The Future Sustainability of the Canada Pension Plan and Old Age Security Program

Private Pensions and Income Security in Old Age: An Uncertain Future
Where are we now? How secure is the future?

Presentation to the SEDAP Conference (Social and Economic Dimensions of an Aging Population) at McMaster University, Hamilton

16 November 2006
Presentation

1. Canadian Income Retirement System
2. Canadian and Global Aging
3. CPP Steady-state Funding and OAS Funding
4. Peer Review Process
5. Stochastic Analysis: a tool to measure the volatility and the uncertainty
Canadian Retirement Security

Canadian retirement system with mixed funding approaches is well recognized in the world for its capacity to adapt rapidly to changing conditions.

- Full funding (RPP/RRSP)
- Partial funding (CPP/QPP)
- Pay-as-you-go funding (OAS/GIS)

The Canadian retirement system could be viewed as about 40% to 45% funded.
Income Replacement Rate of Public Pension Plans (Canada and United States, 2002)

Salary as Multiple of Average Wage

- GIS
- OAS
- CPP
- US Social Security: OASDI

Replacement Rate

0.0% 10.0% 20.0% 30.0% 40.0% 50.0% 60.0% 70.0% 80.0% 90.0% 100.0%

0.5 1 1.5 2 2.5

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Purpose of the CPP Triennial Actuarial Report

• 21st Actuarial Report Tabled by the Minister of Finance on 8 December 2004

• Inform on the current and projected future financial status of the Canada Pension Plan

• Calculate the steady-state contribution rate
Canadian Aging

Population 65 and over

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<th>Year</th>
<th>Number (in millions)</th>
<th>% of population</th>
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<tbody>
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<tr>
<td>2050</td>
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</tbody>
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Increase of 150% From 2005 to 2050

Increase of 250% for 80+

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Global Aging

Projected number of years needed to go from 12% to 24% of 65 and over as a % the total population

- Japan: 25 years
- QPP: 30 years
- Canada: 40 years
- Germany: 60 years
- France: 65 years
- UK: 65 years

Future Labour Shortage, likely or not?

Ratio of 60-64 over 20-24

Canada vs United States

For every 7 who leave, 10 enter

More people leaving than entering after 2015


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Working Age Population (ages 20-60) (indexed 2000=100)

Source: UN World Population Prospects
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How do we position for the aging of the Canadian population? : CPP Steady-state Funding

Effect of the 1998 Amendments

• Increase the contribution rate by 65% over 6 years (1997-2003) and keep the same rate thereafter

• Moderate the future growth of benefits by 10% on a long-term basis (in 2050).

• Creation of the CPP Investment Board to diversify the CPP reserve fund and increase investment returns (www.cppib.ca)
CPP Steady-State Funding

Asset/Expenditure Ratio

- 9.9% Legislated contribution rate
- 9.8% Steady-state rate

In 2020, CPP/QPP assets are projected to be equal to 17% of the GDP.
CPP Steady-State Funding

• If the steady-state rate is higher than the legislated contribution rate AND if finance ministers cannot reach agreement on a solution, then:

  – Contribution rate increased by ½ of excess over three years, subject to maximum increase of 0.2% per year
  – Benefits frozen
  – At end of three years, next review performed to determine financial status of Plan.
How do we position for the aging of the Canadian population?

Evolution of Old Age Security Expenditures in % of GDP

Between 2010 and 2030, the ratio of expenditures to GDP increases from 2.4% to 3.2%, driven largely by the retirement of the baby boomers.

$28 billion in 2004; $37 billion in 2010; $110 billion in 2030

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Independent Peer Review Process

• Auditor General and Selection Process
• Overseeing of the Peer Review by the UK Government Actuary’s Department
• The Independent Review Panel confirmed:
  – That actuarial standards of practice were met;
  – That assumptions were reasonable;
  – That the report fairly communicates the results;
  – The actuarial conclusions reached by the Chief Actuary about the soundness of the CPP.
• and made a series of recommendations.

March 2005
Presentation

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5. **Stochastic Analysis: a tool to measure the volatility and the uncertainty**
CPP Actuarial Report as at 31 December 2003

- Sensitivity Analysis
  - Vary values of 9 key assumptions individually
  - Two tests performed with respect to each assumption
    • High cost: alternative assumption increases steady-state contribution rate
    • Low cost: alternative assumption decreases steady-state contribution rate

- Stochastic Analysis
  - Using historical data, stochastically determine the probability that the actual value for selected assumptions will fall outside the range of potential outcomes determined by the high- and low-cost scenarios
Historical Fertility Rate

(Children per woman)

Geometric Mean (1941-2002) = 2.5

Geometric Mean (1977-2002) = 1.6
Fertility Rates (1977-2002)

Steady-State between 10.1% and 9.5%

Stochastic Analysis
20-year periods

High-Cost
1.3

Low-Cost
1.9

μ = 1.62
σ = 0.02

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Historical Real Wages Differential

Geometric Mean (1924-2003) = 1.4%
Real Wage Differential (1924-2003)

Stochastic Analysis
20-year periods

Steady-State between 10.3% and 9.2%

µ = 1.4%
σ = 0.5%
Geometric Mean (1938-2005) = 6.4%
\[ \sigma = 16.1\% \]
Real Rates of Return (1938-2005)

Stochastic Analysis
20-year periods

CPP Reference Portfolio
(10% Real Return Bonds)

μ = 5.8%
σ = 2.7%

16%
23%
3.1%
5.1%
61%

-2.4% 0.4% 3.1% 5.8% 8.6% 11.3% 14.0%

Stochastic Analysis
20-year periods

CPP Reference Portfolio
(10% Real Return Bonds)

μ = 7.1%
σ = 2.5%

5%
3.1%
4.1%
5.1%
7.1%
17%
78%
CPP Actuarial Report as at 31 December 2006

• How uncertain is the certainty? How certain is the uncertainty?

• Stochastic analysis
  – Determine confidence intervals for assumptions such as fertility, migration, wages increases, investment returns

• Uncertainty of results
  – a new section will be added explaining the uncertainty involved in estimating future contribution rates as per the peer reviewers’ recommendation.
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Thank you

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