



Office of the Superintendent of
Financial Institutions Canada

Bureau du surintendant des
institutions financières Canada

Office of the Chief Actuary

Bureau de l'actuaire en chef



Inspiring Innovation and Discovery

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*



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16 November 2006

Canada

Presentation



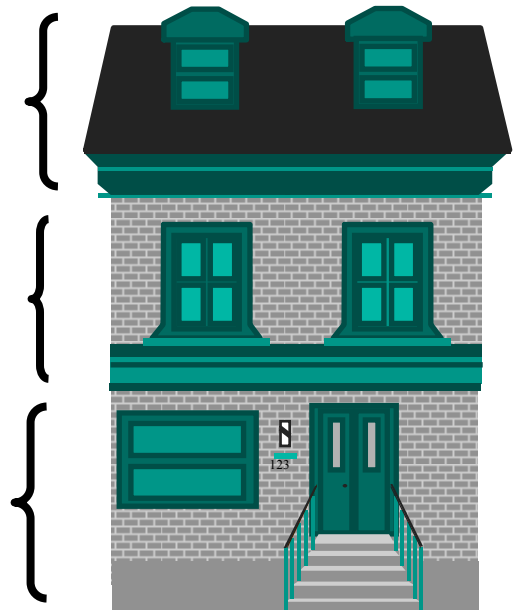
1. Canadian Income Retirement System
2. Canadian and Global Aging
3. CPP Steady-state Funding and OAS Funding
4. Peer Review Process
5. Stochastic Analysis: a tool to measure the volatility and the uncertainty



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.

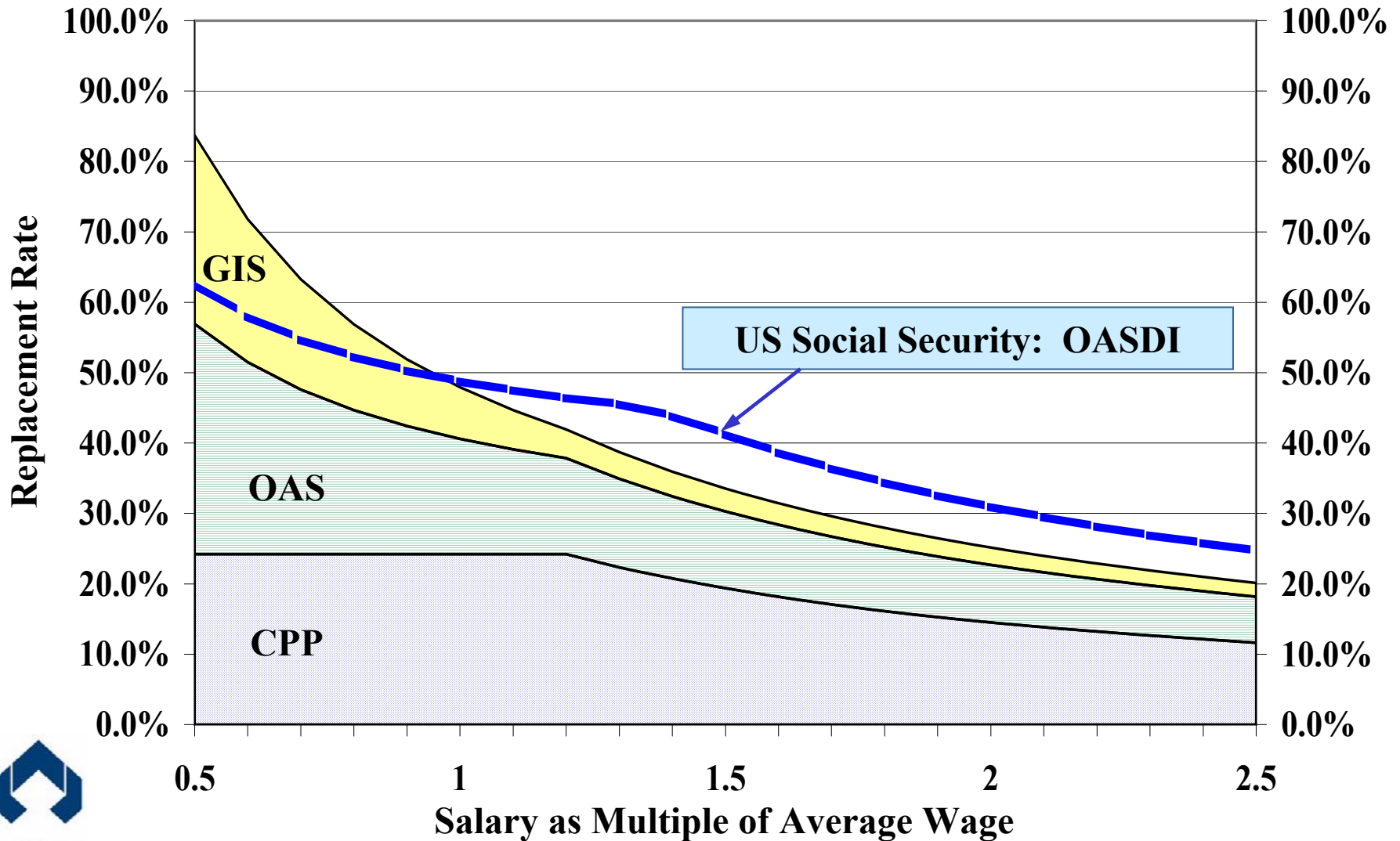
- Full funding (RPP/RRSP)
- Partial funding (CPP/QPP)
- Pay-as-you-go funding (OAS/GIS)



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)



Presentation

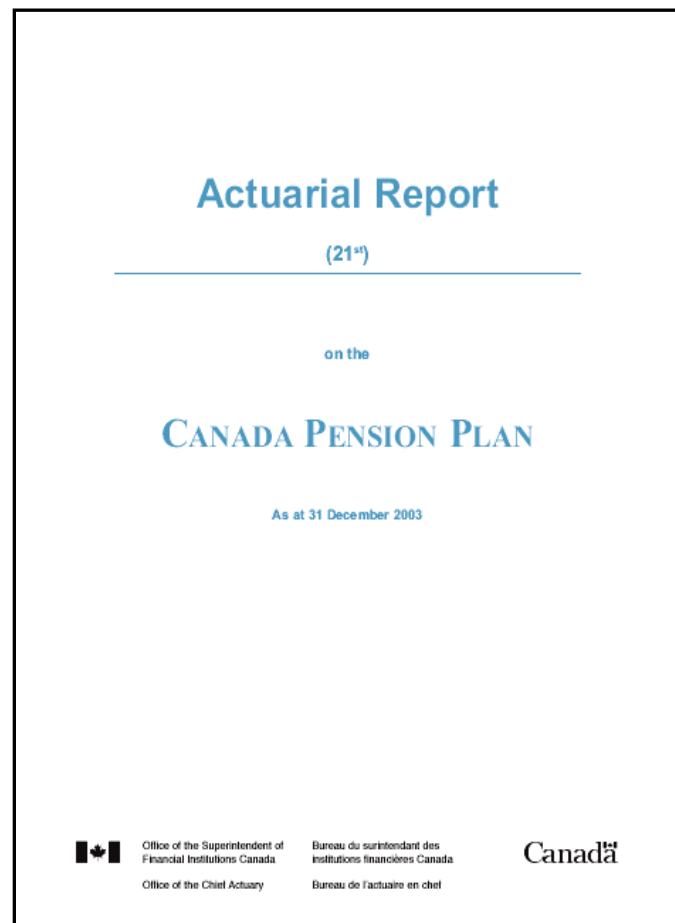


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Purpose of the CPP Triennial Actuarial Report

- 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



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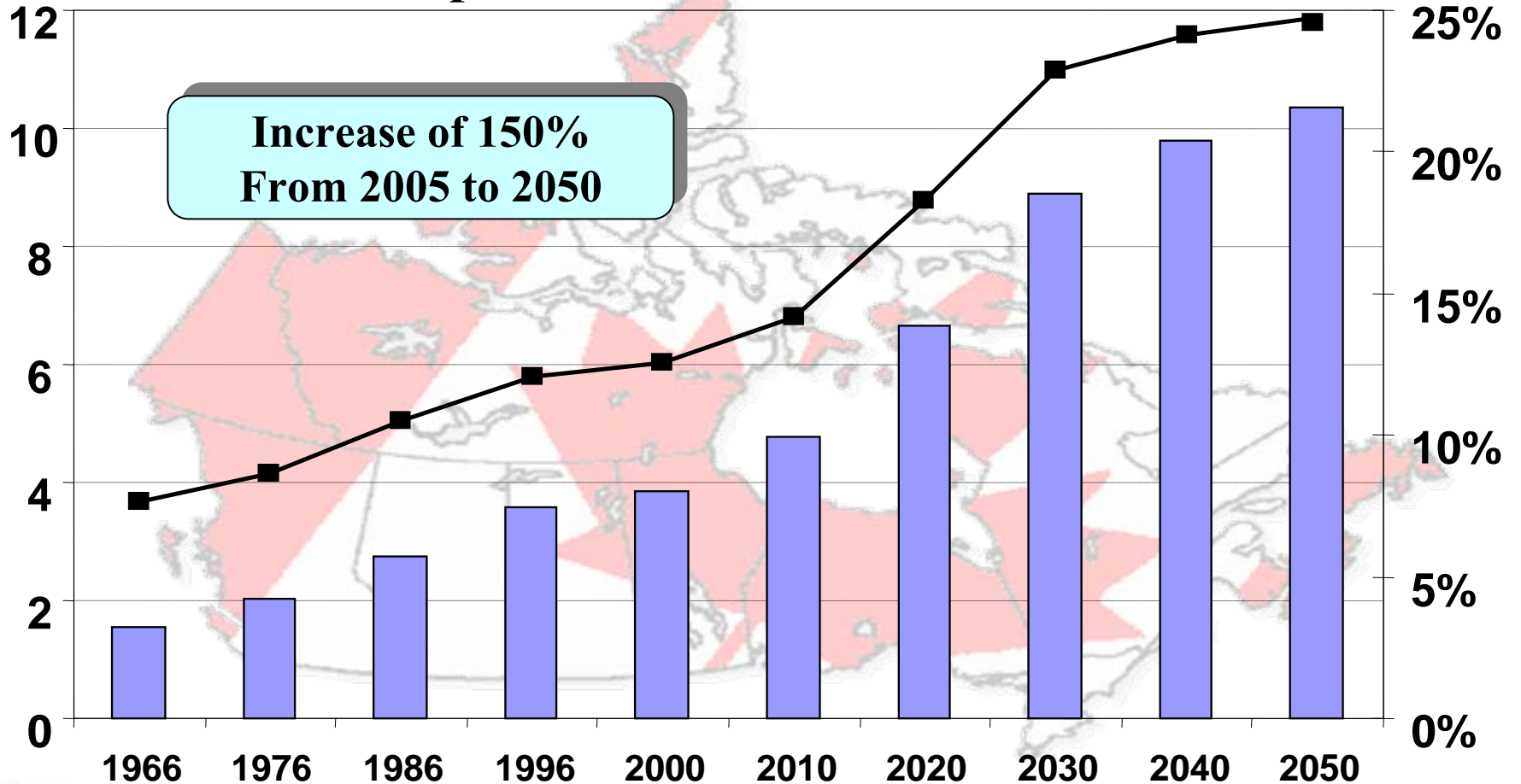
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Canadian Aging

(in millions)

Population 65 and over

(% of population)



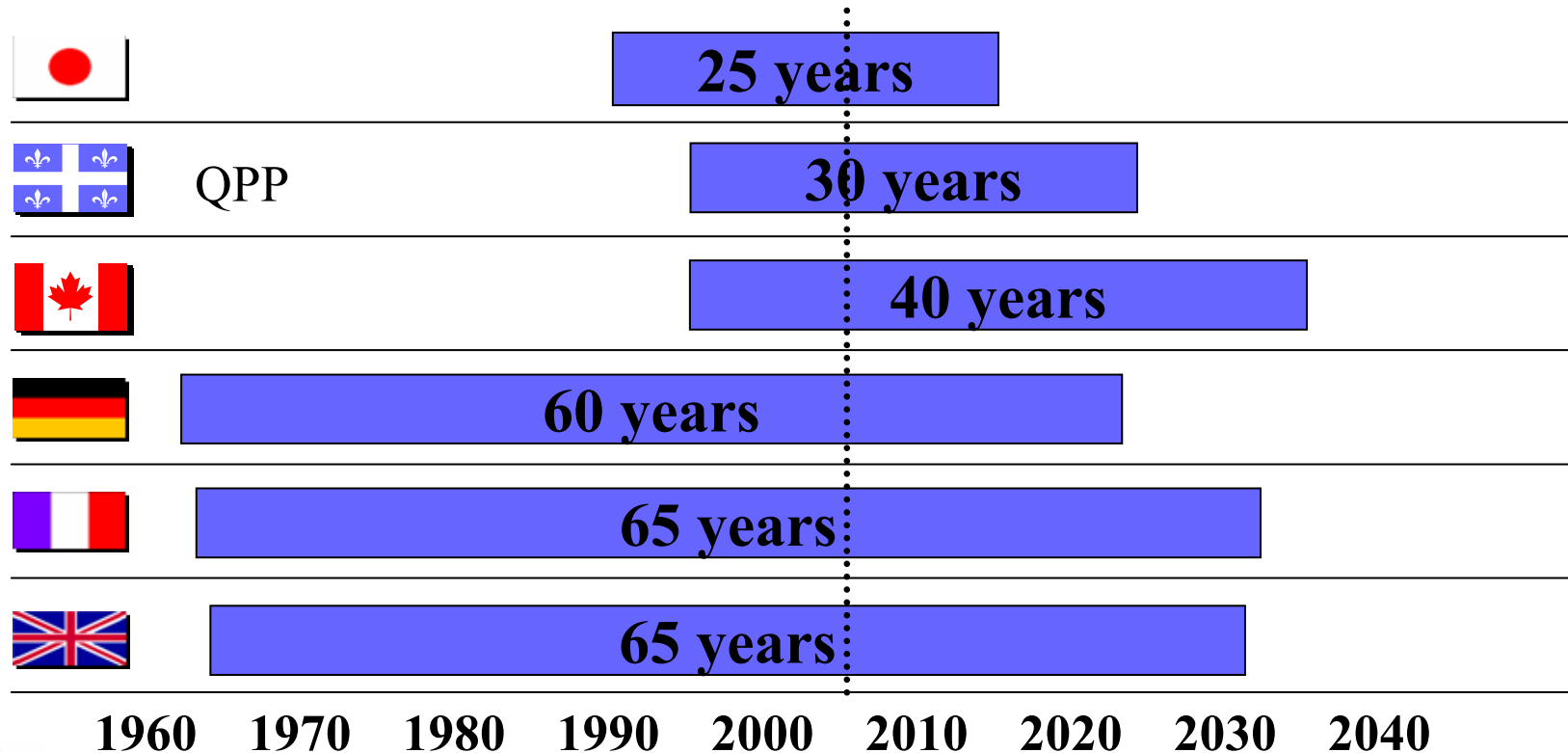
**Increase of 150%
From 2005 to 2050**

Increase of 250% for 80+

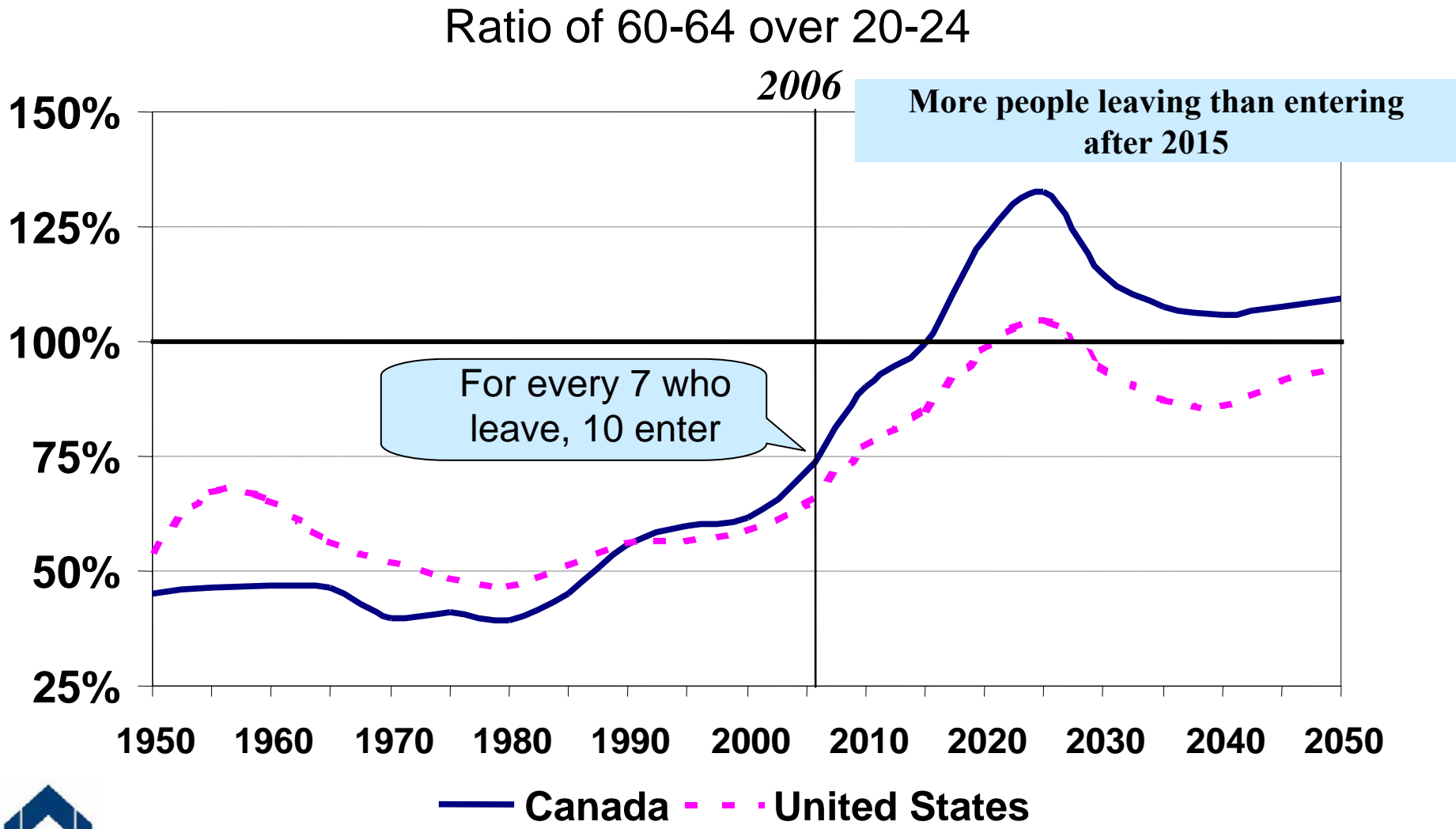


Global Aging

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



Future Labour Shortage, likely or not?



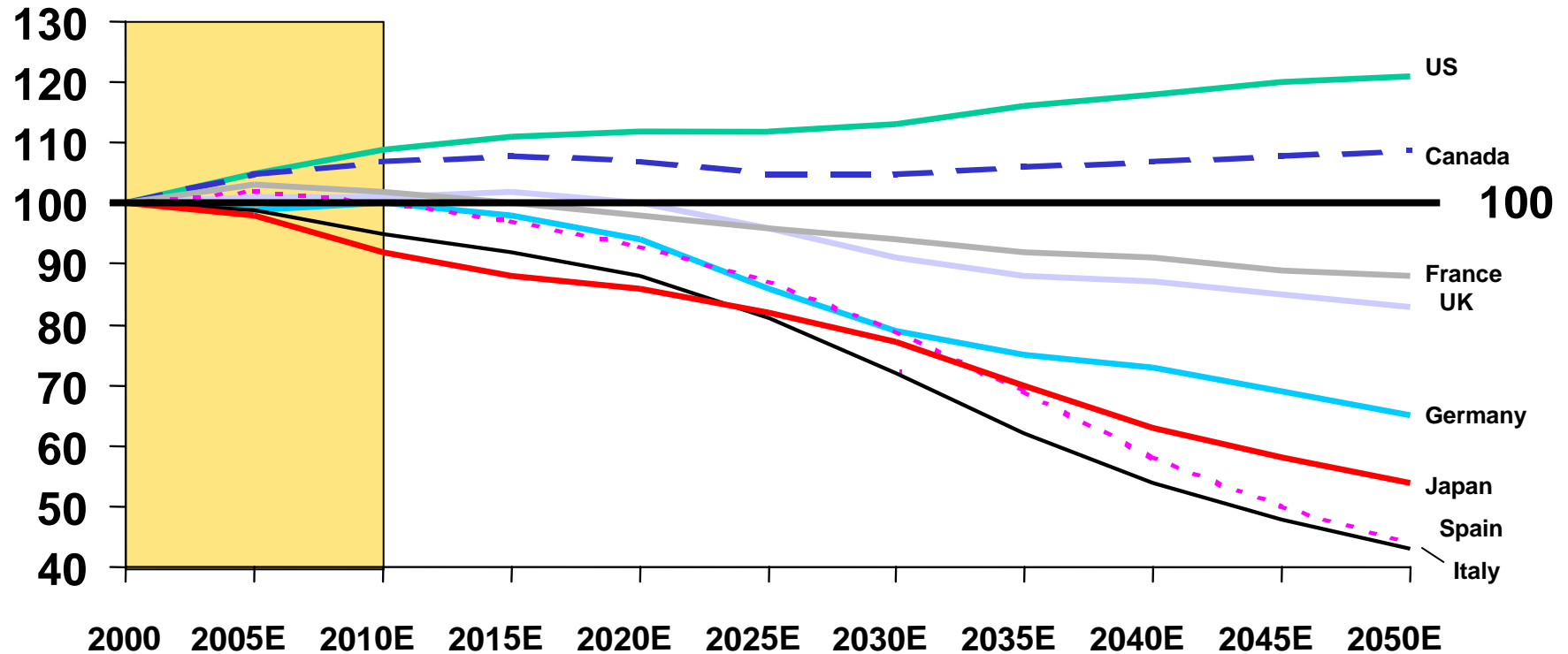
Source for US : United Nations Projections, 2003



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



Source: UN World Population Prospects



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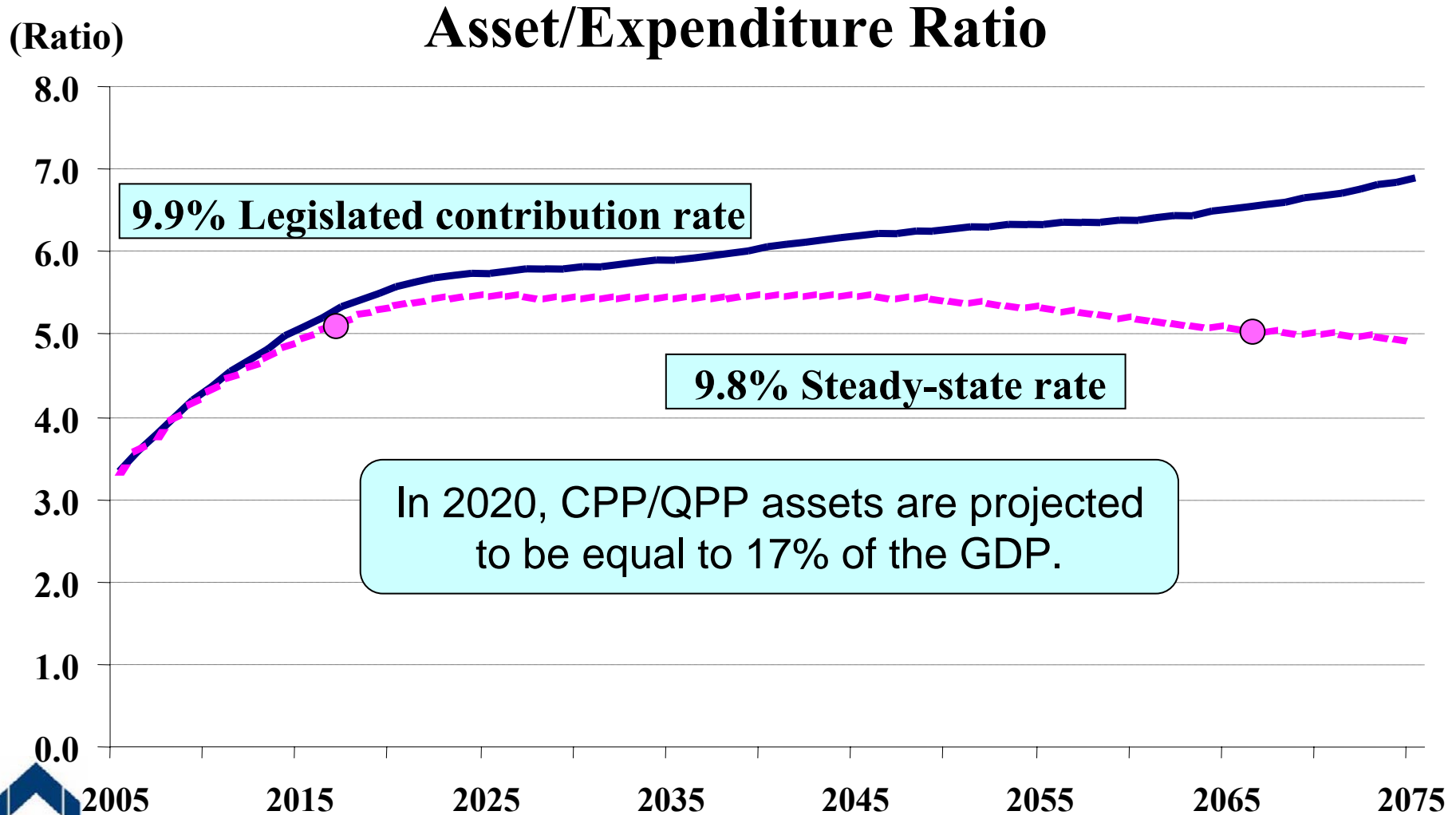
How do we position for the aging of the Canadian population? : CPP Steady-state Funding

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



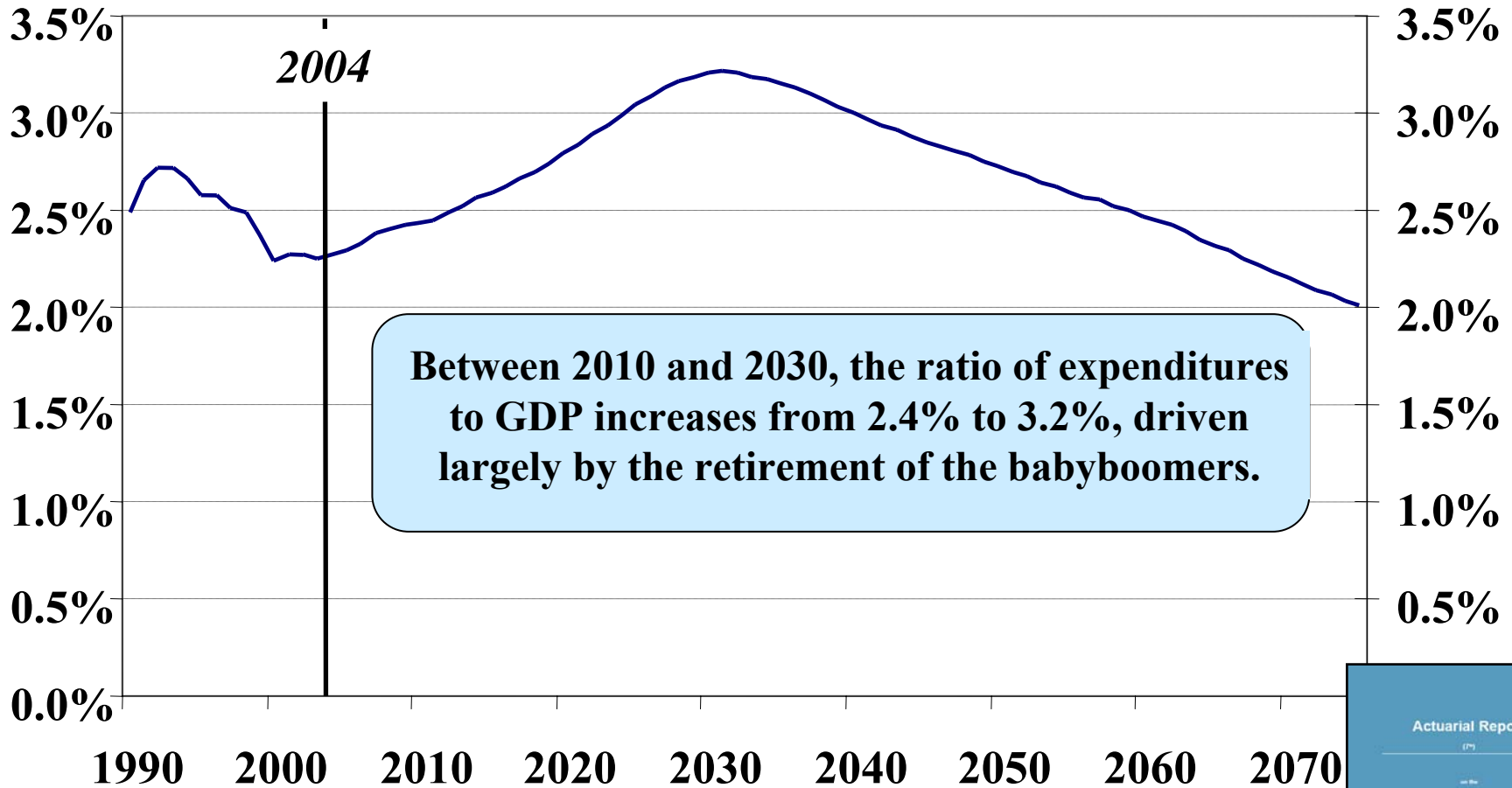
CPP Steady-State Funding

- 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 $\frac{1}{2}$ 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



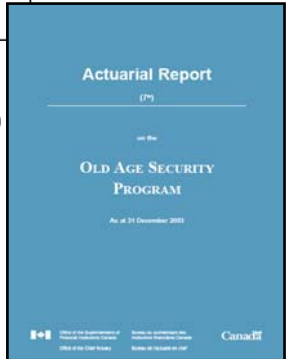
Between 2010 and 2030, the ratio of expenditures to GDP increases from 2.4% to 3.2%, driven largely by the retirement of the baby boomers.

\$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



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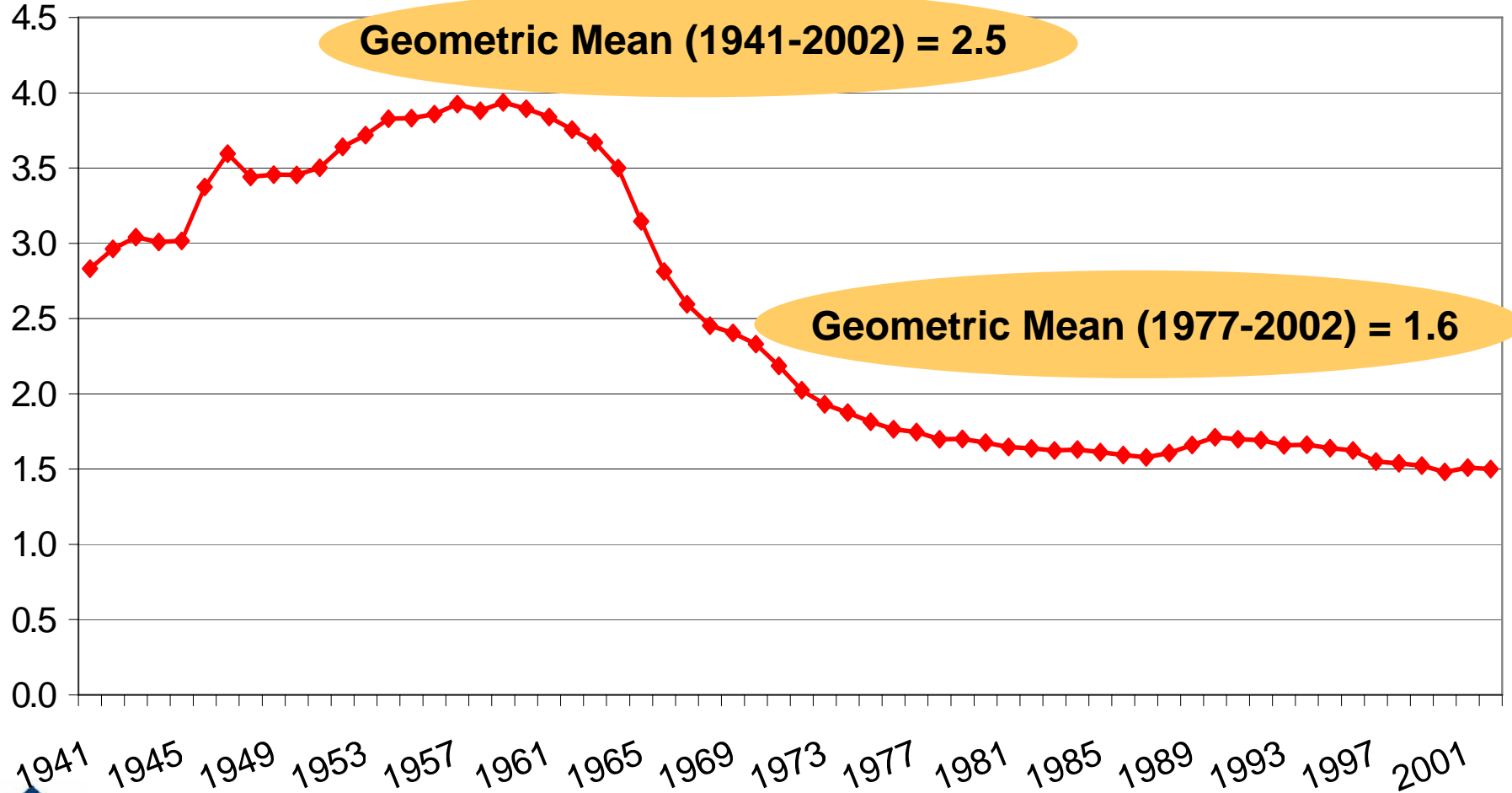
CPP Actuarial Report as at 31 December 2003

- 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

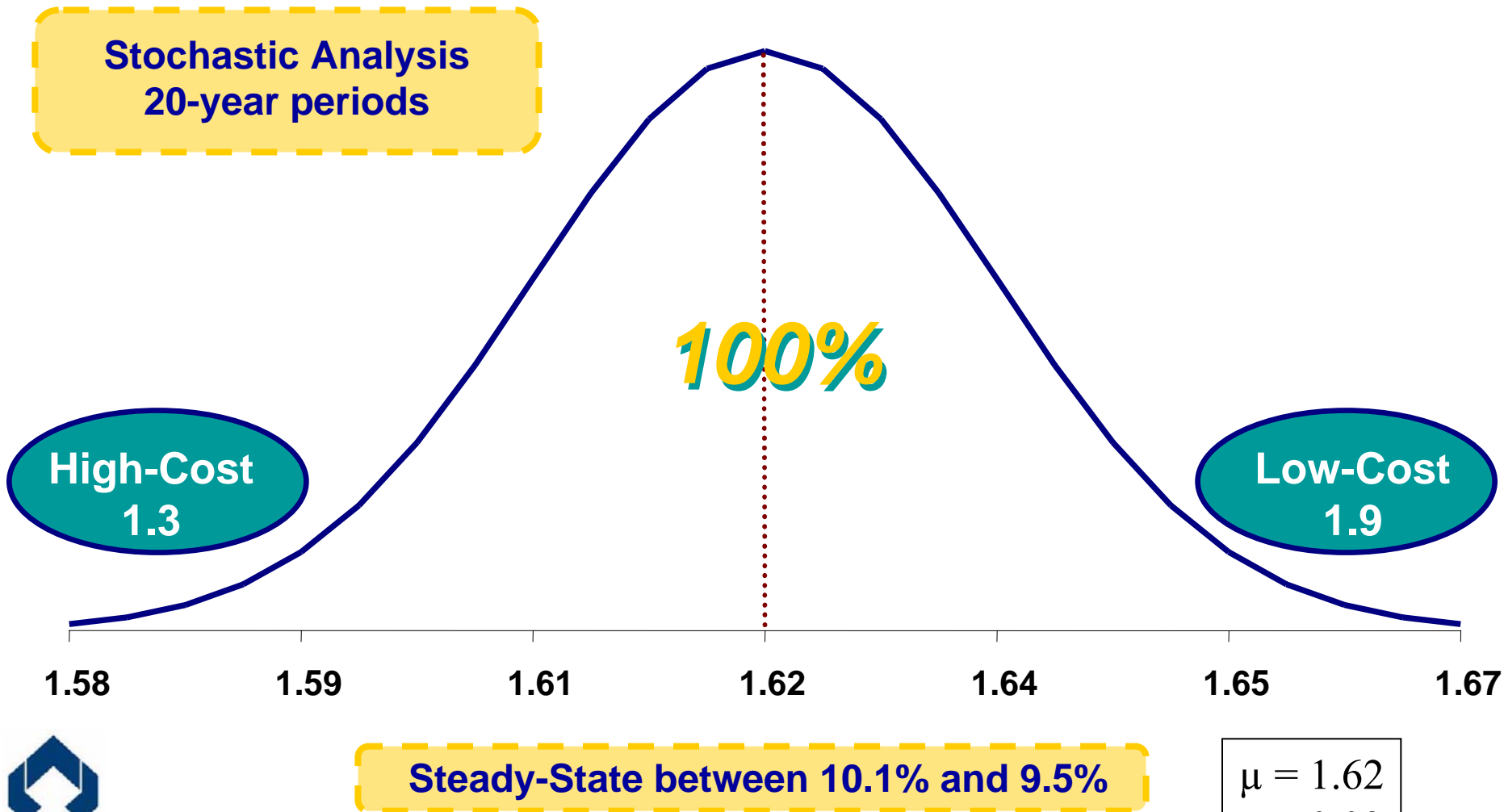
(Children per woman)



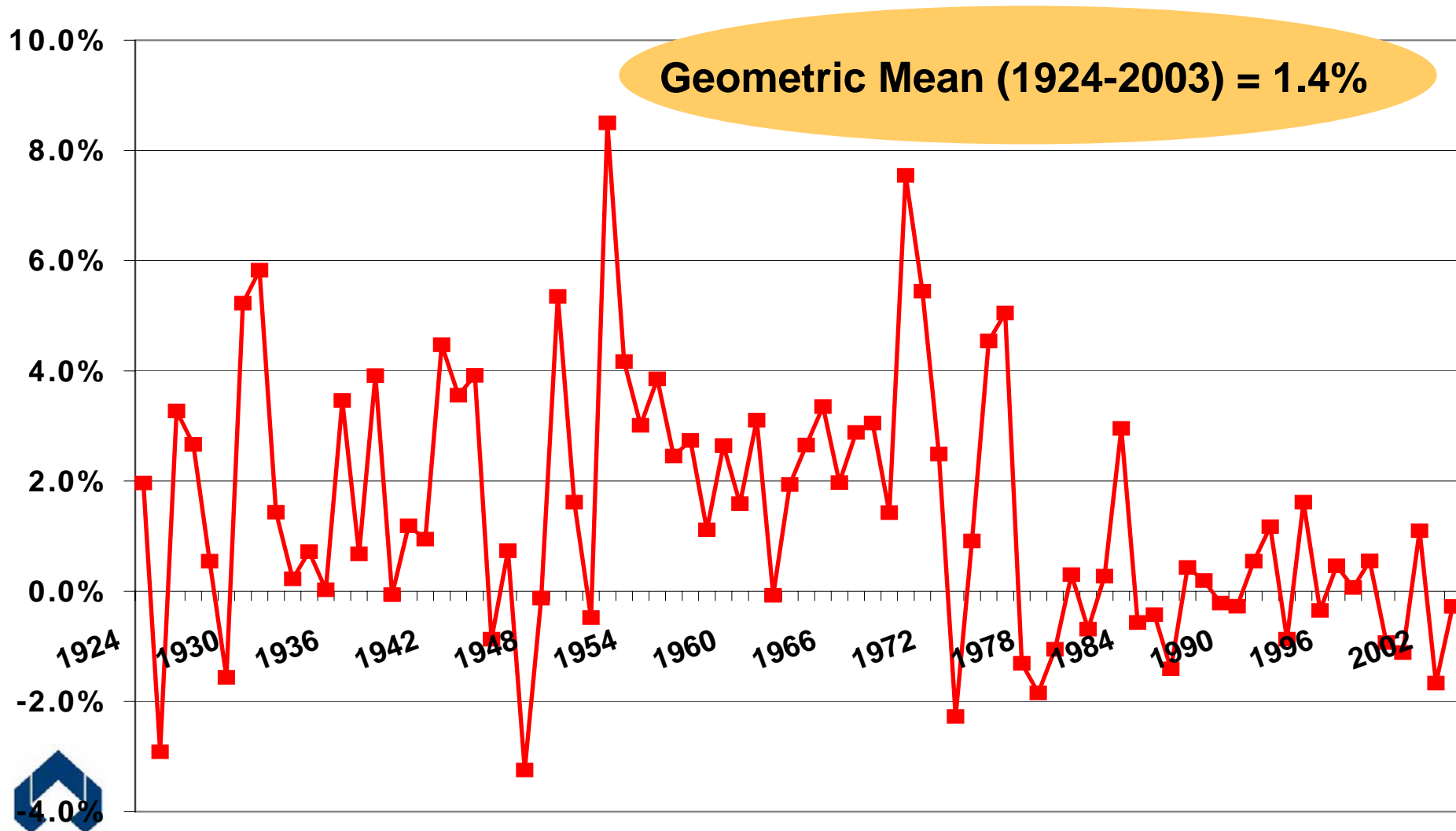
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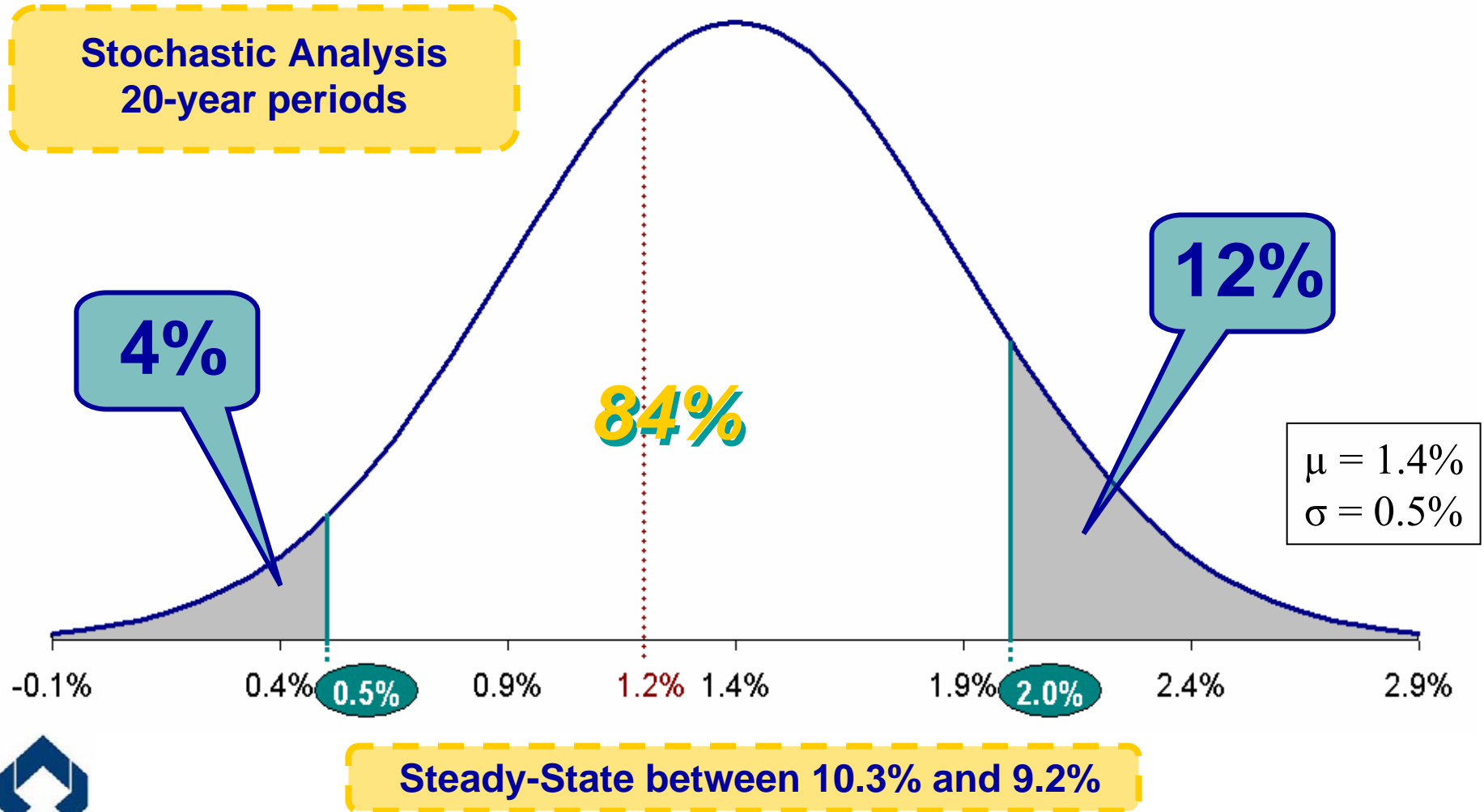
Fertility Rates (1977-2002)



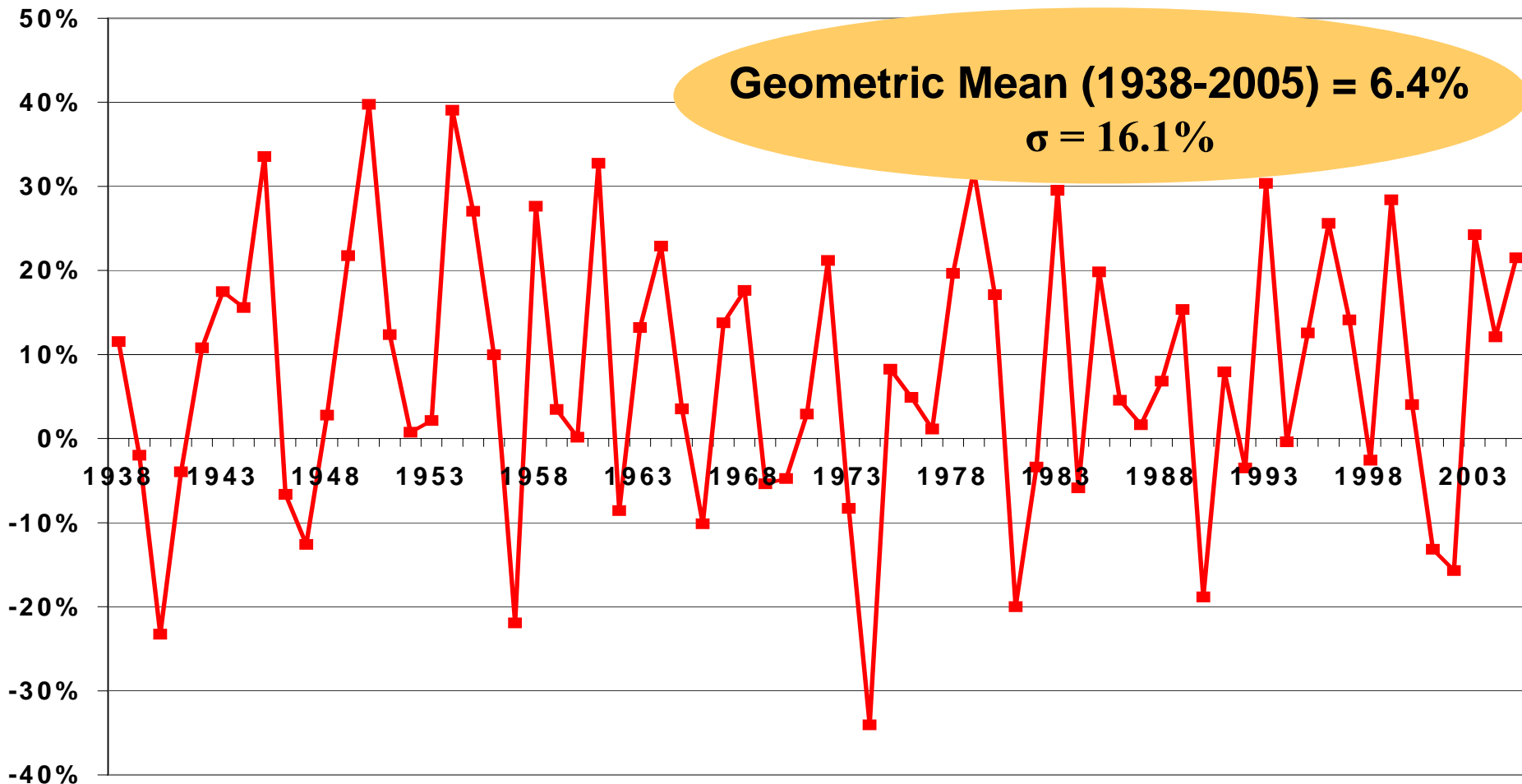
Historical Real Wages Differential



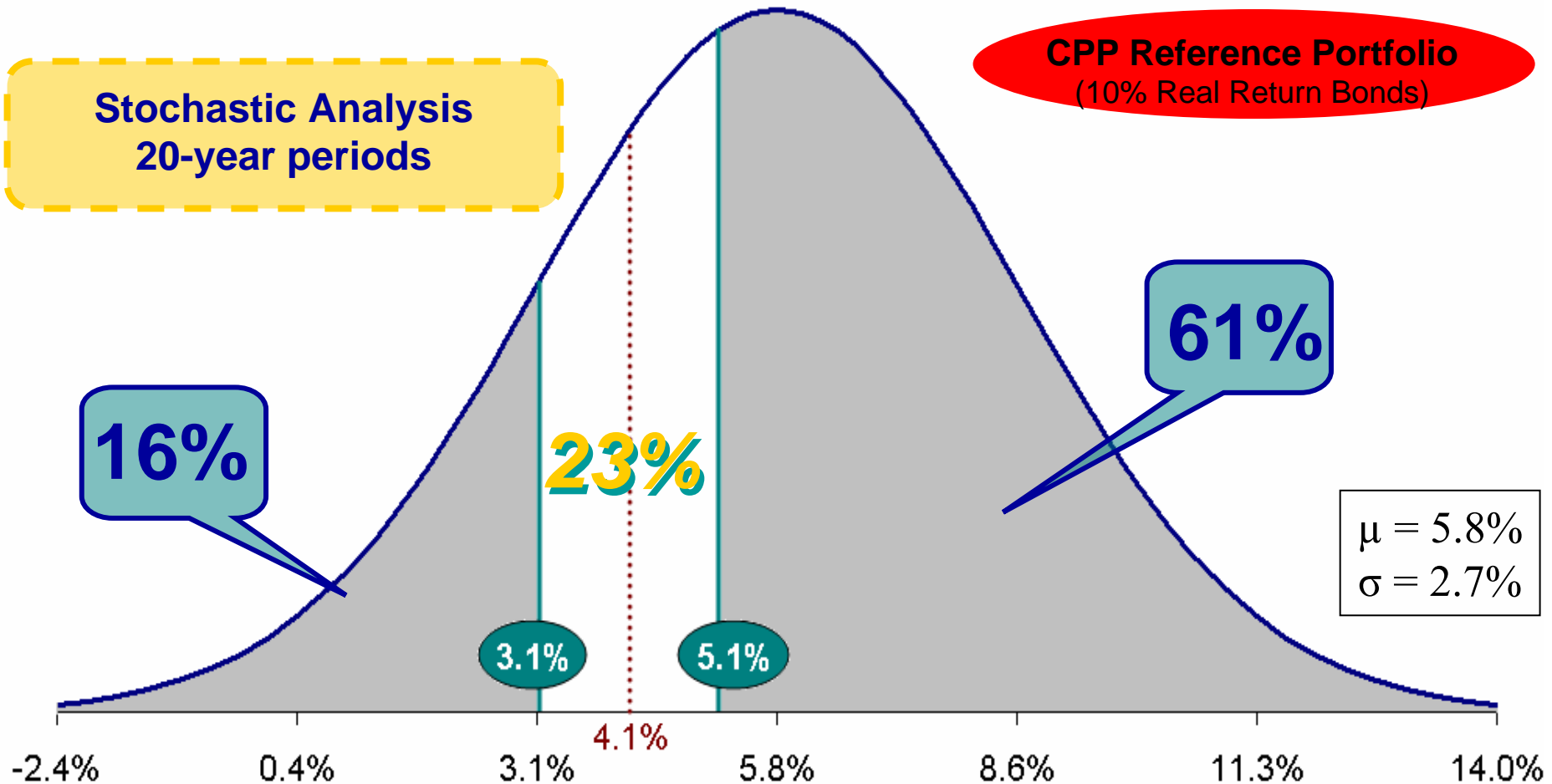
Real Wage Differential (1924-2003)



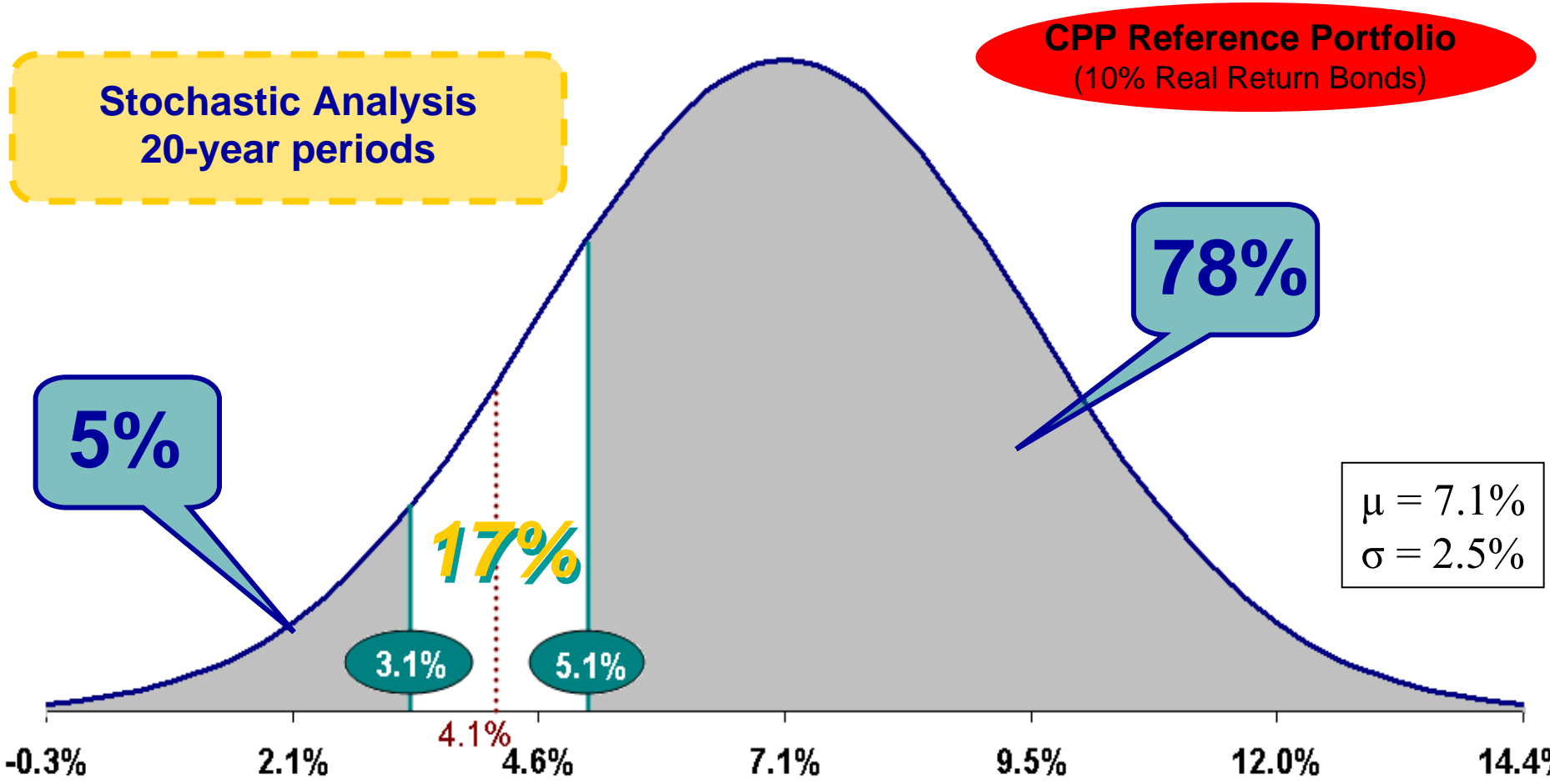
Historical Canadian Equity Return (1938-2005)



Real Rates of Return (1938-2005)



Real Rates of Return (1938-1972, 1983-2005)



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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