Social Security: Actuarial Status and Assumptions

Webinar

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PANELISTS:

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DISCUSSANT:

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Agenda

Part 1: Understanding the Assumptions Used to Evaluate Social Security’s Financial Condition
Eric Klieber, MAAA, FSA, EA; Vice-chairperson, Social Security Committee

Tim Marnell, MAAA, ASA, EA; Member, Social Security Committee
Part 1

Understanding the Assumptions Used to Evaluate Social Security’s Financial Condition
Who is Evaluating Social Security’s Financial Condition?

- Social Security’s Board of Trustees issues an Annual Report
  - Required by law
  - 75-year valuation period
  - Three projections: best estimate, high cost and low cost

- Congressional Budget Office and Office of Management and Budget
  - Provide annual cost estimates to Congress and Executive, respectively
  - Both use Trustees’ best estimate demographics projections
  - But use own economic assumptions

- Outside experts from think tanks and academia
  - May choose their own methods and assumptions
All of these projections rely on assumptions about future demographic and economic trends.

Because the future remains uncertain.

The selection of assumptions affects the results of any projection.

The results in turn affect the policy prescriptions of anyone relying on the projection.
Two Categories of Assumptions

- Demographic assumptions: used to project future populations of –
  - Workers paying into the system
  - Retired and disabled worker beneficiaries
  - Family members and survivors receiving benefits

- Economic assumptions: used to project –
  - Earnings and the resulting taxes paid into the program
  - Amount of benefit payments
  - Investment income on trust fund assets
Sources of Assumptions

- Past experience: the normal valuation process includes
  - Comparing actual experience and past projections
  - Fine tuning assumptions based on this analysis

- Judgment about future changes in experience
  - Will mortality continue improving at historical rates?
  - Will people work to older ages as longevity improves?
  - Will an aging population slow economic growth?
  - How will emerging economies affect the US economy?
Demographic Assumptions
Fertility

- Average number of children born to a woman during her lifetime
- Primary determinant of rate new workers enter system
- Adjusted fertility rate
  - Excludes children who do not survive to age 10*
  - Nearly constant at 3.0 from early 20th century to 1960s
  - Declined to about 2.0 in 1960s and 1970s
  - Nearly constant since then
- Decline in adjusted fertility rate contributes highly to the projected increase in benefit payments as a percentage of GDP

[*They never participate in Social Security*]
Immigration

- Secondary determinant of rate new workers enter system
  - Most immigrants spend all or most of their working lifetimes in US
  - Emigrants more likely to be older and are often already retired
  - Important to treat immigrants and emigrants separately

- Legal immigration has increased since WWII due to increases in statutory quotas

- Other than legal immigration hard to quantify
Mortality

- Decreased greatly during 1970s, more slowly since 1982
- Result: longer benefit payout periods, fewer pre-retirement deaths
- The former has a far greater impact on cost projections
- Future rate of mortality improvement highly uncertain
Mortality, cont.

- Factors favoring rapid decrease in mortality:
  - Medical advances
  - Greater emphasis on disease management
  - Lifestyle changes, e.g., more exercise, less smoking

- Factors favoring leveling off of mortality improvement:
  - Diminishing returns on medical research
  - High cost of medical care
  - Possible emergence of new diseases
  - Obesity
Disability Incidence

- Determines greatly the cost of disability insurance
- Tends to be cyclical in response to ups and downs in economy
- Long-term age adjusted rates have not changed much recently
- Aging population and recent severe recession combined have caused high rates of new disability awards in the last several years, but not outside historical norms
Economic Assumptions
Earnings Increases

- Affects both tax receipts and benefit amounts
- Made possible by increases in productivity, i.e., ratio of real GDP to hours worked
- Earnings increases do not exactly track productivity increases due to –
  - Changes in average hours worked
  - Changes in proportion of total compensation paid as earnings
  - Inflation (as measured by GDP deflator)
  - Other factors with small effects
Consumer Price Index

- CPI for urban wage earners and clerical workers
  - (CPI-W)
- Beginning with the year of benefit eligibility
  - (age 62 for retirees)
- Intended to maintain purchasing power of benefits
Real Wage Differential

- Wage increase minus increase in CPI-W
- A higher real wage differential decreases program cost (and vice versa):
  - At any given time, income rises with increases in wages
  - While outgo rises in part with increases in CPI-W
- The future real wage differential is a significant factor bearing on Social Security’s financial health
Real Interest Rate

- “Real” means excess over CPI-W
- Social Security’s assets invested in special issue Treasury securities
- Interest rates approximate rate on medium term public securities
- The real interest rate assumption affects projections in two ways:
  - Affects return on system’s accumulated assets
  - Affects present value of future system cash flows
Labor Force Participation Rate

- Proportion of working age population employed, self-employed or looking for work
- Includes covered and non-covered workers and those unemployed
- Assumption affects projection in two ways:
  - Affects aggregate earnings and, hence, tax income
  - Affects number of two-earner couples
- Future labor force participation rates, particularly among those eligible for old age benefits, remain a great uncertainty in projecting Social Security’s future financial condition
Unemployment Rate

- Proportion of workers in the labor force unable to find work
- Assumption affects projection in two ways:
  - Affects aggregate earnings and, hence, tax income
  - Affects participant’s benefits at retirement
- Former effect much greater
- Spike in unemployment rate due to recent recession caused benefit payments to overtake tax income about five years earlier than predicted
- But did not have a large effect on the system’s long-term finances
Stock Return Assumption

- Not a required assumption for current program
- But required for any reform proposal that calls for investment of trust fund assets in stocks, whether or not in individual accounts
- Advocates for such investments focus on the higher potential expected return of such investments; opponents note that stock returns are not guaranteed and could be significantly more or less than expected.
Assumptions Over An Infinite Time Horizon

Since 2003 the Trustees Report has included an infinite time horizon projection.

Given the uncertainty of major assumptions over the regular 75-year projection period, it seems unreasonable to expect that results over an infinite period will be sufficiently reliable to use as a basis for policy decisions.

For example, merely extending current assumptions for mortality improvement and changes in labor force participation rates leads to the conclusion that some day workers will receive benefits for a longer period than they pay into the system.
“It’s tough to make predictions, especially about the future.”

-Yogi Berra
Conclusions for Part 1

- Even experts can and do disagree about future demographic and economic trends that will affect Social Security’s long-term finances
- There are many sets of assumptions that are reasonable
- Small changes in assumptions can lead to large changes in results over 75 years
Conclusions for Part 1, cont.

- Do other groups making long-term projections of Social Security’s finances:
  - Disclose all assumptions?
  - Use assumptions that are internally consistent?
  - For any assumption subject to substantial uncertainty, provide a sensitivity analysis?

- Be aware of how using different assumptions affects the comparison of reform proposals

- The Trustees Report and the Social Security actuaries have set “the standard” for providing this information to policymakers
Part 2

2012 Trustee Report Actuarial Status
Results from 2012 Trustees Report

- In general, the Trustees report on:
  - Short-range results
    - Year just ended results (2011)
    - 10-year projection period (2012 to 2021)
  - Long-range results
    - 75-year period (2012 to 2086)
2012 Results

- Cost, generally benefit payments plus administrative expenses, continued to exceed non-interest income

- Deficit of non-interest income relative to cost was:
  - $45 billion for 2011
  - $53 billion projected for 2012

- General revenue reimbursements for 2011 were $103 billion and projected to be $112 for 2012
Combined OASI and DI trust funds assets:

- Expected to grow from $2,678 billion at beginning of 2012 to $3,061 billion at beginning of 2021
- Thereafter, assets expected to decline
Ratio of assets to cost continues to decline

- 340% for 2012 to 227% for 2021
- Prior year’s ratios were 347% and 272% at 2012 and 2021, respectively

Source: Figure II.D1., 2012 OASDI Trustees Report
Short-Range Projections, cont.

- DI Trust Fund expected to decline rapidly
  - Falls below 100% at beginning of 2013
  - Exhausted by 2016

![Short-Range DI Trust Fund Ratios](source: IV.A1., 2012 OASDI Trustees Report)
Change in Short-Range Projections from 2011 Trustees Report

- Change in valuation period reduced the trust fund ratio by 13 percentage points
  - Prior period was 2011 to 2020
  - Current period is 2012 to 2021

- Changes in demographic assumptions reduced the trust fund ratio by only 2 percentage points

- Actual economic data and changes in assumptions reduced the trust fund ratio by 53 percentage points
  - Actual cost-of-living increase for December 2011
  - Lower interest rates
  - Slower growth in average earnings
  - Higher unemployment rates
Long-Range Results

- Number of OASDI beneficiaries per 100 Covered Workers

![Graph showing the number of OASDI beneficiaries per 100 covered workers over time, with lines for Intermediate, Low Cost, and High Cost scenarios. The graph is sourced from IV.B2., 2012 OASDI Trustees Report.]
Long-Range Results, cont.

- Combined trust funds decline beginning in 2021 until exhausted in 2033
  - Separately, DI exhausted in 2016
  - OASI exhausted in 2035
  - Two to three years earlier than prior projection

Source: Figure II.D6., 2012 OASDI Trustees Report
Projected OASDI annual cost rate increases from

- 13.83% of taxable payroll for 2012 to
- 17.41% for 2035 to
- 17.83% for 2086
- 4.50% of taxable payroll more than the projected 2086 income rate

Expenditures are benefits payable after trust fund exhaustion in 2033

Source: Figure II.D2., 2012 OASDI Trustees Report
Projected OASDI cost relative to GDP increases from:

- 5.0% of GDP currently to
- 6.4% in 2035 and then declines to
- 6.1% in 2055 and after

Source: Figure II.D4., 2012 OASDI Trustees Report
Summarized Income Rates are the sum of:
- Scheduled payroll taxes;
- Income from taxation of scheduled benefits;
- Reimbursements from the General Fund; and
- The starting trust fund value.
  - Expressed as a percentage of taxable payroll

Summarized Cost Rates are the sum of:
- Scheduled benefit payments;
- Administrative expenses;
- Certain other costs; and
- The cost of reaching a target trust fund of 100% of end of period annual cost.
  - Expressed as a percentage of taxable payroll

Actuarial deficit, the difference between the Summarized Income Rate and the Summarized Cost Rate, for the 75-year period is 2.67% of taxable payroll
- Based on Intermediate Assumptions
Change in Long-Range Projections from 2011 Trustees Report

- No changes to ultimate demographic assumptions
  - Updated starting values and transition to ultimate assumptions decreased actuarial balance by 0.05% of taxable payroll

- One ultimate economic assumption changed
  - Annual rate of change in average hours worked now assumed to decline slightly

- Updated starting values and changes in near-term economic growth rate assumptions
  - 0.14% of taxable payroll decrease in long-range actuarial balance

- Long-range actuarial balance (the negative of actuarial deficit) expected to:
  - Decline by 0.05% of taxable payroll due to change in valuation period
  - All other changes reduced actuarial balance by another 0.39% of taxable payroll
Additional Resources

American Academy of Actuaries Issue Briefs

- *An Actuarial Perspective on the 2012 Social Security Trustees’ Report*
- *Understanding the Assumptions Used to Evaluate Social Security’s Financial Condition*

Social Security Administration

- *Social Security Office of the Chief Actuary*
- *The 2012 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*
Appendix

2012 Trustee Report Assumptions
Demographic Assumptions

Fertility Rate

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<tr>
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<th>Intermediate</th>
<th>Low-Cost</th>
<th>High-Cost</th>
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<tbody>
<tr>
<td></td>
<td>2</td>
<td>2.3</td>
<td>1.7</td>
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Source: Table II.C1, 2012 OASDI Trustees Report

Net Immigration

<table>
<thead>
<tr>
<th></th>
<th>Intermediate</th>
<th>Low-Cost</th>
<th>High-Cost</th>
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<tbody>
<tr>
<td></td>
<td>1,080,000</td>
<td>1,375,000</td>
<td>790,000</td>
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</table>

Source: Table II.C1, 2012 OASDI Trustees Report
Demographic Assumptions, cont.

**Mortality**

<table>
<thead>
<tr>
<th></th>
<th>Intermediate</th>
<th>Low-Cost</th>
<th>High-Cost</th>
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</thead>
<tbody>
<tr>
<td>Average annual decrease in mortality</td>
<td>0.77%</td>
<td>0.39%</td>
<td>1.18%</td>
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<tr>
<td>Life expectancy in 2090</td>
<td>85.3</td>
<td>82.1</td>
<td>88.6</td>
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</table>

Source: Table II.C1, 2012 OASDI Trustees Report, Life Expectancy in 2090 - Table V.A3, 2012 OASDI Trustees Report, assuming 50% male, 50% female

**Disability Incidence (per 1,000)**

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<thead>
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<th>Intermediate</th>
<th>Low-Cost</th>
<th>High-Cost</th>
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<tbody>
<tr>
<td></td>
<td>5.4</td>
<td>4.4</td>
<td>6.5</td>
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Source: Figure V.C3- DI Disability Incidence Rates, 2012 OASDI Trustees Report
Economic Assumptions

Real Wage Differential = 
Wage Growth minus Consumer Price Index

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<thead>
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<th>Intermediate</th>
<th>Low-Cost</th>
<th>High-Cost</th>
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</thead>
<tbody>
<tr>
<td>Wage Growth</td>
<td>3.90%</td>
<td>3.50%</td>
<td>4.30%</td>
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<tr>
<td>Consumer Price Index</td>
<td>2.80%</td>
<td>1.80%</td>
<td>3.80%</td>
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<td>Real Wage Differential</td>
<td>1.10%</td>
<td>1.70%</td>
<td>0.50%</td>
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Source: Table II.C1 and Table V.B1, 2012 OASDI Trustees Report
### Interest Rate

<table>
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<tr>
<td>2.90%</td>
<td>3.40%</td>
<td>2.40%</td>
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Source: Table II.C1, 2012 OASDI Trustees Report

### Labor Force Participation

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<th>Intermediate</th>
<th>Low-Cost</th>
<th>High-Cost</th>
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<tr>
<td>66.80%</td>
<td>67.10%</td>
<td>66.60%</td>
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Source: Section V.B5, 2012 OASDI Trustees Report, assuming 50% male, 50% female
Economic Assumptions, cont.

Unemployment Rate

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<th>Intermediate</th>
<th>Low-Cost</th>
<th>High-Cost</th>
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<tbody>
<tr>
<td>5.50%</td>
<td>4.50%</td>
<td>6.50%</td>
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Source: Table II.C1, 2012 OASDI Trustees Report

Growth Domestic Product Growth

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<th>Intermediate</th>
<th>Low-Cost</th>
<th>High-Cost</th>
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<tr>
<td>2.40%</td>
<td>1.50%</td>
<td>3.30%</td>
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Source: Table V.B1, 2012 OASDI Trustees Report
Q & A
Staff Contact

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