CONFERENCE OF CONSULTING ACTUARIES

CCA Annual Meeting 2025

SESSION 409

Common Challenges in Social Security Systems Around the World

All sessions of the Conference of Consulting Actuaries (CCA) are conducted in compliance with Federal and State antitrust laws and any discussion of anticompetitive activities among participants is strictly prohibited. The views expressed here are those of the presenter(s), and not necessarily those of the CCA. Nothing in this presentation is intended to be an interpretation of Actuarial Standards of Practice by the CCA.
Copyright © 2025 Conference of Consulting Actuaries. CCA retains copyright of this presentation. Content remains property of contributors.

Antitrust Policy

Professional societies, including the Conference of Consulting Actuaries (CCA), are subject to federal and state antitrust laws, and must constantly monitor their activities to ensure continued compliance with all antitrust regulations.

Purpose of Antitrust Laws

The antitrust laws prohibit any concerted activity or combination of competitors from interfering with free competition. In other words, the primary thrust of the law is to control private economic power by protecting competition. Persons and organizations are prohibited from engaging in any action which unreasonably restrains commerce or trade (i.e., competition). Per se violations (practices presumed to be inherently wrong regardless of the motivating factors) include: agreements to fix or stabilize prices, to divide markets, to allocate production, or to impose boycotts. In essence, this means any concerted action that significantly diminishes rivalry among competing firms.

CONFERENCE OF CONSULTING ACTUARIES

CCA Annual Meeting 2025

Speakers

Douglas Carey, FSA, FCA, MAAA, EA
Retired Global Consulting Actuary
doug@dougcarey.com

Jerry Mingione,
FSA, FCA, MAAA, CERA
The Terry Group
Capital Markets
jerry.mingione@terrygroup.com

Laurence Frappier, FSA, FCIA
Office of the Superintendent of
Financial Institutions, Canada
Laurence.Frappier@osfi-bsif.gc.ca

Richard Jackson, Ph.D.
Global Aging Institute
rjackson@globalaginginstitute.org

CONFERENCE OF CONSULTING ACTUARIES

CCA Annual Meeting 2025

Agenda

- U.S. Social Security system
  - What drove system financing off track
  - How were those factors addressed
  - Why did the past reform effort fail
  - What might a reform solution look like now
  - How does Medicare's situation compare
- Canadian Pension System
  - How was the Canada Pension Plan designed to work
  - What created problems
  - How were those factors addressed: reform of 1997 and expansion of 2016
  - What are the risks faced by the Canada Pension Plan today
- Developed Countries and Emerging Markets
  - Early evolution of developed country systems
  - Major approaches to reform since the 1990s
  - Developed country lessons for the United States
  - Special challenges facing aging emerging markets

U.S. Social Security System

U.S. Social Security – Underlying Philosophies

- Social Security was implemented to support old-age workers in retirement, reduce old-age poverty, and thus lessen the burden on families and government; fundamental principles were described as:
  - universal compulsory coverage
  - earnings-related benefits paid without a test of need
  - contributions toward the cost of the program from covered workers and employers.
- After some deliberation, it was determined that the system would be financed based on a pay-as-you-go funding philosophy
  - current workers pay to provide benefits for current retirees
  - reserve funds did not build up much in the early years, as benefits were advanced to early participants.
- Current program benefits are based on a progressive formula (90%/32%/15%) connected to years of coverage and taxes paid. The current formula is based on indexed wages; the original benefit formula (40%/10%) was based on fixed $ wage amounts.
  - Congress periodically acted to increase benefits and/or taxes
  - this resulted in instability in financing and in benefit expectations
  - automatic indexing was introduced in the 1970s.

CONFERENCE OF CONSULTING ACTUARIES

CCA Annual Meeting 2025

Social Security Financing – 2024

Income

Payroll Taxes
$1,294 B

Taxes on
Soc Sec Benefits
$55 B

Trust Fund Interest
$69 B

$1,418 B for 2024

Trust Fund

Image source – Pexels.com

$2,721 B at YE 2024

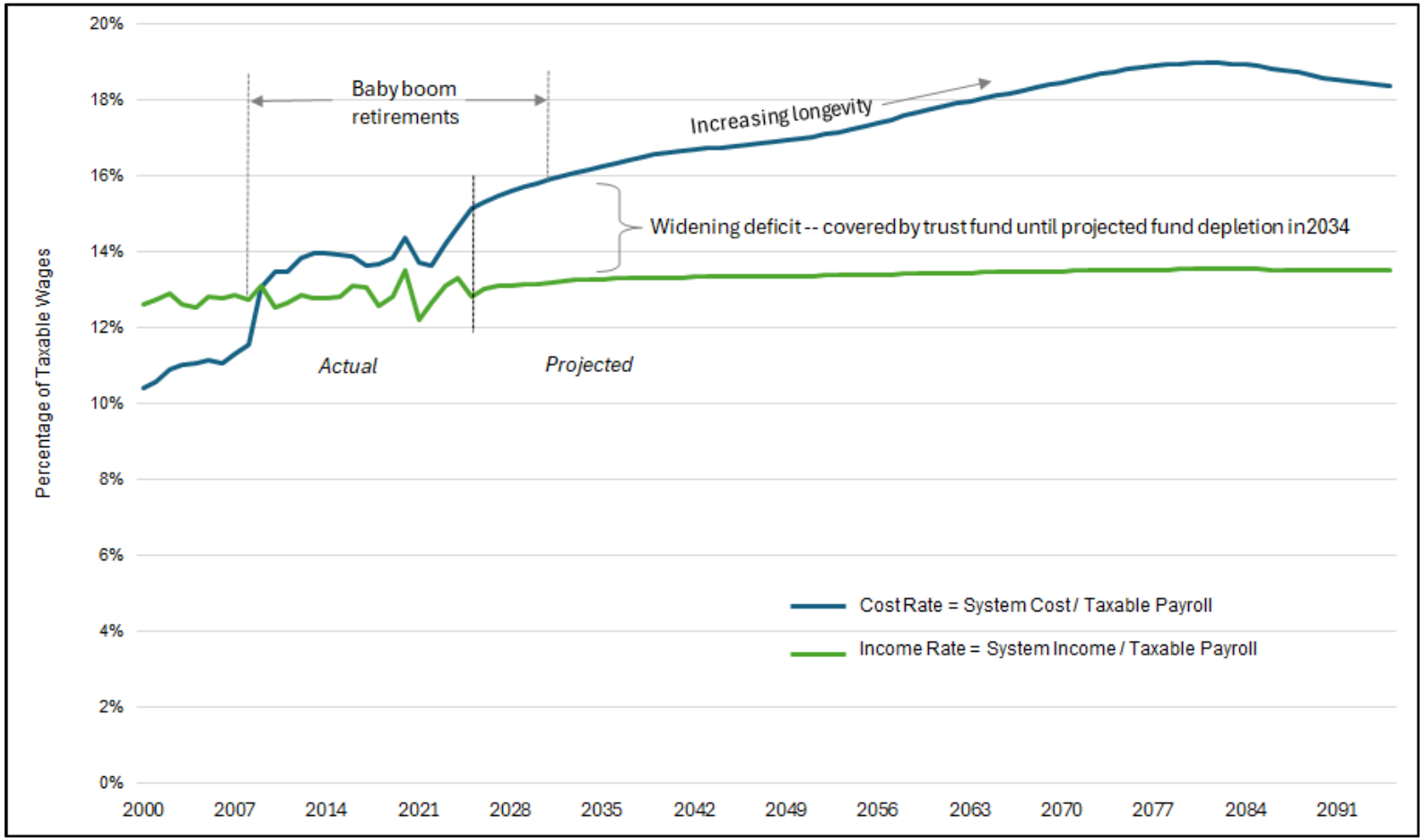
Outgo

Benefit Payments
$1,472 B

Admin/Other
$13 B

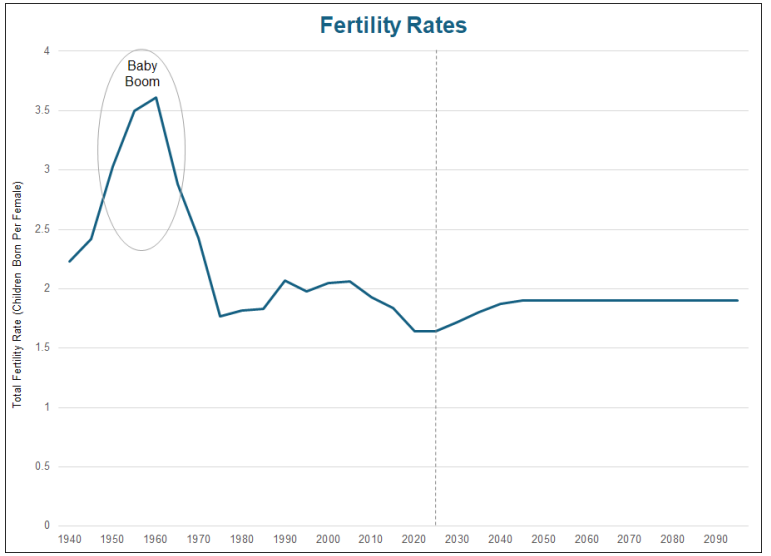
$1,485 B for 2024

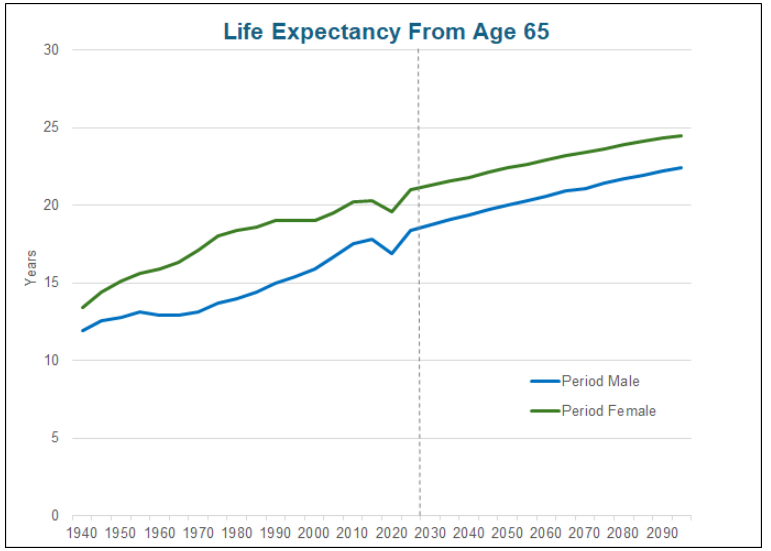
Social Security Financing Outlook



Factors Driving System Financing Off Track

- The 1979-1981 period saw surging inflation, high unemployment, and a loss in workers' real wages.
  - these conditions caused a jolt to system financing.
- The baby boom bump in fertility was projected to push pay-as-you-go financing permanently off track
  - had the funding philosophy had been left unadjusted, there would be significant *understatement of taxes vs. future benefits* for this generational group.
  - then, upon their retirement, there would be a *disproportionate burden* on the relatively smaller workforce.
- Continuously expanding life expectancies also entail an ever-growing financial burden for a system designed with a fixed retirement age.



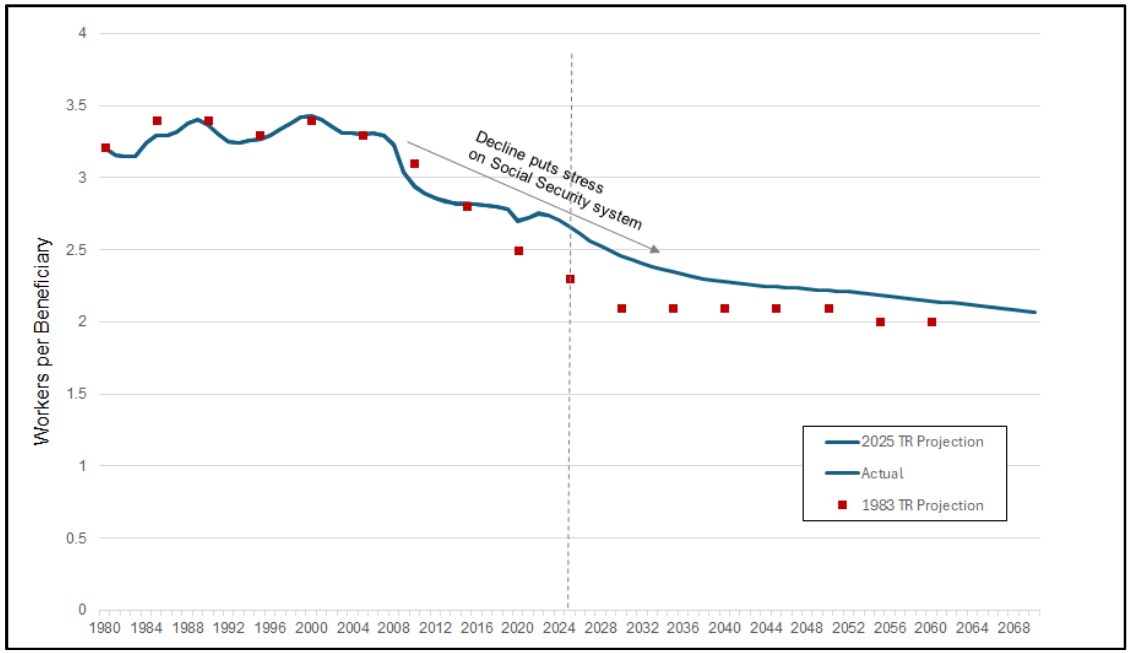


Factors Driving System Financing Off Track

- As a pay-as-you-go based system, two factors are critical:
  - the ratio of workers to benefit recipients
  - the rate of payroll increases over time.
- As the two charts indicate, a declining worker ratio was very much anticipated.
  - better-than-anticipated demographics mostly due to immigration counts far in excess of 1983 expectations.

Ratio of 20-64 ("working age") to 65+ population segments

	Actual/Current Projection	Expected 1983
1990	4.8	4.6
2000	4.8	4.5
2010	4.6	4.3
2020	3.5	3.3
2030	2.8	2.6
2050	2.6	2.6



1983 Reform's Attempt to Address the Financing Issues

- The legislation was developed on a bi-partisan basis, with provisions affecting both benefits and taxes.

  Key features were:

  - increases in payroll tax rates
  - increases in normal retirement age phased in over the following 20-40 years
  - some system benefits made taxable (essentially operates as a means-tested benefit reduction for higher-income recipients).

- The intent was to increase tax income from baby boom workers in advance of system requirements, thus building up a trust fund to address the increasing payout demands as that generation retired.

- This was expected to preserve system solvency until about 2063, at which time the baby boomers would have left the scene and population demographics would have stabilized.

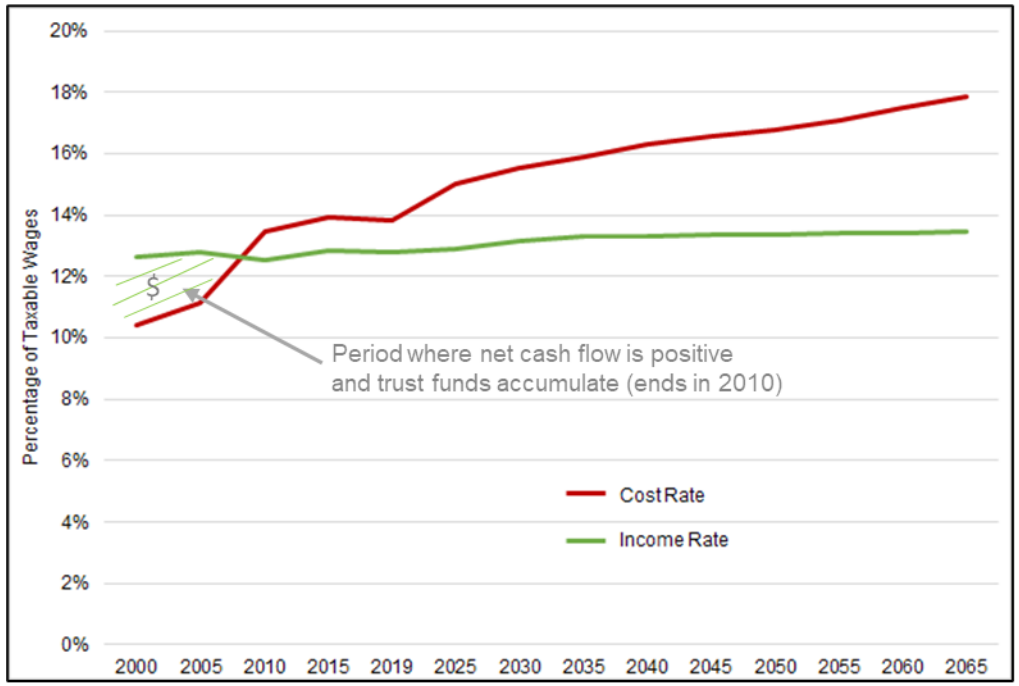
  But trust insolvency is now projected in 2034.

	Tax Rate	Taxable Wage Base
1983	10.8%	$35,700
1984	11.4%	37,800
1988	12.1%	45,000
1990	12.4%	51,300
2000	12.4%	76,200
2012	12.4%	110,100
2025	12.4%	176,100

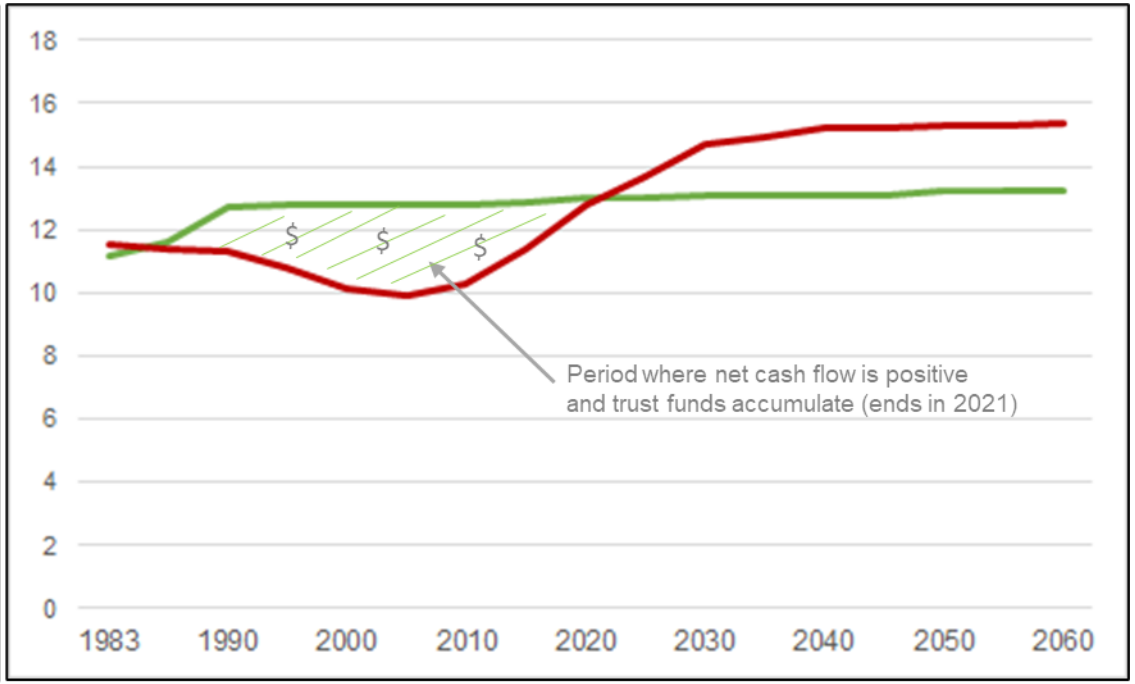
Year Age 65	Normal Ret. Age
Through 2002	65
2008- 2019	66
2025 and after	67

But It's Not Quite Working As Planned

The system went into a cash flow deficit in 2010 (w/o considering interest), 11 years earlier than projected. Annual deficits grew faster than anticipated.



2024 Trustees Report



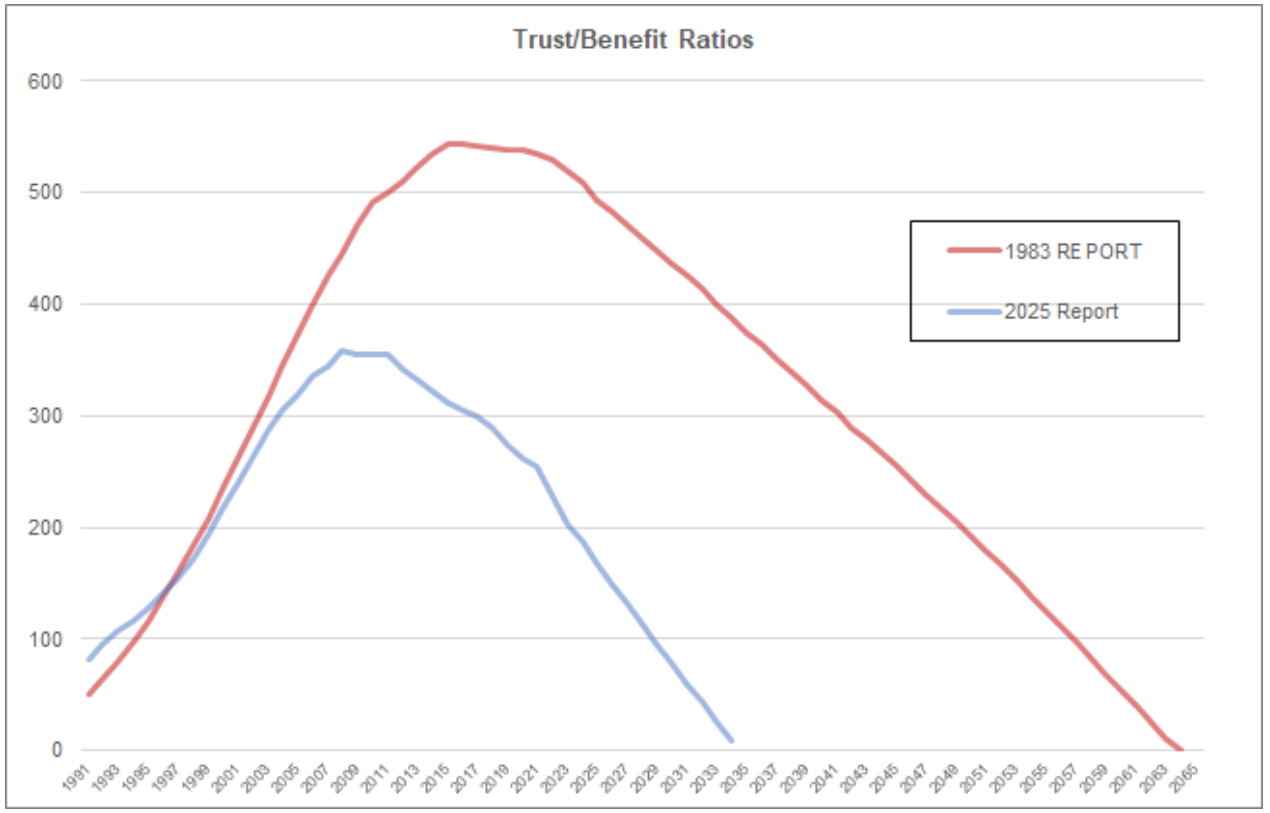
1983 Trustees Report

CONFERENCE OF CONSULTING ACTUARIES

CCA Annual Meeting 2025

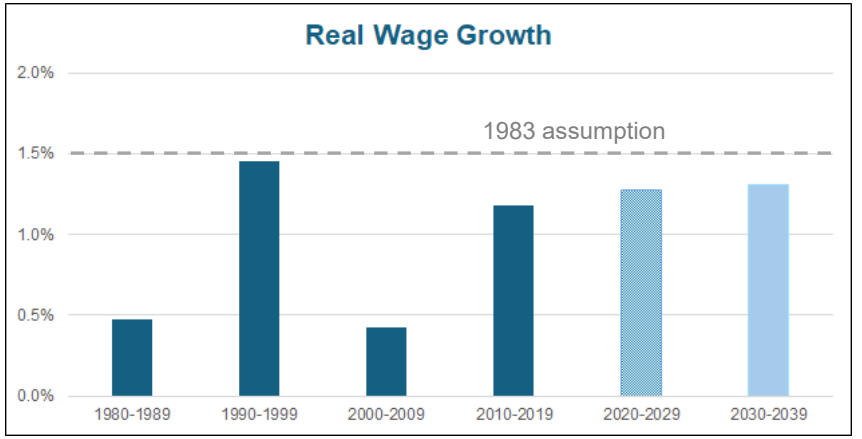
But It's Not Quite Working As Planned

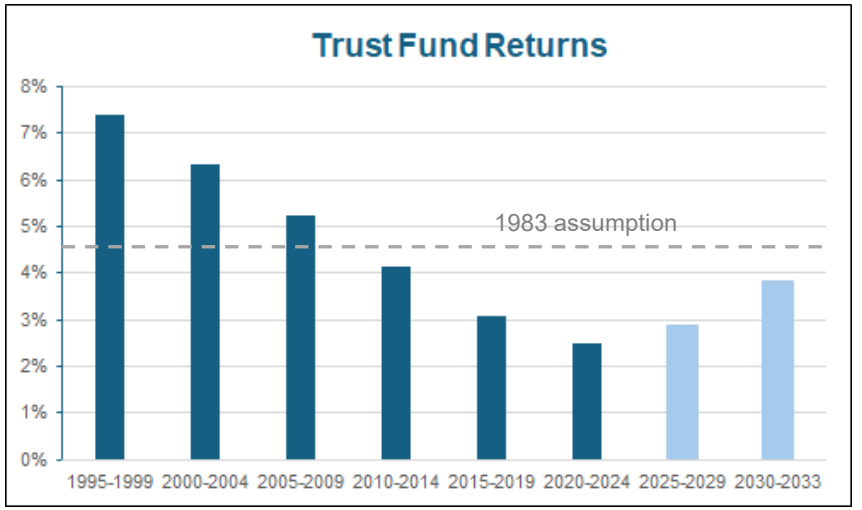
Trust fund accumulation was thus lower and peaked earlier than anticipated.



Why Didn't the 1983 Reform Solution Hold Up?

- The projected 75-year actuarial balance has worsened by 3.8% of payroll since 1983.
- Over 60% of this decline represents the playing out of expected demographic trends as the baby boomers moved through the workforce and retiree lifetimes expanded.
- The unexpected decline mostly resulted from macro-economic experience:
  - slowdown in productivity growth
  - reduced share of economic growth making it to worker compensation
  - diminished portion of worker compensation making it to taxable payroll due to
    - (1) increased health-care costs
    - (2) increased income disparity
  - declining return on trust fund assets.





Shaping a New Reform Solution

- Addressing Social Security's financial status is a major undertaking, addressing a projected deficit that is measured at about 1.2% of the national economy.
- In recent years, Social Security reform proposals have been something of a "hot potato". Neither party wants to be identified with proposals viewed as cutting benefits or raising taxes.
- It's clear that – just as in 1983 – any viable reform proposal will need to be a *bipartisan* effort. This way neither side is vulnerable to political attack based on what is certain to be a relatively painful process of "picking your poison".
  - This almost definitely implies that both benefits and taxes will be affected.
  - "The rich" will likely provide a disproportionate share of the financial solution, but by no means all of it.
  - The "poorest of the poor" will most likely be protected.

Pixabay.com

Addressing Retirement Age

- This is basically the “elephant in the room”. System demographics will never be stable so long as retiree longevity is increasing and the retirement age is fixed.
- As grand a solution as the 1983 reform effort was, a major weakness was that it did not address the increasing longevity issue permanently.
  - Indexation of retirement age was in fact considered, but not formally proposed.
  - 1983 reform architects likely assumed that after their retirement age increase schedule was completed in the 2020s, future legislators would be able to address any future demographic imbalance.

- In order to maintain a constant ratio of retirement years, to work years, an indexing formula would likely require a one month increase in normal retirement age every two years.

How Should Benefits Be Indexed?

- Benefits are currently linked to changes in CPI-W during the retirement years. This inflation index is based on the cost of a fixed basket of consumer goods.
- An often-proposed alternative is the chained version of CPI. This inflation index provides for the substitution of less expensive goods for those whose prices are inflating.
  - For example, if the price of pork increases, chicken would be substituted.
- Another commonly proposed index is the "elderly" version of CPI (CPI-E). This reworks the market basket to reflect the goods actually purchased by retirees. It is generally expected to produce a higher inflation result due to increases in healthcare costs (which may not be a certain outcome going forward).

What About Taxes?

Raising payroll tax revenue in some way is almost certain. But how?

- The payroll taxation rate could simply be increased about 4%.
- The payroll tax limit could be raised, e.g., to the level necessary to achieve a 90% taxation target (like the 1983 reform architects anticipated), likely about $315,000.
- A "donut hole" approach could be implemented, which seems to be of considerable appeal to legislators in recent years.* For example, the current tax limit could remain in place, but a (perhaps lower) tax rate could be applied to pay over $400k.
  - A critical policy decision would arise: should these taxes be connected to benefit accrual?
  - If they aren't, this would represent a breach in the underlying system philosophy where (in theory) workers pay in to provide for their own benefits (and thus it can't be viewed as welfare).
- There are also proposals that call for taxing non-traditional income sources like investment earnings (as already done for Medicare) and/or the value of healthcare benefits.

* Based on the evergreen political philosophy of "don't tax you, don't tax me, tax the fellow behind the tree" (Russell B. Lon, 1973).

Other Benefits Issues

A number proposals have called for:

- Extending the benefit calculation formula to reflect expectations for longer work, e.g., a formula based on 40 years rather than 35 years.
- Spousal benefits may be cut back. Spouses now receive 50% of the primary worker's benefit, a design based on a presumption of single-worker families. It is now presumed to result in perhaps-overstated benefits and perceived inequity compared to those provided to singles and dual-worker families.
- There is some sentiment from both political factions that benefits for low-wage workers should be increased, as a means of further diminishing rates of elderly poverty.

Recent Proposals (from all sides)

Larson (Dem) Proposal – focus on tax increases

- major increase in payroll taxes
- minor bump in benefits at low-income levels
- more generous CPI increases (elder-focused index)
- slight reduction in benefit taxation

Johnson (Rep) Proposal – focus on benefit cuts

- more significant bump in benefits at low-income levels
- major reduction in benefits at high-income levels
- increase in normal retirement age to 69 (short transition)
- reduction in inflation indexing (chained CPI, income cap)
- cap on spouse benefit
- major reduction in benefit taxation

Bipartisan Policy Center Proposal – attempt at compromise

- significant increase in payroll taxes
- minor bump in benefits at low-income levels
- significant drop in benefits at high-income levels
- increase in normal retirement age to 69 (by 2070)
- reduction in inflation indexing
- cap on spouse benefit
- reduction to survivor benefit
- minor increase in benefit taxation

CONFERENCE OF CONSULTING ACTUARIES

CCA Annual Meeting 2025

Crafting a Reform Solution

https://socialsecurity.actuary.org/

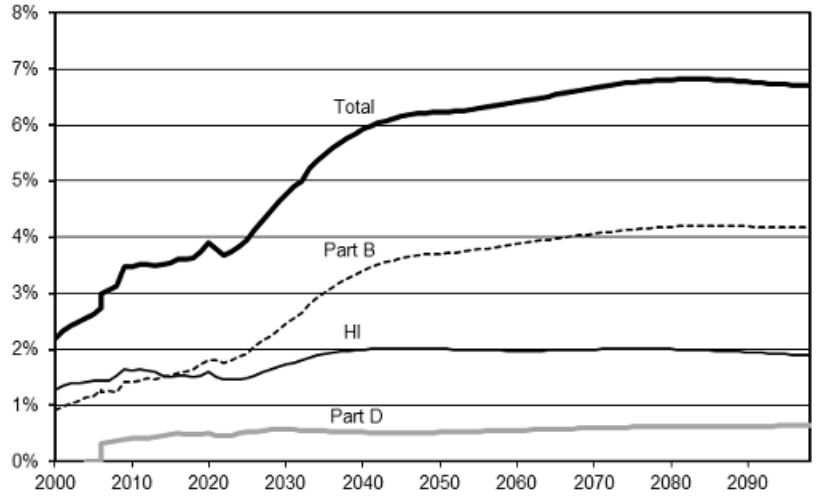
Sample Reform Solutions	% of shortfall addressed
1. Increase/index NRA	35%
2. Moderate increases in tax rate and benefit base	40%
3. Less generous CPI index	16%
4. Accrual formula reset to 40 years	12%
5. Other slight adjustments to benefits (+ minimum, - spouse ben)	0-(5)%

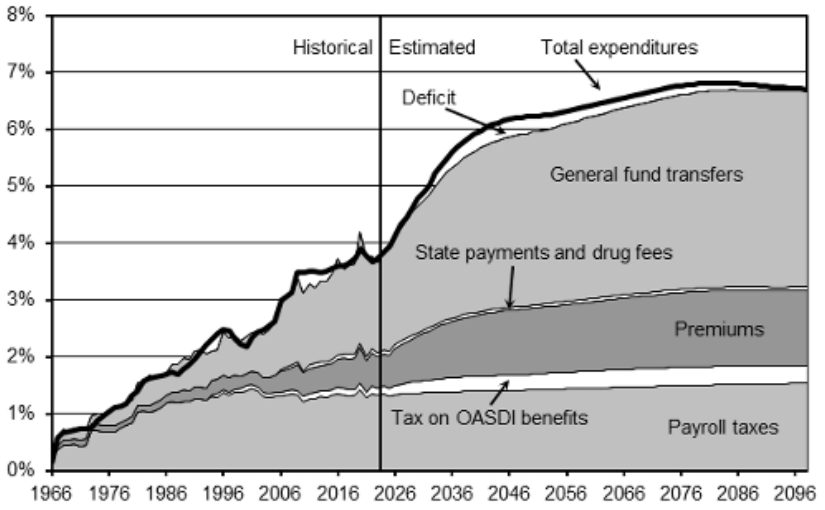
What About Medicare?

- A key objective for Social Security was to alleviate old-age poverty.
  - However, it was noted that incidences of major healthcare costs continued to push some elderly into poverty.
- Medicare was implemented to address this and thus further drive down old-age poverty.
- Medicare financing faces the same demographic issues as Social Security (low recent-year fertility, expanding coverage periods), but has not addressed any of it via increases in eligibility age.
- Medicare's structure includes some key differences in both benefits and financing that allow for a potential array of financing solutions:
  - Healthcare costs are subject to inflationary pressures that in the past have exceeded both wage base and CPI increases. But Congress periodically acts to restrict healthcare provider reimbursements. (Some of these cost-control provisions prove more effective than others.)
  - Medicare funding comes from payroll taxes, premiums paid by covered participants, a portion of taxes paid on Soc. Sec. benefits, a net investment tax (implemented in 2013) and other general fund subsidies.
  - 2023 revenue totaled over $1 trillion; approximately 43% came from general revenues, 36% from payroll taxes, and 15% from premiums.

Medicare's Financial Outlook

- The HI trust fund will become insolvent in the 2030s, just like Social Security. However, the measured shortfall is only about half the size (11%).
- Medicare spending went from 2.2% of GDP in 2000 to 3.9% currently; projected to exceed 6% in the 2040s.
- The most significant growth is coming from Part B (out-patient/physician services). These comprise roughly ½ of total expenditures today, and 60% in 2050.
- It is important to note that Medicare's projections assume that provider payments will grow more slowly than overall medical costs.
  - Efforts to control provider charges have a mixed record of success; should these fail, long-term costs could be almost 10% higher in 2050.





Canadian Pension System

Office of the Chief Actuary – Who we are

- The Office of the Chief Actuary (OCA) is an independent unit within the Government of Canada
- The OCA's mandate is to conduct a range of actuarial valuations and to provide actuarial advisory services to the Government of Canada in relations to social security, pension and employee benefits programs
- The OCA serves as a valuable resource for the government departments responsible for designing, funding, and administering these programs

- Visit us at: https://www.osfi-bsif.gc.ca/en/oca

Canadian Retirement Income System

- Three-tiered system with mixed funding approaches
- Canadian system well recognized around the world for its capacity to adapt rapidly to changing conditions

Workplace Pension Plans and Private Savings
Mandatory/Voluntary schemes aimed at providing adequate retirement income
Fully funded

Replace about 40%-45% of pre-retirement earnings for average individual

Canada / Québec Pension Plan
Mandatory earnings-related DB plans aimed at providing basic retirement income
Partially funded

Old Age Security Program
Universal basic pension/supplement aimed at poverty reduction
Financed from government general revenues ("pay as you go")

What is the Canada Pension Plan (CPP)

- Mandatory earnings-related DB plans aimed at providing basic retirement income
- Since 2019 the CPP consists of two parts:
  - Base CPP (benefits prior to the enhancement) is partially funded
  - Additional CPP is fully funded
- Replacement rate at maturity for the full career is 1/3 of 114% of average wage
- Financed through employee/employer contributions and investment income
- CPP contributions are paid in equal part by employer and employees at the combined rate of:
  - Legislated contribution rate of 9.9% for base CPP
  - Legislated first and second contribution rates of 2.0% and 8.0%, respectively

CONFERENCE OF CONSULTING ACTUARIES

CCA Annual Meeting 2025

The Canada Pension Plan in Numbers

History of the CPP

- The CPP was established in 1966 as a pay-as-you-go plan with small reserve fund
  - Pensions and benefits for one generation to be largely paid by contributions from later generations
- Focus on both current and future generations
- Meaningful for people close to retirement at inception
  - Full retirement pension was available after 10 years
- Low combined employer-employee contribution rate of 3.6%
  - Despite 1964 projections predicting that the contribution rate necessary to maintain the plan would be between 4.3% and 5.2% by 2010
- Low-income rate among seniors fell
  - From 37% in 1971 to 22% by 1981 and 10% in 1991

Uncertain future of the CPP

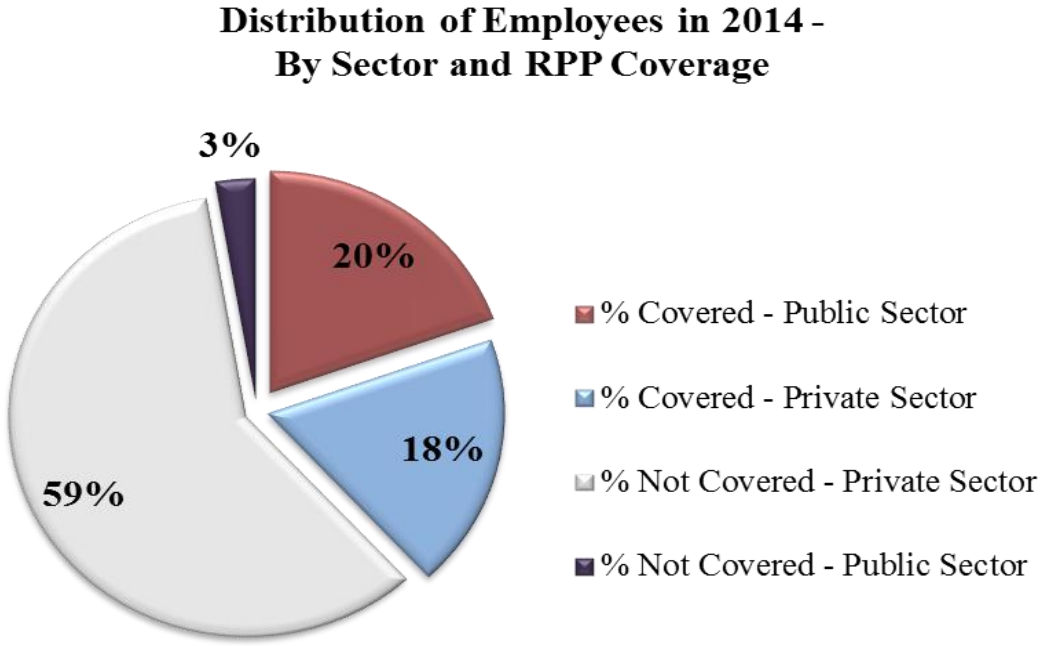
- From mid-1980 the CPP started to show signs of weakness
  - Assets were declining and contribution rate increases were necessary
  - In 1993, it was projected that by 2030 the pay-as-you-go rate would be 14.2% and the reserve fund would be exhausted by 2015
- Main reasons for these problems
  - less births
  - longer lives
  - lower productivity
  - overutilization of disability provisions
- Younger generations were losing confidence in the CPP

1997 Changes to the CPP

- Contribution rate increase from 5.6% in 1996 to 9.9% in 2003
- Slowing of the future growth of benefits
- Major changes in the financing approach
  - Moving from pay-as-you-go to partial funding approach
  - Introducing full funding for new or improved benefits
  - Creating an investment board (CPPIB) to invest assets on the markets
- Improved stewardship
  - Triennial instead of quinquennial reviews of the CPP by the stewards
  - Introduction of Self-Adjustment provisions

Triggers of the 2016 Changes to the CPP

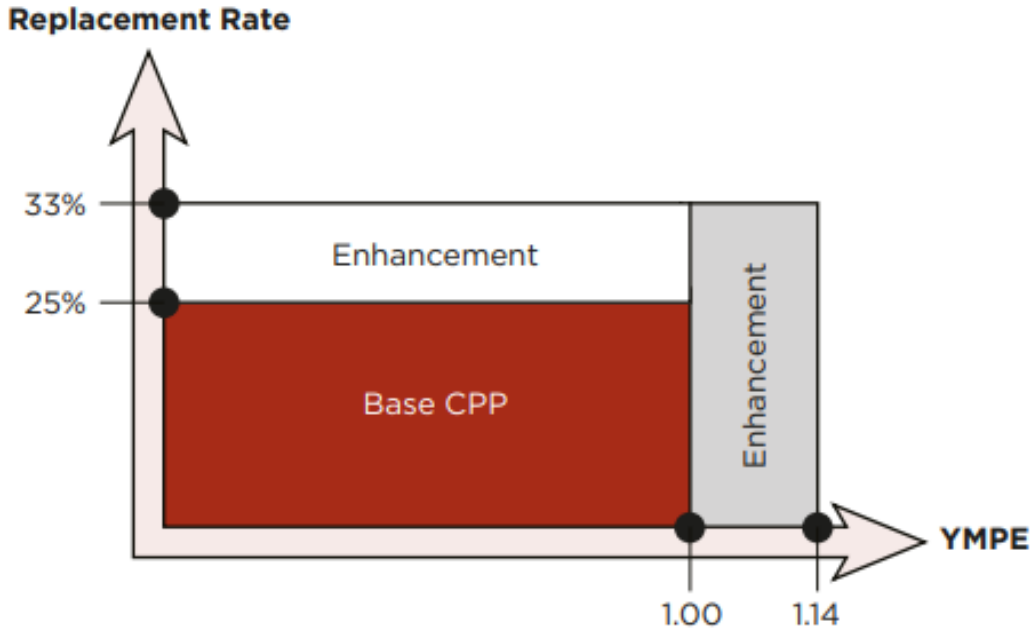
- Decline in the coverage by the employer-sponsored pension plans (especially in private sector)
- Shift from defined benefit to defined contribution plans
- 2008-2009 financial crisis
- One in four families approaching retirement—1.1 million families—were at risk of not saving enough
- Middle income families and younger workers were identified as being more at risk



Stewards of the CPP agreed on expansion parameters: <u>modest</u>, <u>gradual</u> and <u>fully-funded</u>

Increase in Replacement Rate and Covered Earnings

- Increase in replacement rate from 25% to 33.33%
- Increase in earnings limit to 114% of current limit (Year's Maximum Pensionable Earnings -YMPE)
- Gradual accrual of benefits: full accrual only available after 40 years of contributions



Increase in Contribution Rates

- Additional 2% on covered earnings below YMPE
- New 8% on earnings between YMPE and 114% of YMPE
- Gradual phase-in periods

	Earnings under YMPE			Earnings between YMPE and 114% of YMPE
Year	Base CPP	Additional CPP	Total	Additional CPP
2019	9.9%	0.3%	10.2%	-
2020	9.9%	0.6%	10.5%	-
2021	9.9%	1.0%	10.9%	-
2022	9.9%	1.5%	11.4%	-
2023	9.9%	2.0%	11.9%	-
2024	9.9%	2.0%	11.9%	8%
2025	9.9%	2.0%	11.9%	8%

CPP Financing Objectives

- Base CPP: Partial Funding (Legislated contribution rate of 9.9%)
  - Contribution rates aimed at stabilizing the ratio of assets to expenditures over the long term with full funding of any increased or new benefits (minimum contribution rates)
- Additional CPP: Full Funding (Legislated first and second contribution rates of 2.0% and 8.0%)
  - Contribution rates that result in projected contributions and investment income that are sufficient to fully pay the projected expenditures of the additional CPP over the long-term (additional minimum contribution rates)
- Sustainability of the CPP is determined by comparing the minimum contribution rates with the legislated contribution rates
- Based on the last CPP Actuarial Report as at 31 December 2021:
  - The base CPP minimum contribution rate (for 2034+) is 9.54%
  - The additional minimum contribution rates are 1.97% and 7.88%

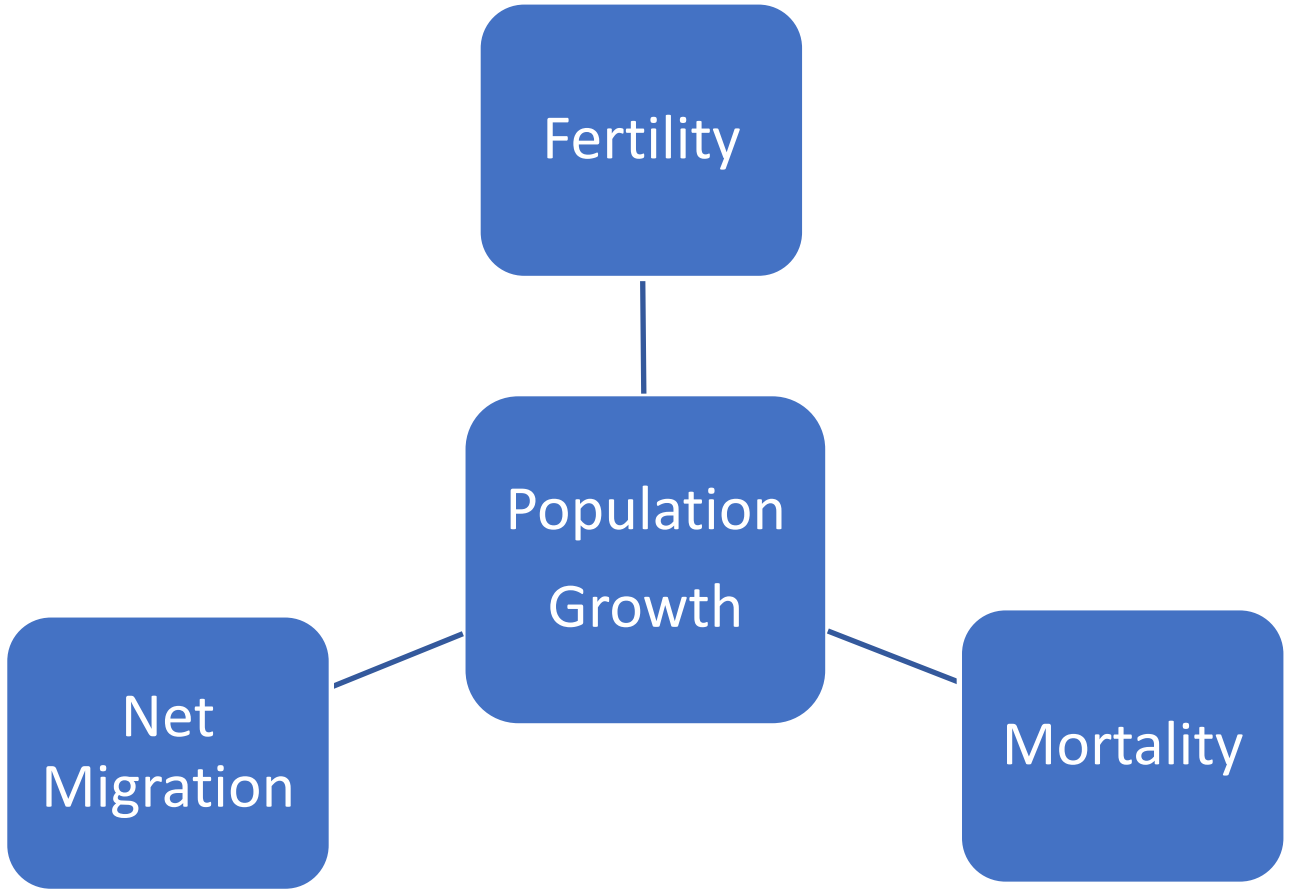
Systemic Risks

- Demographic risks
  - Aging of the population
- Macroeconomic environment
  - Geopolitical risks
  - Supply chain
  - Stagflation
  - Uncertain economic growth
- Investment risks
- Climate risks
- AI/Technological transition

Who says demography is boring?

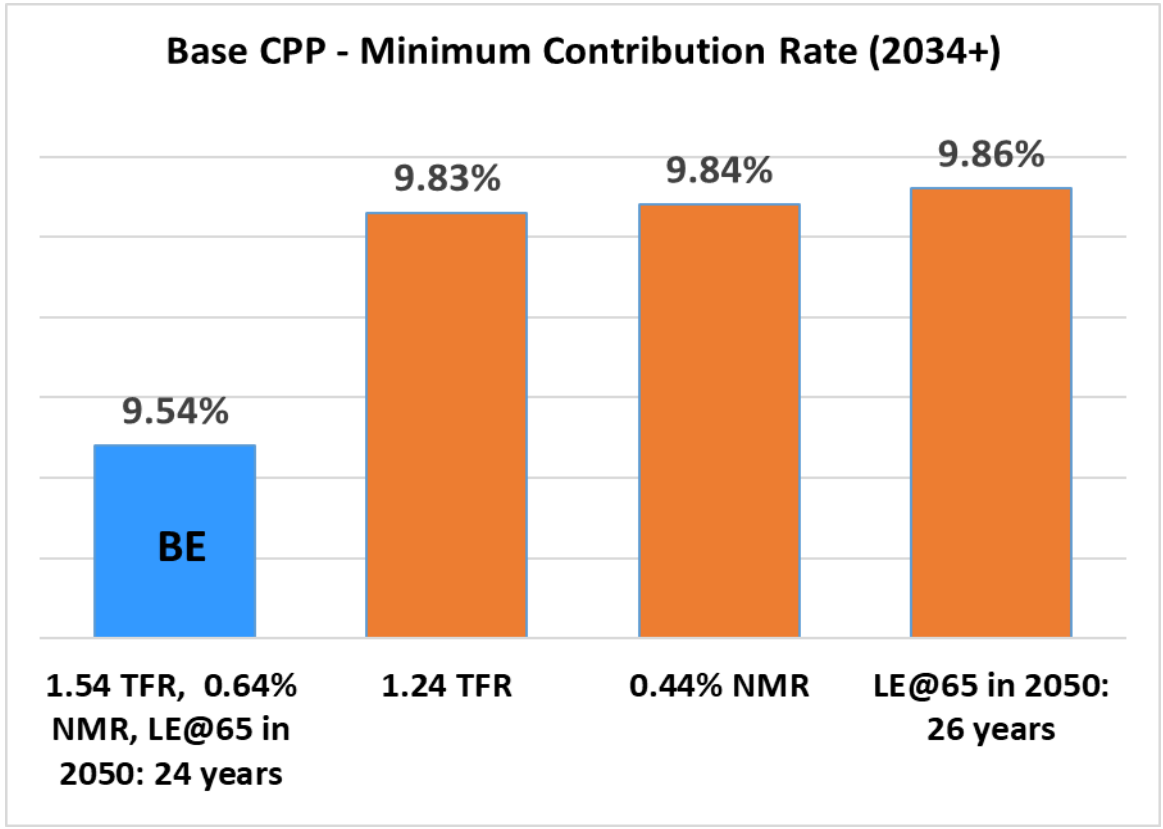
Over the last three years:

- Fertility rates have reached record lows
- Migration rates have hit record highs
- The pandemic and the opioid crisis have added complexity to mortality experience and future assumptions



Demographic scenarios – Base CPP

These scenarios illustrate the potential downward impact of demographic variables on the minimum contribution rate of the base CPP



BE – best estimate
TFR – total fertility rates
NMR – net migration rate as % of population
LE – life expectancy

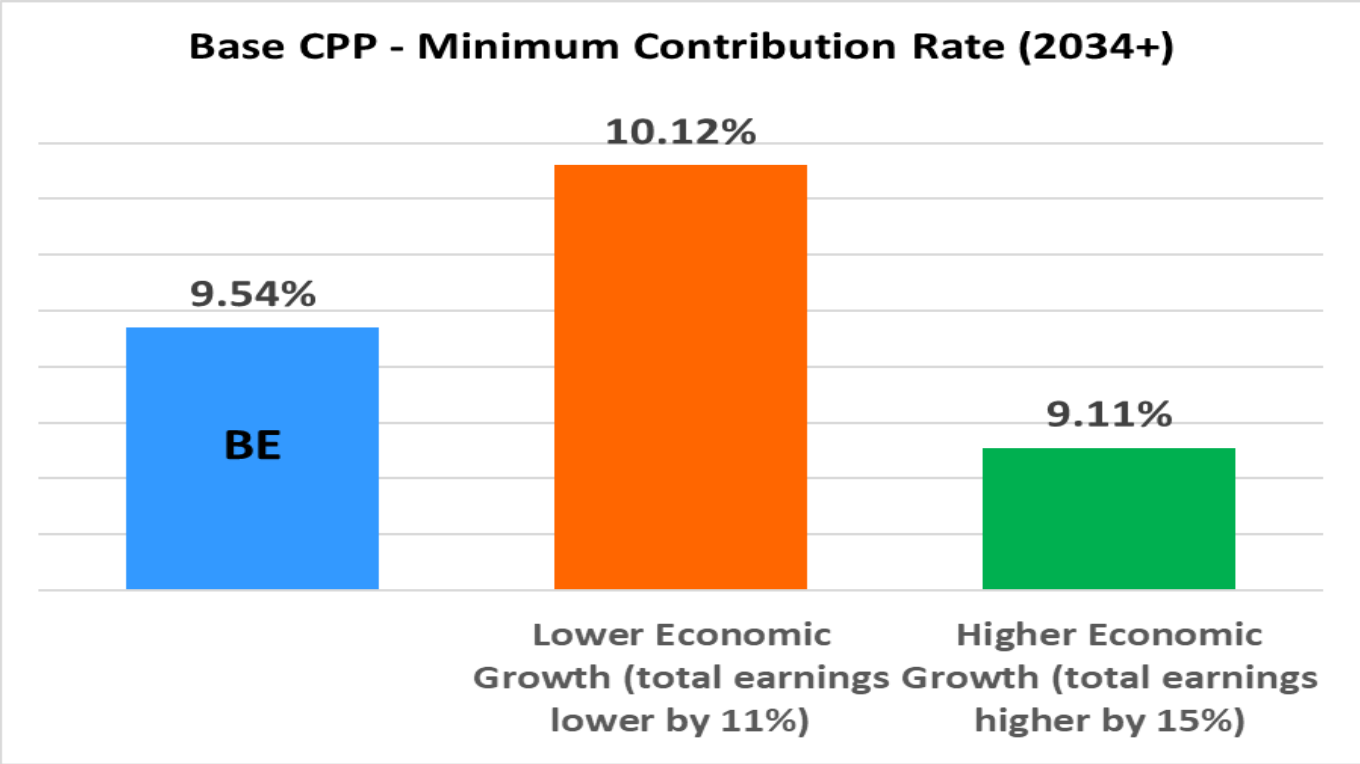
Source: CPP31 Report

Macroeconomic Risks

- CPP31 assumes moderate economic growth in Canada
- Several shocks over the last few years
  - Supply chain disruption caused by COVID19
  - Elevated inflation
  - Trade policies
- Short term vs long term impacts and expectation – scenarios and sensitivities used to illustrate impacts

Scenario: Lower and Higher Economic Growth

This scenario illustrates the potential impact of lower and higher economic growth (as proxied by labour market) on the minimum contribution rate of the base CPP

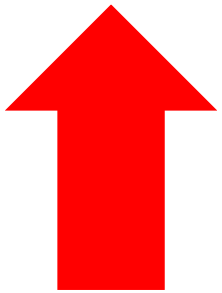


Source: CPP31 Report

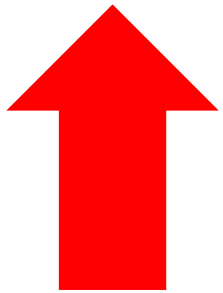
Scenario: Stagflation

This scenario assumes a simultaneous economic stagnation and increase in inflation

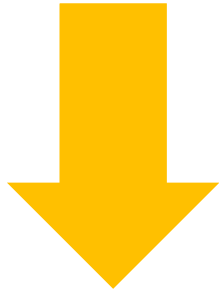
- High inflation for a period of 10 years
- High unemployment rate for a period of 10 years
- Only partial inflation is assumed to flow through nominal wages in the short term
- Only partial inflation is assumed to flow through nominal investment returns in the short term



Inflation



Unemployment



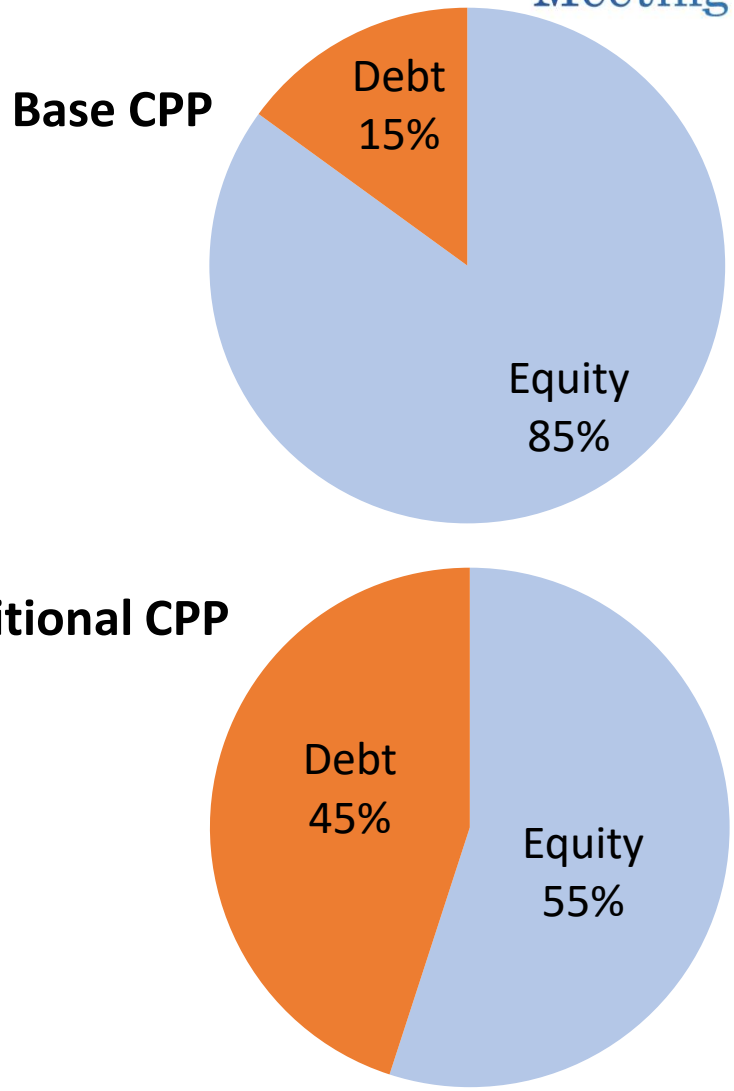
Real GDP

Under the stagflation scenario, the minimum contribution rate of the base CPP increases by 0.31 percentage points to 9.85%

Source: CPP31 Report

Investment Risks

- CPPIB invests money on behalf of the CPP
- Target level of market risk is different for the Base and Additional CPP
- The Additional CPP is still in its early years, it is currently not as sensitive to investment shocks.
  - It is however more sensitive to long-term investment assumptions

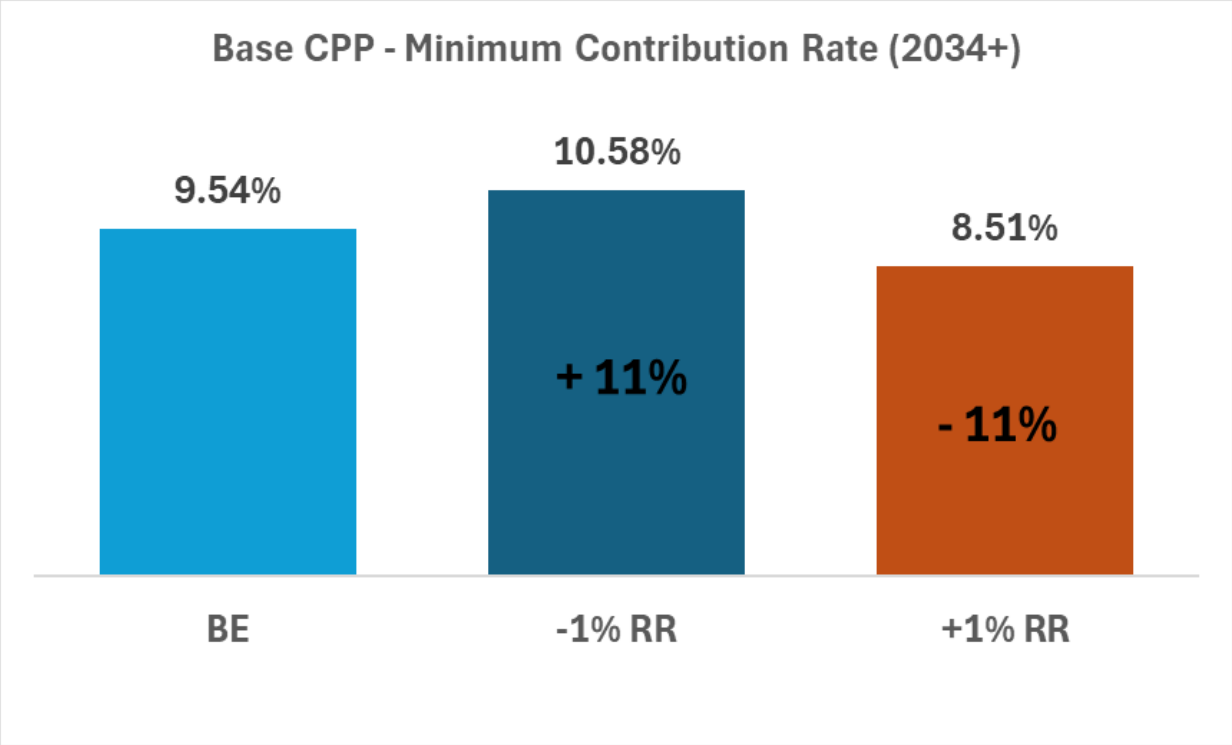


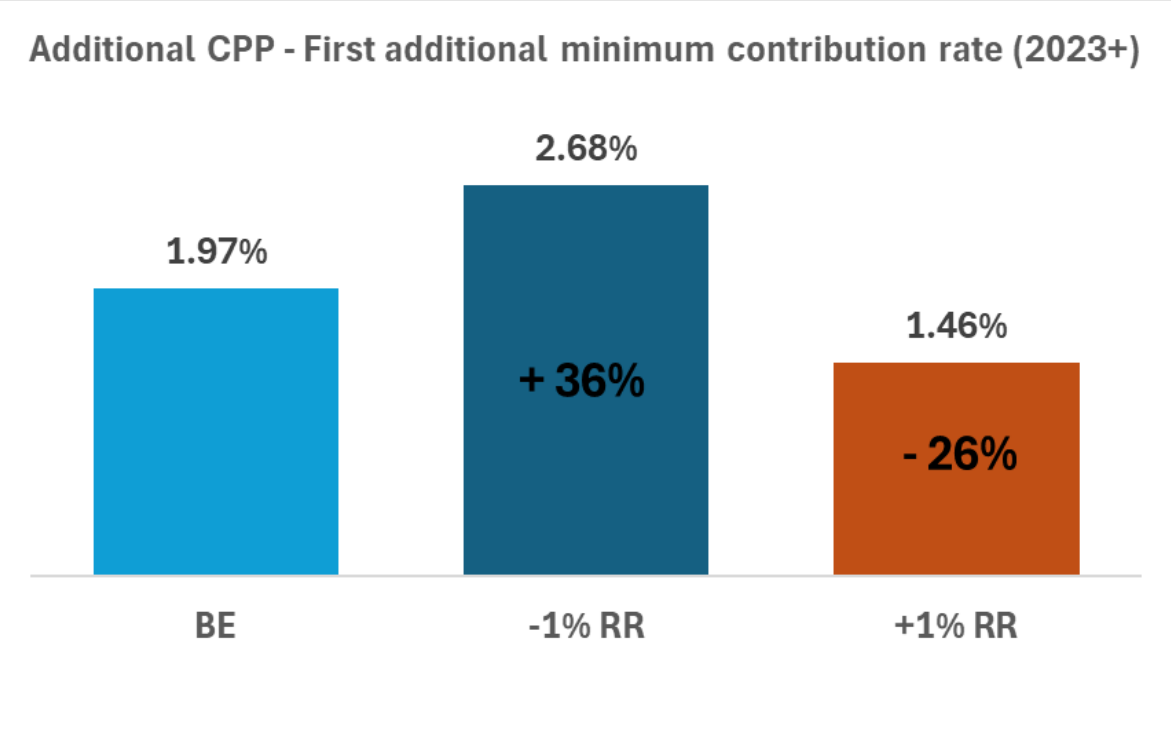
Source: CPPIB 2025 Report

CONFERENCE OF CONSULTING ACTUARIES

CCA Annual Meeting 2025

Sensitivity to Investment Returns





Source:CPP31 Report

Climate Change Poses Risks for Sustainability and Adequacy of Social Security Programs

Climate Impacts

- Heat waves
- Storms
- Flood
- Sea Level rises
- Forest Fire
- Drought
- Air pollution
- Water and Food Chain
- Disease
- Etc.

Social Impact

- Demography
- Healthcare Infrastructure
- Emergency Services & Social Services
- Consumer Behavior
- Etc.

Economic Impact

- GDP growth
- Investor sentiment
- Infrastructure Investment
- Labor Market
- Housing
- Etc.

Sustainability

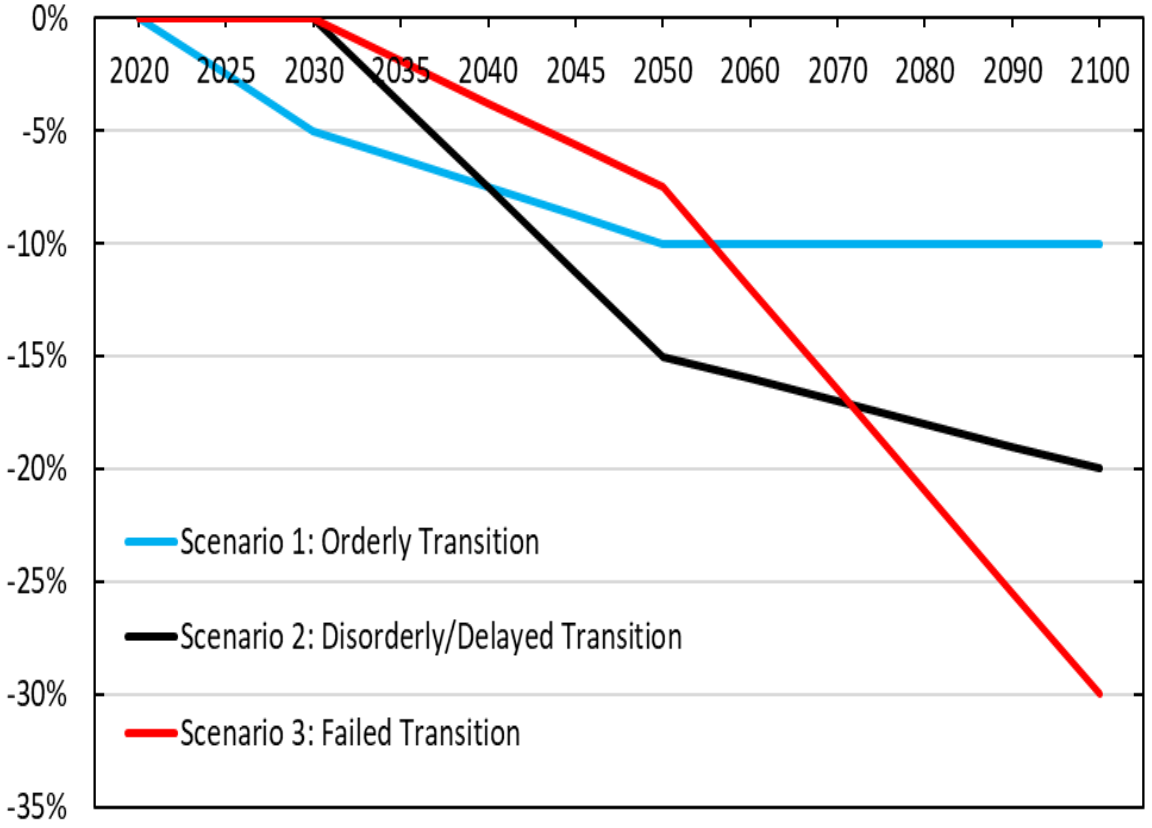
Adequacy

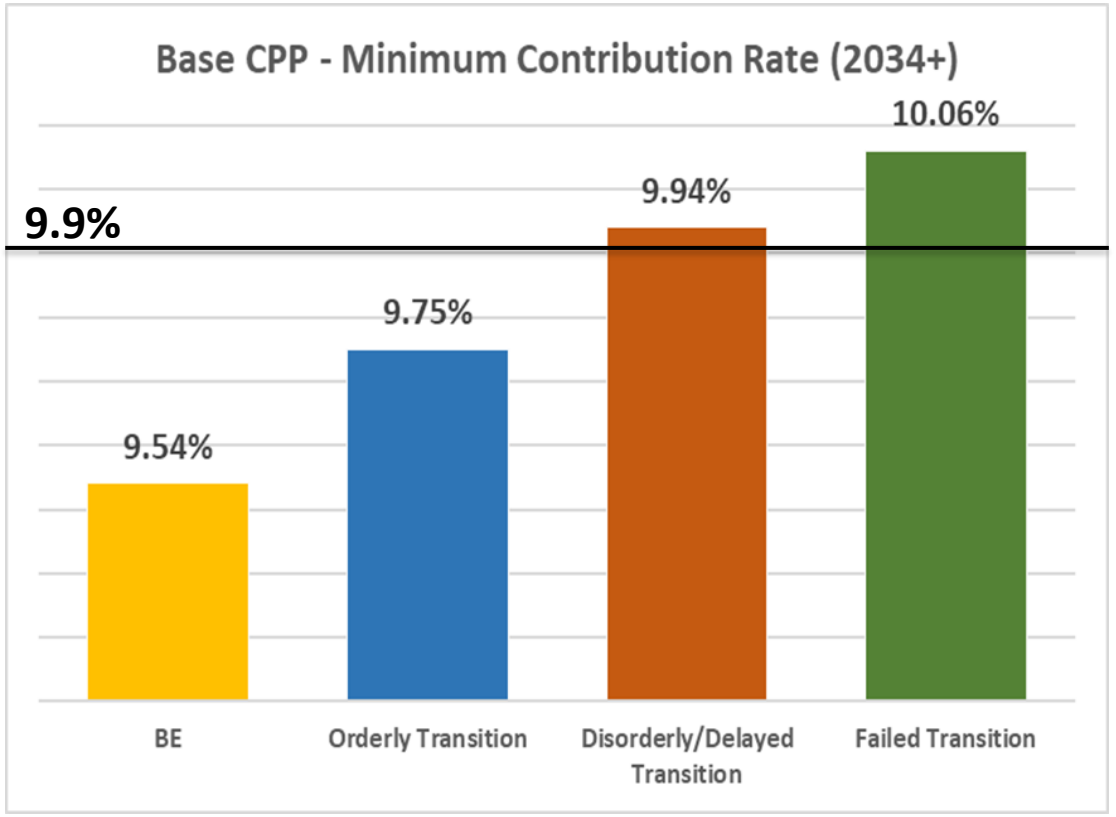
CONFERENCE OF CONSULTING ACTUARIES

CCA Annual Meeting 2025

Scenario: Climate Change

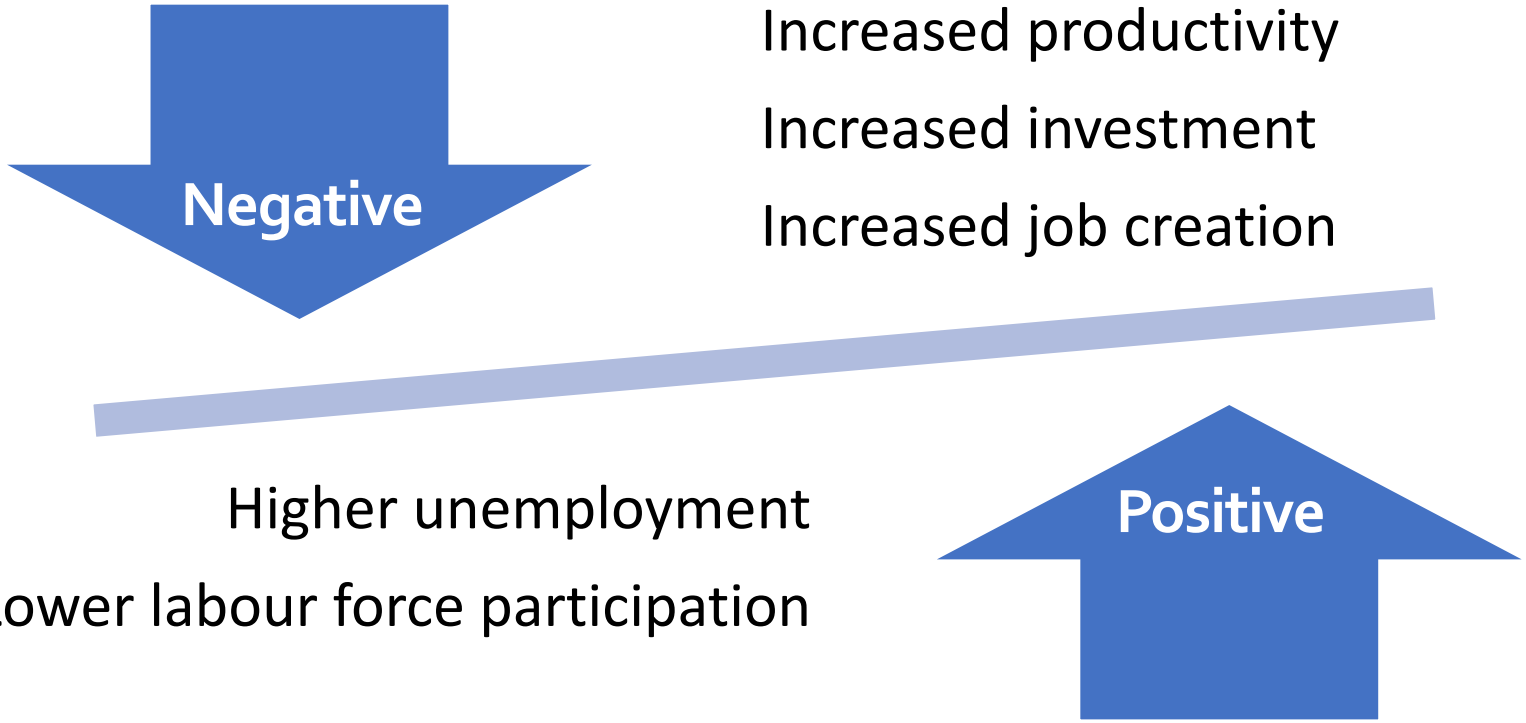
Cumulative Canadian GDP Impact Relative to Baseline Scenario





Source:CPP31 Report

AI and Technological Transition – Potential Impacts on CPP

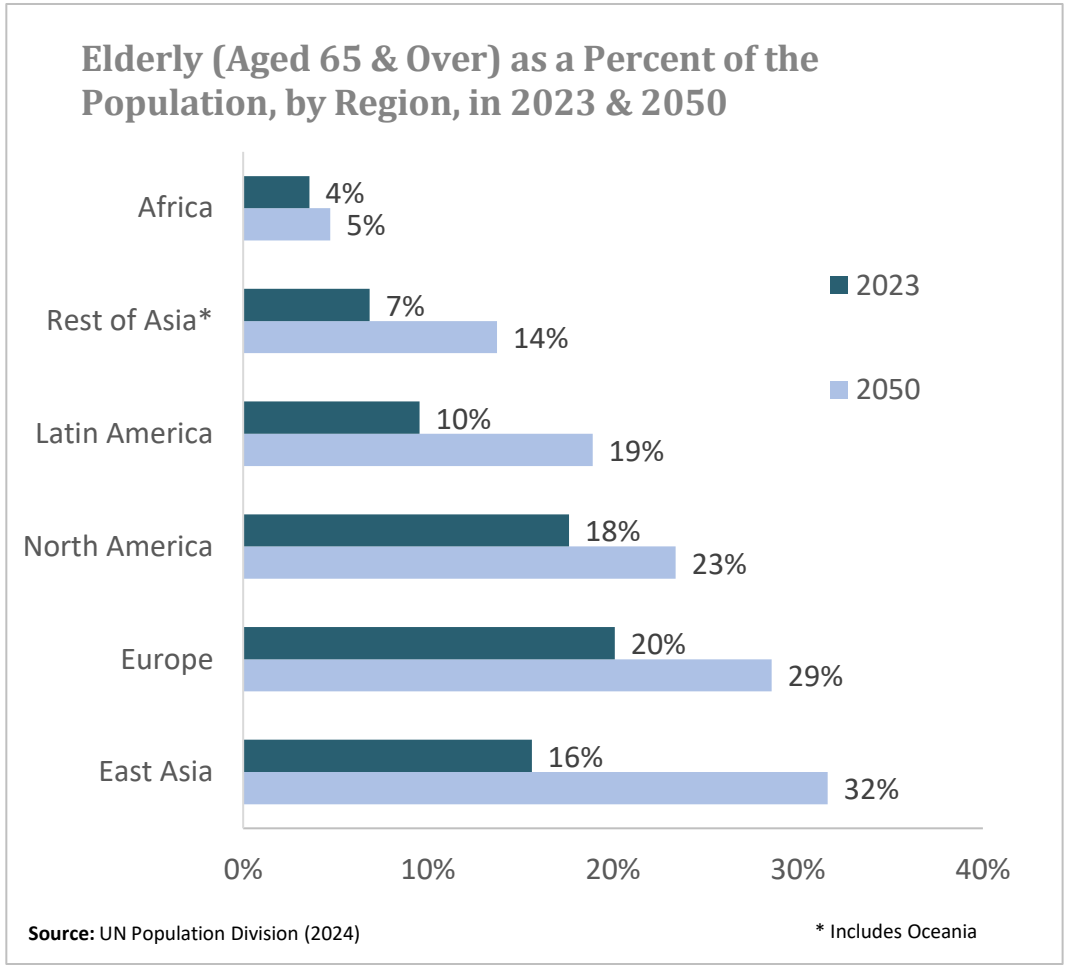


No consensus on how AI may impact the CPP. No explicit assumption based on advent of AI. We continue to monitor the experience and literature.

Developed Countries and Emerging Markets

A Stunning Demographic Transformation

- Falling fertility and rising life expectancy are leading to a dramatic aging of populations worldwide.
- The aging trend began in the rich world, but it has now overtaken much of the emerging world as well.
- Population aging poses fundamental challenges to the sustainability and adequacy of retirement systems.



Developed Countries and Emerging Markets: A Very Different Retirement Challenge

DEVELOPED COUNTRIES

How to maintain a high standard of living for the old without putting a crushing burden on the young

EMERGING MARKETS

How to afford a modicum of income security for the old when most of the elderly now have none at all

Developed Country Overview

The Postwar Retirement Revolution

- In the early postwar decades, most developed countries greatly expanded the generosity of government retirement systems, triggering a mass exodus of older workers from the labor force.
- Although the design of retirement systems differed, most were financed on an exclusively PAYGO basis.
- Favorable demographics, combined with rapid economic growth, made generous government retirement benefits seem effortlessly affordable.
- Given the high poverty rates, low educational attainment, and low life expectancy of the elderly, heavily subsidizing retirement also seemed like enlightened social policy.

"The beauty about social insurance is that it is *actuarially* unsound…Always there are more youths than old folks in a growing population. More important, with real incomes growing at 3 percent per year, the taxable base upon which benefits rest in any period is much greater than the taxes paid historically by the generation now retired… A growing nation is the greatest Ponzi game ever contrived."

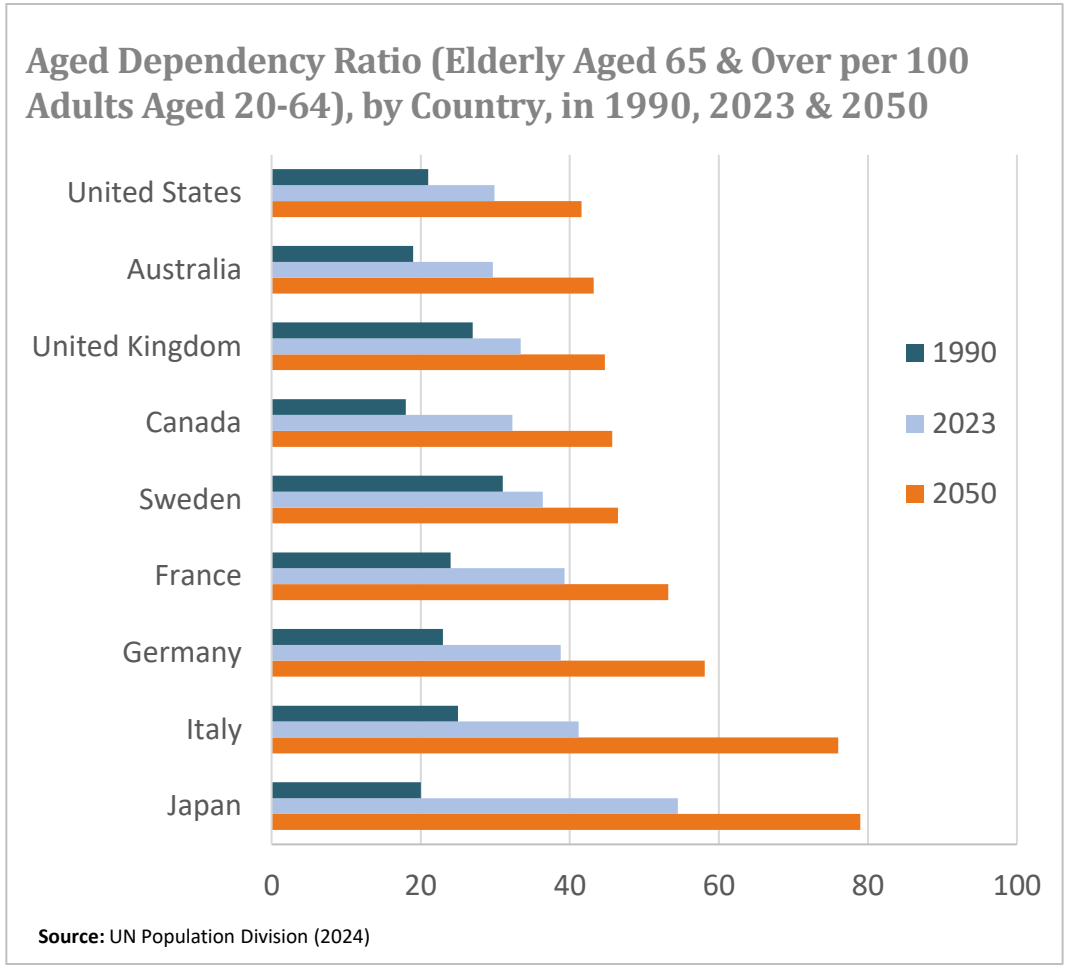
-- Paul A. Samuelson, *Newsweek* (February 13, 1967)

Types of Government Pension Systems

- Most developed countries currently have some sort of contributory, earnings-related government pension system financed on a PAYGO basis. Australia, New Zealand, the Netherlands, and the UK are notable exceptions.
- In addition to (or instead) of an earnings-related government pension system, some developed countries have a universal or means-tested flat benefit, usually paid for out of general revenues.
- A few countries, including Australia, the Netherlands, and Switzerland, have mandatory or quasi-mandatory employer pension systems that substitute for government earnings-related systems.

The End of Samuelson's Chain Letter

- No sooner had today's retirement systems been put into place than plunging birthrates and slowing economic growth rendered them unsustainable.
- At the same time, the rising income, educational attainment, and life expectancy of the elderly rendered the social justification for heavily subsidizing retirement less compelling.
- Faced with daunting fiscal projections, by the 1990s, most developed countries had shifted from expanding the generosity of government retirement provision to attempting to control the mounting costs.



Reducing Costs: Higher Retirement Ages

- Like the United States, most developed countries have raised or are in the process of raising their full-benefit retirement ages. Unlike the United States, some have also raised their early retirement ages.
- The shift toward later retirement has been especially dramatic in Europe, where until recently some countries allowed early retirement in the late fifties or early sixties with little or no actuarial reduction in benefits.
- After bottoming out in the mid-1990s to early 2000s, labor-force participation rates at older ages have risen substantially in most developed countries.

Labor-Force Participation Rate of Older Men, by Age and Country, in 1970, 1995 & 2024

	Age 60-64			Age 65 & Over		
	1970*	1995	2024	1970*	1995	2024
Australia	77%	47%	68%	22%	9%	20%
Canada	67%	43%	65%	15%	10%	19%
France	53%	11%	46%	13%	3%	5%
Germany	72%	28%	73%	17%	4%	12%
Italy	48%	31%	59%	n.a.	6%	8%
Japan	81%	75%	87%	49%	37%	35%
Netherlands	74%	21%	79%	11%	5%	19%
Sweden	80%	57%	76%	29%	14%	27%
United Kingdom	n.a.	50%	64%	na	8%	15%
United States	75%	53%	64%	27%	17%	23%

Source: OECD Data Explorer (2025) *Netherlands = 1971, France = 1975, Canada =1976

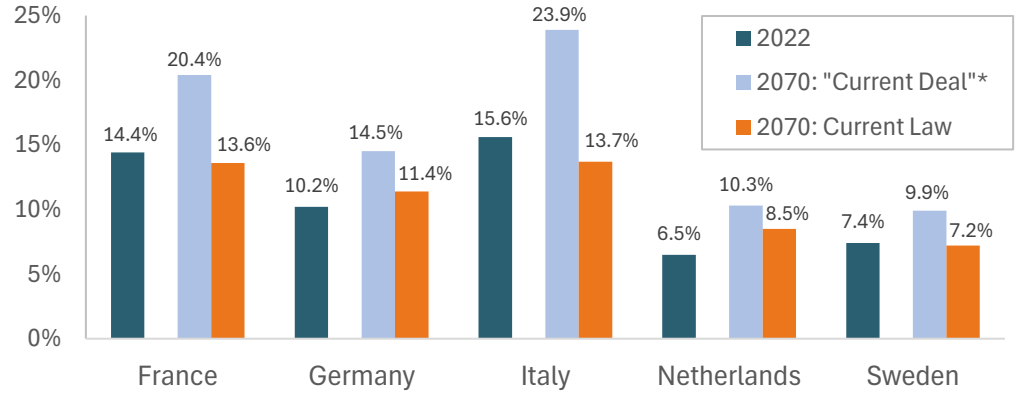
Reducing Costs: Benefit Cuts & Automatic Stabilizers

- Along with raising retirement ages, many developed countries have also reduced initial benefit formulas and/or the indexation of benefits in current payment status.
- Beyond such parametric reforms, some countries have gone further and enacted reforms that aim to automatically stabilize spending as a share of GDP.
- Ten countries in the European Union have indexed their full-benefit retirement ages to life expectancy.
- A few countries, including **Italy**, **Norway,** and **Sweden**, have adopted NDC systems in which benefits are fully indexed to demographic and economic change.
- Some countries with DB systems, notably **Germany** and **Japan**, have also added automatic stabilizers that reduce benefit levels as aged dependency ratios rise.

Automatic Stabilizers in Swedish System

- The notional return on account balances equals average wage growth.
- Annuities are calculated based on cohort life expectancy at retirement.
- An "automatic balancing mechanism" adjusts indexation of annuities if the system drifts out of long-term actuarial balance.

Government Pension Spending as a Percent of GDP, by Country, in 2022 and Projections for 2070

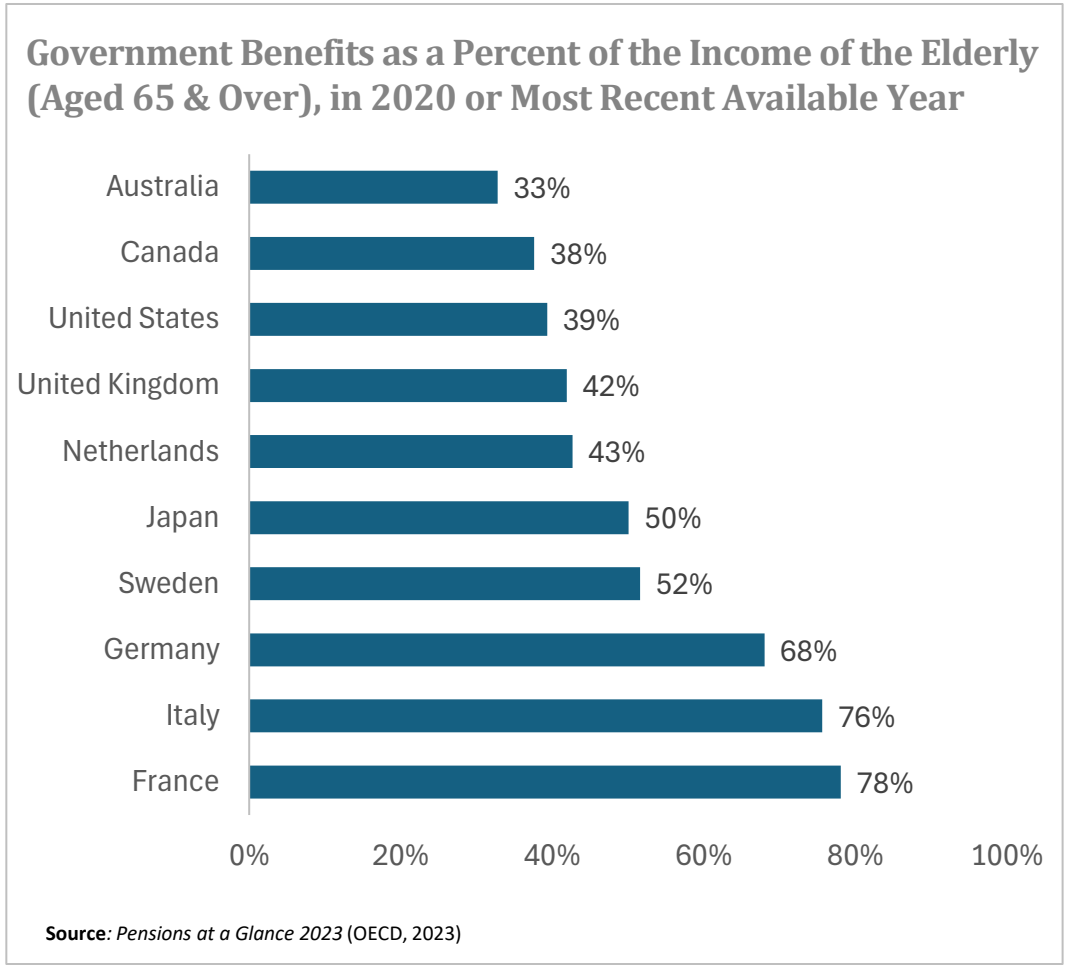


Source: *2024 Ageing Report* (EC, 2024)

* The "Current Deal" projection assumes no change in relative benefit levels, retirement ages, and labor-force participation rates.

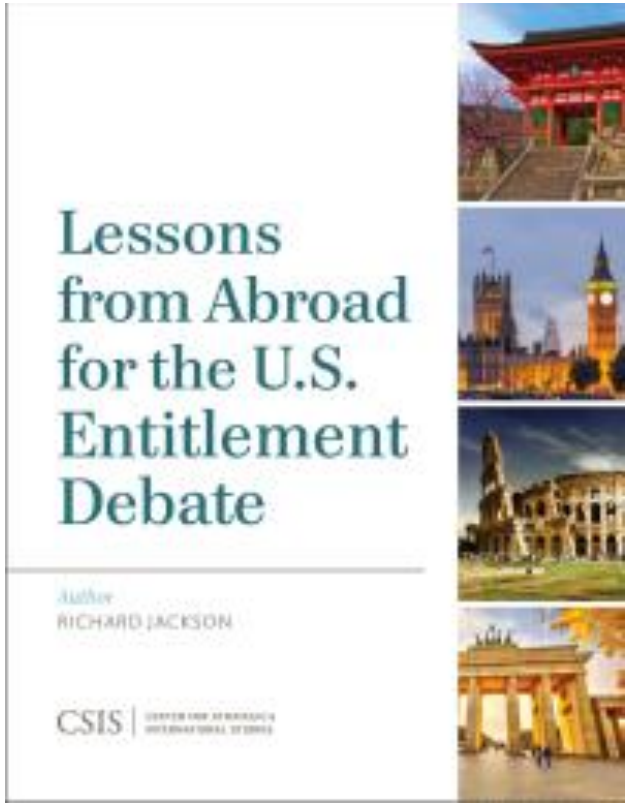
Maintaining Adequacy: Retirement Savings

- Given the high level of elderly dependence on government retirement benefits in many developed countries, scheduled reforms could result in deep reductions in the relative living standard of the elderly.
- To maintain income adequacy, some countries that until now have relied almost exclusively on PAYGO retirement provision are jump-starting new funded retirement systems (e.g., **Germany** and **Italy**).
- Meanwhile, countries with well-established funded systems are trying to expand their breadth and depth (e.g., **Australia**, **New Zealand**, **Sweden**, and the **U.K.**).



Three Lessons for the United States

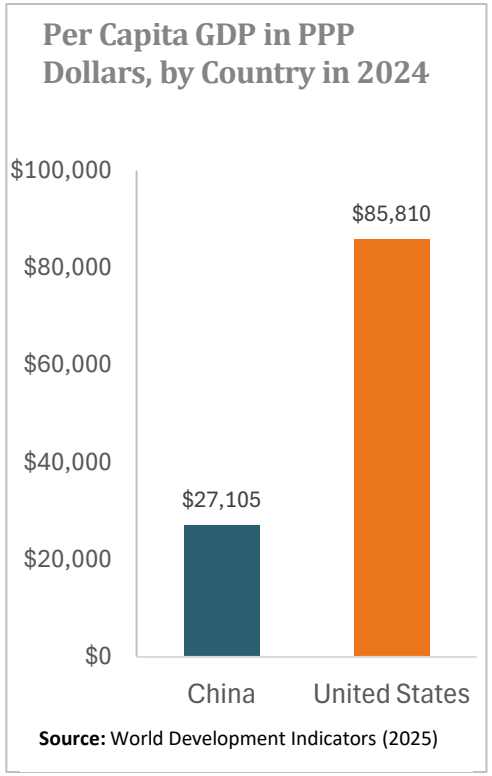
- Retirement reforms that focus on fiscal sustainability at the expense of income adequacy are likely to be reversed by aging electorates. (Example: The **UK**)
- There is no single right approach to retirement reform. Radically different models can succeed in ensuring both fiscal sustainability and income adequacy. (Example: **Australia** vs. **Sweden**)
- Retirement systems that are based on social contracts (like those in most European countries), may be easier to reform than systems (like U.S. Social Security) that are dressed up in the contractual language of "entitlements" and "earned rights."

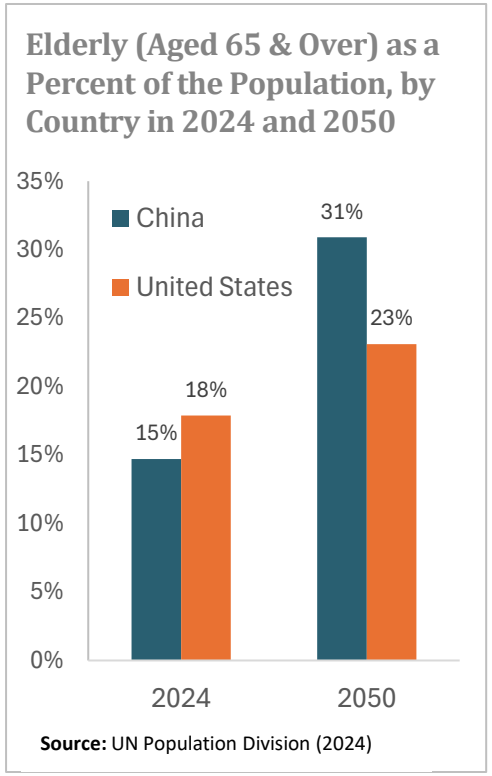


Emerging Market Overview

Growing Old before Growing Rich

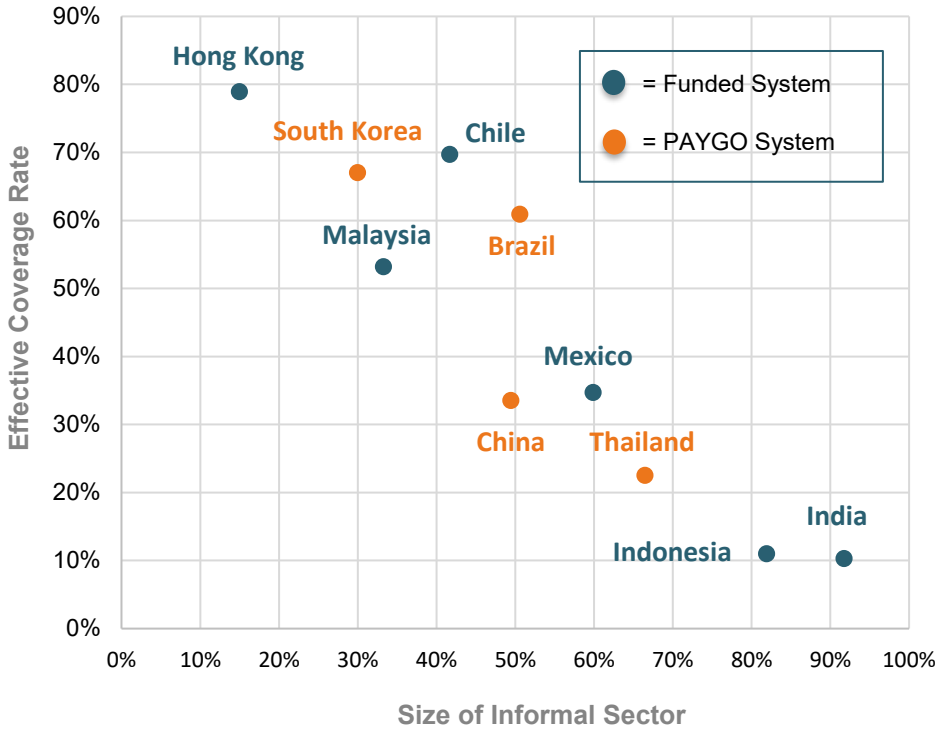
- While today's developed countries became affluent societies before they became aging societies, many emerging markets are growing old while they are still in the midst of development and before they have put in place the full protections of a modern welfare state.
- This premature aging vastly complicates the challenge of building adequate and sustainable retirement systems.





Limited Government Retirement Coverage

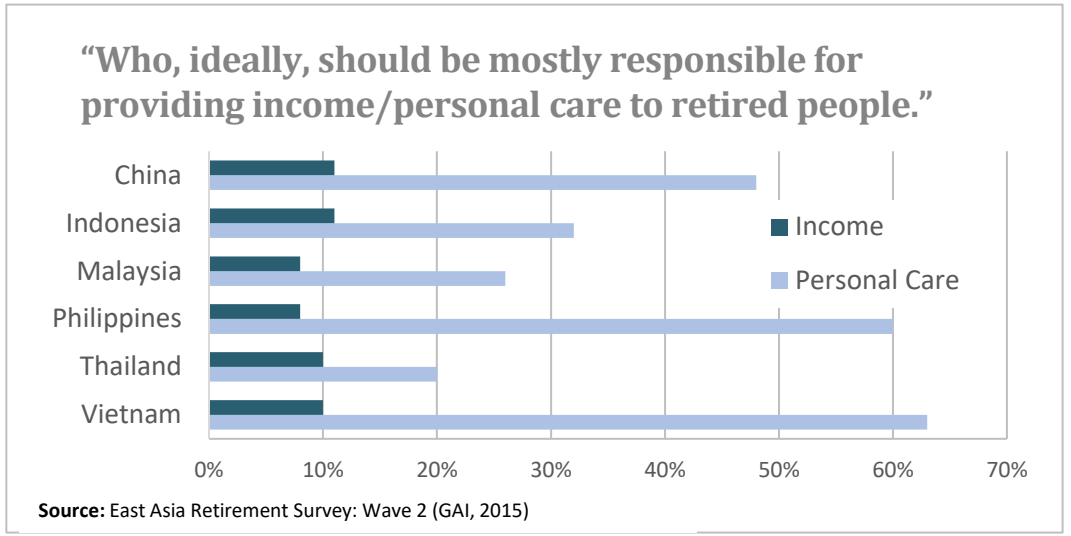
- The design of government retirement systems varies greatly across emerging markets, from traditional DB systems (e.g., **Brazil** and **China**) to personal accounts systems (e.g., **Chile** and **Mexico**) and government provident funds (e.g., **India**, **Indonesia**, and **Malaysia**).
- Yet all emerging markets face a common retirement security challenge. A significant share of workers, and in some countries the great majority of workers, fail to participate in the government retirement system.
- The higher the rate of labor-market informality, the lower the effective coverage rate, regardless of the design of the government pension system.



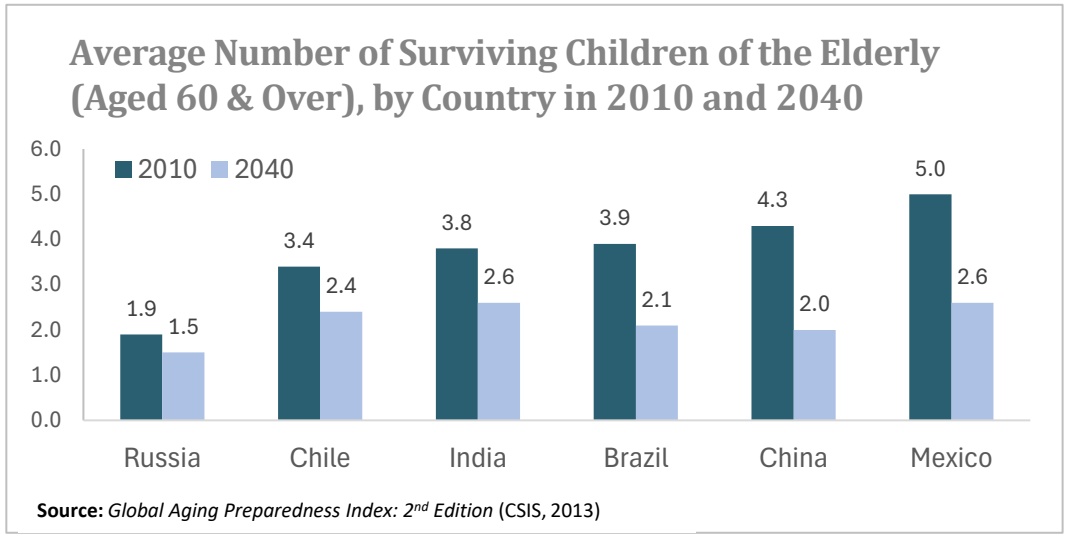
Source: *Voluntary Pensions in Emerging Markets* (GAI, 2017)

Weakening Family Support Networks

- Until recently, governments in emerging markets could count on the extended family to step in and provide for workers who reached old-age without a pension.
- Traditional family support networks, however, are already under stress from the forces of modernization and will soon come under intense new demographic pressure from declining family size.
- The failure to build more inclusive and adequate retirement systems could result in a humanitarian aging crisis of immense proportions.



Source: East Asia Retirement Survey: Wave 2 (GAI, 2015)



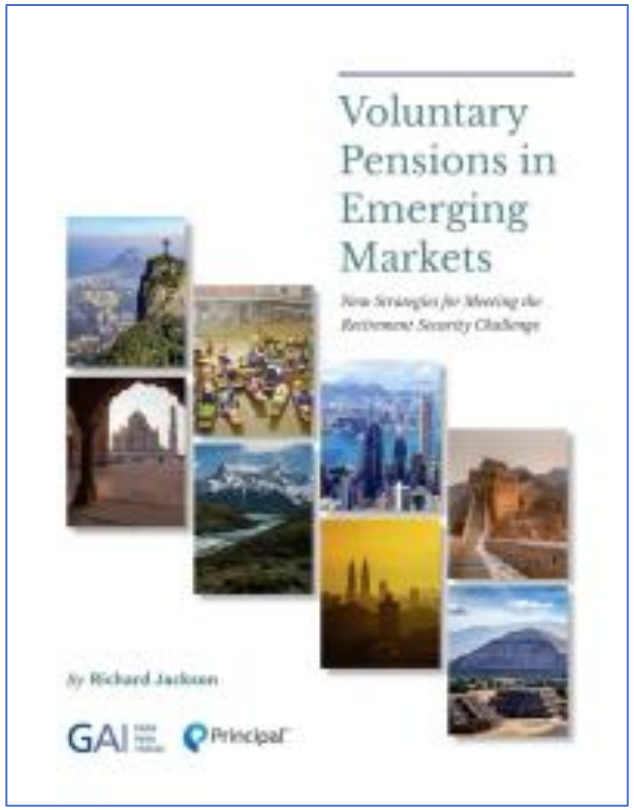
Source: *Global Aging Preparedness Index: 2nd Edition* (CSIS, 2013)

CONFERENCE OF CONSULTING ACTUARIES

CCA Annual Meeting 2025

Social Pensions versus Voluntary Pensions

- Over the past few decades, most emerging markets have tried to address the coverage problem by putting in place some sort of noncontributory "social pension."
- While social pensions are a near-term necessity, they have two drawbacks: First, they threaten to become prohibitively expensive as societies age. Second, they encourage the very informality that makes them necessary.
- More recently some emerging markets, most notably **China** and **India**, have begun to experiment with a promising alternative: voluntary contributory pensions with flexible contribution and withdrawal rules tailored to the needs of informal-sector workers.
- In the long run, the only lasting solution will be to extend the reach of the formal sector itself.



CONFERENCE OF CONSULTING ACTUARIES

CCA Annual Meeting 2025

Questions?

Thank you!

All sessions of the Conference of Consulting Actuaries (CCA) are conducted in compliance with Federal and State antitrust laws and any discussion of anticompetitive activities among participants is strictly prohibited.
The views expressed here are those of the presenter(s), and not necessarily those of the CCA. Nothing in this presentation is intended to be an interpretation of Actuarial Standards of Practice by the CCA.
Copyright © 2025 Conference of Consulting Actuaries. CCA retains copyright of this presentation. Content remains property of contributors.