Republic of Catalia Introduction

PROST Exercise

World Bank

Pensions Core Course
November 4, 2019
Session 2
System Design

- PAYG defined benefit system
- Contribution rate: 20% from employers
- Retirement age: 60 for men and 55 for women (no early retirement)
- Benefit formula: generous accrual rate of 2.2% per year based on final salary
- Indexation: post-retirement benefits are indexed to wage growth
- No restrictions on minimum and maximum pension (for simplicity)
Current Status

- Mature system
- Coverage rate: ~40% of population age 18 to retirement
- System Dependency Rate: 22%
- Average replacement rates for existing old-age pensioners: ~ 80% of average wage
- Total expenditure = 3.2% of GDP
- Total revenue = 3.5% of GDP
## Demographic Assumptions

<table>
<thead>
<tr>
<th></th>
<th>Year 0</th>
<th>Year 20</th>
<th>Year 40</th>
<th>Year 70</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Male</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life Expectancy: At Birth</td>
<td>63.4</td>
<td>68.5</td>
<td>70.9</td>
<td>75.2</td>
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<tr>
<td>At Age 60 (retirement age)</td>
<td>15.6</td>
<td>16.7</td>
<td>17.7</td>
<td>19.8</td>
</tr>
<tr>
<td>At Age 65</td>
<td>12.4</td>
<td>13.4</td>
<td>14.2</td>
<td>16.0</td>
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<tr>
<td><strong>Female</strong></td>
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<tr>
<td>Life Expectancy: At Birth</td>
<td>69.4</td>
<td>75.0</td>
<td>77.5</td>
<td>81.8</td>
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<tr>
<td>At Age 55 (retirement age)</td>
<td>22.2</td>
<td>24.6</td>
<td>26.0</td>
<td>28.8</td>
</tr>
<tr>
<td>At Age 60</td>
<td>18.2</td>
<td>20.3</td>
<td>21.7</td>
<td>24.3</td>
</tr>
<tr>
<td>At Age 65</td>
<td>14.5</td>
<td>16.4</td>
<td>17.6</td>
<td>20.0</td>
</tr>
<tr>
<td><strong>Total fertility rate</strong></td>
<td>3.1</td>
<td>2.3</td>
<td>2.2</td>
<td>2.1</td>
</tr>
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</table>
## Macroeconomic Assumptions

<table>
<thead>
<tr>
<th></th>
<th>Year 0</th>
<th>Year 10</th>
<th>Year 20</th>
<th>Year 30</th>
<th>Year 40</th>
<th>Year 70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real GDP growth</td>
<td>5.0%</td>
<td>4.5%</td>
<td>4.0%</td>
<td>3.5%</td>
<td>2.2%</td>
<td>2.2%</td>
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<tr>
<td>Inflation</td>
<td>3.0%</td>
<td>3.0%</td>
<td>3.0%</td>
<td>3.0%</td>
<td>3.0%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Real wage growth</td>
<td>2.2%</td>
<td>2.1%</td>
<td>2.4%</td>
<td>2.4%</td>
<td>2.0%</td>
<td>2.0%</td>
</tr>
</tbody>
</table>
Baseline: Population (thousand persons)

- Total population
- Age 0-14
- Age 15-ret. age
- Ret. age+
Baseline: Old Age Population Dependency Rate
(old age population/working age population)
Baseline: System Dependency Rate
(number of pensioners/number of contributors)

old age pensioners
all pensioners
Baseline: Average Replacement Rates for Old Age Pensioners

(% of average wage)
Baseline: System Finances, % of GDP

- Revenues
- Expenditures
- Balance

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Key Issues

- Growing total dependency rate due to population aging: from current 22% to 83% in the long-run
- Generous benefit formula (high accrual rate, final salary feature)
- Expensive indexation policy
- System is financially unsustainable: deficits reach 10% of GDP in the long-run
- So, risk of defaulting on the promise in the future is high
- Estimated IPD: ~ 145% of GDP (at 4% real discount rate)
- Large uncovered population (farmers) – beyond the scope of the exercise
Potential Reforms

- Reform 1: Raise contribution rates from 20% to 25% by a percentage point a year starting with year 2
- Reform 2: Decrease accrual rate from 2.2% to 1.5% by 0.1 percentage point a year starting with year 2
- Reform 3: Averaging period increased from last year to lifetime average earnings adding an additional year to the period each year, beginning with year 2; valorized to wage growth
- Reform 4: Indexation of pensions changed from wage to price from year 2 onwards
- Reform 5: Retirement age raised from 60/55 for men/women to 65/60 over the next 10 years, going up 6 months each year, starting with year 2
Reform 1: Raising the contribution rate
Reform 2: Decreasing the accrual rate and impact on fiscal balance

Baseline Case 2
Reform 2 impact on existing old age benefits

Baseline

Case 2
Reform 2 impact on new pension benefits
Reform 3 changing indexation period and impact on pension balance
Reform 3 impact on existing old age benefits

Baseline vs Case 3

1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 69 71
Reform 3 impact on benefits of new pensioners

Baseline vs Case 3
Reform 4: Impact of change in indexation on pension fund balance

Baseline vs Case 4
Reform 4 impact on benefit levels of existing pensioners

Baseline vs Case 4
Reform 5: Retirement age impact on pension fund balance
Reform 5: Retirement age impact on benefit levels of existing pensioners
Reform 5: Retirement age impact on new pensioners

Baseline vs Case 5

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Reform 6: Multipillar option

- Increase contribution rates for all those above 40 as in Reform 1
- Put additional contribution rates for those below 40 into a funded Defined Contribution system
- Reduce benefits to those joining the second pillar in proportion to their contributions to that pillar compared to non-switchers
Reform 6: Multipillar impact on pension fund balance
Reform 6: Impact on benefit levels of existing pensioners

Baseline

Case 6

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Reform 6: Impact on benefits for new pensioners
Thank you!

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