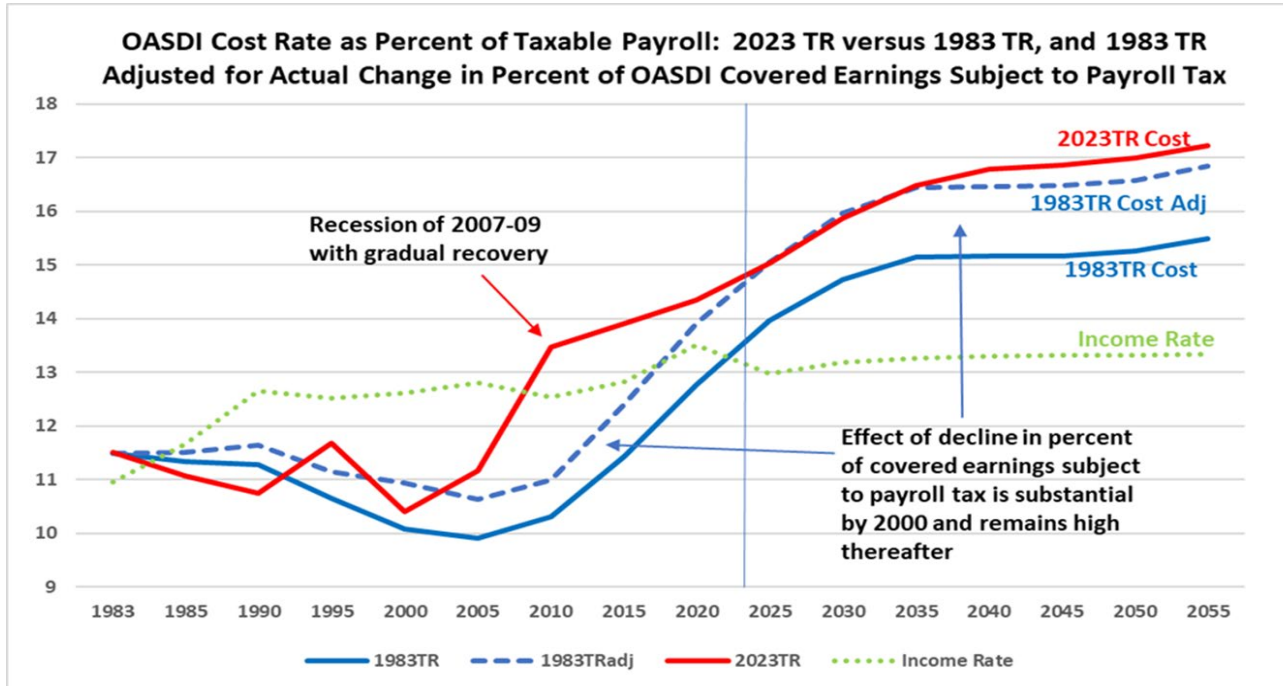
- Lower birth rates were anticipated in 1983, and mortality projections were extremely accurate

- Over 80% of worsening in projections since 1983 Trustees Report was due to unanticipated economic experience

- Redistribution of earnings from 1983 to 2000 reduced taxable payroll, and payroll tax revenue, by 8%

- Depth of 2007-09 recession and slow recovery reduced employment and tax revenue

Earnings "Dispersion" Between 1983 and 2000 Lowered the Percent of Earnings Taxable from 90% to 82.5%

Overall, average earnings increased more than expected, but real growth was 62% for the top 6% of workers, while only 17% for lower 94% of workers.

Taxable Ratio 2023 TR

Historical   Projected

slide 19
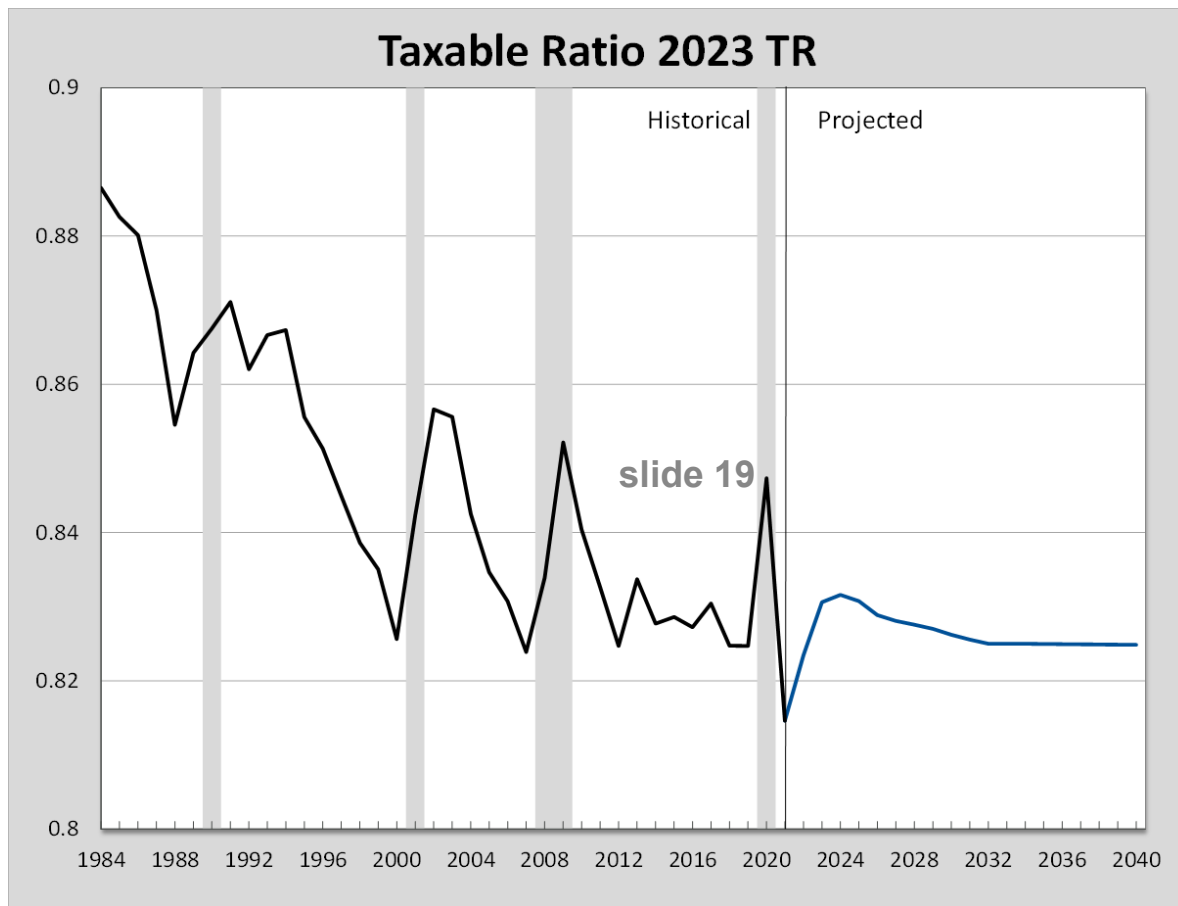
The Reduced Share of Earnings Subject to Payroll Tax Explains Most of the Increase in Cost as Percent of Payroll, Compared to the Projection in 1983

OASDI Cost Rate as Percent of Taxable Payroll: 2023 TR versus 1983 TR, and 1983 TR Adjusted for Actual Change in Percent of OASDI Covered Earnings Subject to Payroll Tax

- But the depth of the 2007-09 recession and slow recovery further reduced expected trust fund accumulation through 2019

For More Information, Go To: www.ssa.gov/OACT/

There you will find:

- The 2023 and all prior OASDI Trustees Reports
- Detailed single-year tables for recent reports
- Our estimates for comprehensive proposals and individual provisions
- Actuarial notes and studies
- Extensive databases
- Congressional testimonies
- Presentations by OCACT employees

Q & A

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