Canada Pension Plan Actuarial Adjustment Factors
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By way of introduction, I am Jean-Claude Ménard, Chief Actuary of the Canada
Pension Plan and public sector pension plans. Thank you for inviting me here today to
talk about the Canada Pension Plan Actuarial Adjustment Factors. Before I go any
further, let me say a few words about the organization to which I belong.

(Slide 2) The Office of the Chief Actuary (OCA) is located in the Office of the
Superintendent of Financial Institutions (OSFI), the primary regulator of federally
regulated financial institutions and pension plans. OCA is responsible for providing
actuarial services for the Canada Pension Plan (CPP), the Old Age Security (OAS), the
Canada Student Loans Program, and pension and benefit plans provided to public sector
employees.

Today, I will talk about the second actuarial study released by our office at the end of
March: CPP Actuarial Adjustment Factors. I will describe the purpose, the methods and
the results of this study as well as a brief international comparison. I will conclude with
our actuarial opinion.

(Slide 3) Flexible retirement provisions were introduced in the Canada Pension Plan
(CPP) in January 1987. Since that date, the retirement pension is subject to an actuarial
adjustment that depends on the contributor's age at commencement of the retirement
pension. The retirement pension is permanently adjusted downwards or upwards by
0.5% for each month between age 65 and the age when the pension commences, which
can be as early as age 60 or as late as age 70, at the discretion of the contributor. The
main purpose of this study is to review the appropriateness of the actuarial adjustment
factor of 0.5% per month. The CPP legislation provides a role for the Chief Actuary in
this respect.

(Slide 4) Changing economic and demographic conditions, along with the introduction
of new Plan provisions during the last 15 years, have caused the current factor of 0.5%
per month to be no longer neutral either to the Plan or to contributors under current Plan
provisions. The study looks at how these changes have affected the suitability of the
actuarial adjustment factor, using the individual, collective and steady-state contribution
rate methods. Such information should facilitate a better understanding of the financial
basis of the flexible retirement provision and the elements that influence the choice of a
cost neutral adjustment factor. The purpose of the actuarial adjustment is that it should

not be more advantageous for individuals to opt for their retirement pensions at age 60 rather than at age 65.

(Slide 5) The individual method consists of evaluating actuarial adjustments for a single individual. In this context the only elements considered are mortality, real rates of return and real wage increases. The actuarial adjustment can be defined as the fraction or multiple, depending on the age at retirement pension uptake, that must be applied to a retirement pension such that the present value will be equivalent to the present value, at the same age, of the accrued retirement pension payable at age 65.

(Slide 6) Because the actuarial adjustment at each age depends on each individual circumstance, especially in terms of expectations of wage increases and mortality (results are different between the sexes), the individual method can produce as many actuarial adjustments for each age as there are individuals. For simplicity, the results presented below assume that the individual has always earned, and will continue to earn, 100% of the YMPE and that the annual rates of return, inflation and wage increases are as assumed under the Eighteenth CPP Actuarial Report. Results based on other rates of return, inflation, and wage increase assumptions are also presented in the study.

(Slide 7) The table reveals that the actuarial adjustment for females is higher than for males in all cells. This can be explained by the fact that females have lower mortality than males and are expected to live longer than males. Therefore, five additional years of pension payments represent a smaller relative increase in value for females than for males. It should be noted that for the same retirement pension the actuarial present value of retirement benefits for a female aged 65 is greater than for a male of the same age because women live longer. As an example, a female retiring at age 65 in 2004 receiving the maximum CPP retirement pension would have a present value of retirement benefits about 15% higher than for a male.

(Slide 8) The individual method is strictly based on present values of retirement benefits and is generally easy to understand. From an individual perspective, this method could be viewed as the most appropriate in terms of actuarial neutrality as the actuarial adjustments are determined taking into account only the retirement benefit and the individual's own particular set of circumstances at time of benefit uptake. On the other hand, this method could prove to be too subjective as two individuals with relatively the same set of circumstances at time of benefit uptake could end up with different actuarial adjustments because of differences in their expectations in respect of future wage increases and life expectancy.

Even though actuarial neutrality is achieved on an individual basis, the individual method is not the appropriate lens through which to assess actuarial neutrality in a pension plan such as the CPP because it requires different factors for each individual and is typically focused solely on benefits received at various ages and therefore does not capture all Plan provisions, including the financing.

(Slide 9)   The collective method eliminates the most important caveats to the individual method by recognizing the benefit provisions of the CPP and by determining actuarial adjustments in terms of present values on a collective instead of individual basis. In other words, the collective method, because it looks at contributions as well as benefits, recognizes key Plan provisions, such as, in the CPP, the contributory period ends at the age of pension take up, not at age 65. As a result, the collective method explicitly recognizes the loss of contributions to the Plan from those who opt for their benefit before the normal retirement age of 65 and the gain in contributions from those who opt for their benefit after age 65. While it is a small component, it also takes into account the loss of disability benefits resulting from an early benefit uptake.

(Slide 10) The collective method also requires an assumption about how severe the loss of contributions to the Plan will be if each individual in the cohort opts for the retirement pension at only one specific age, be it 60, 65 or any other age between 60 and 70, inclusive. This is probably the most complex part of the study.

The full-loss-of-contributions assumption should be considered as the best-estimate assumption for the determination of the actuarial adjustments as it assumes labour force participation rates are the same as in the Actuarial Report, regardless of the assumed age of benefit uptake. When viewed in the context of empirical evidence that suggests that the Canada Pension Plan is not a key determinant in the decision of Canadians to retire from the labour force, the assumption appears appropriate.

On the other hand, the no-loss-of-contributions assumption can be viewed as unrealistic. It requires that new contributors replace all lost contributors with the same average contributory earnings without major changes to the best-estimate labour force assumptions presented in the Eighteenth CPP Actuarial Report. In effect this approach amounts to assuming that the CPP has a very major impact on working or not.

(Slide 11) For a cohort of individuals, the actuarial adjustments are simply determined by comparing the present values of the contribution, retirement benefit and disability benefit streams under the various benefit uptake ages with those of a benchmark scenario where all individuals in the cohort opt to take their retirement pension at age 65.

The first step of the collective method consists then of evaluating for a specific cohort of individuals (i.e. people with the same year of birth) the present value at age 60 of their post-60 contributions (assuming a contribution rate of 9.9% for 2003 and later), retirement benefits and disability benefits if each individual opts for the retirement pension at exact age 65 with no actuarial adjustments. This scenario then becomes a benchmark and is used to determine the actuarial adjustments for any other benefit uptake age.

The second step of the collective method simply consists of determining the same present values under a scenario where each individual in the cohort is assumed to opt for the retirement pension at age 60.

This table presents the actuarial adjustments for the cohort age 60 in 2004. It is interesting to note that the results under the no-loss contributions approach would be almost equivalent to the individual method results since contributions would not be a factor in the determination of the actuarial adjustments.

(Slide 12) Analysis of the actuarial adjustments by component underlines that actuarial adjustments are not only dependent on economic and demographic assumptions but also on Plan provisions. This underscores that cost neutrality to the Plan can be restored without necessarily having to change the current actuarial adjustments. For instance, if contributions were required from working beneficiaries (in contrast to current Plan provisions) then the contribution component could be eliminated and the actuarial adjustments for early benefit uptake would be in line with the currently legislated adjustments. This is because by having working beneficiaries contribute, there would no longer be a loss of contributions to the Plan due to early benefit uptake and the contribution component of the collective method would equal zero.

The collective method is a method that is appropriate as it recognizes specific CPP benefit provisions and leads to unique actuarial adjustments that can be applied to a cohort of individuals. However, it is important to note that an actuarial adjustment derived in this manner may not be actuarially neutral for a particular individual Plan member.

(Slide 13) Because the collective method ignores the financing aspects of the CPP, in the sense that the steady-state financing principle is not integral to deriving the actuarial adjustments, the next section introduces the steady-state contribution rate method for determining the actuarial adjustments. It is important to note that this method is similar to the collective method and results in similar actuarial adjustment factors.

How the CPP is financed ? What are the financial implications of having a steady-state contribution rate ? The steady-state contribution rate is the lowest rate rate that can be maintained over the foreseeable future and that will result in a Fund/Benefit ratio generally constant over a long period of time. The steady-state rate is also the lowest rate that can be charged that is sufficient to sustain the plan without further increase. A long-term funding level of 20% to 25% is sufficient to meet that condition.

(Slide 14) The following chart shows the evolution of the Fund/Benefit ratio. The 9.9% legislated contribution rate is slightly higher than the calculated steady-state contribution rate of 9.8% of the 18th CPP Actuarial Report.

(Slide 15) Under the steady-state method actuarial neutrality occurs when the net cost to the Plan (steady-state contribution rate) is the same whether each individual takes the benefit at age 65 or at any other age from 60 to 70, inclusive. Actuarial adjustments that are set to achieve this objective are said to be actuarially cost neutral for the Plan and for Plan members on a collective basis. If everyone opts for benefit at age 65, the steady-state contribution rate is 9.7%.

(Slide 16) The steady-state contribution rate of 9.7% becomes our benchmark. Then the required actuarial adjustment at age 60 is the one that will yield a steady-state contribution rate of 9.7% if each individual opts for the benefit at age 60. For instance, the following chart shows an actuarial adjustment of 65% at age 60.

(Slide 17) Note that even though each age of benefit uptake scenario yields the same steady-state rate of 9.7% the resulting funding level for each scenario is different. The expected assets are equal to eight times the annual benefits paid under the scenario which everyone opts for benefit at age 70 and 3.3 times under the scenario which everyone is assumed to opt for the benefit at age 60. Moreover, if the new actuarial adjustment factors are applied to the current distribution of benefit uptake by age and sex under the CPP actuarial report, a steady-state rate of 9.6% is obtained which is even lower than our benchmark of 9.7%.

(Slide 18) The steady-state method, which does not require the calculation of actuarial present values, is easy to understand and is appropriate in the context of the CPP as it recognizes all CPP benefit and financing provisions. The method yields unique actuarial adjustments that can be applied to all future cohorts of individuals (same factor for each individual regardless of year of birth).

(Slide 19) The principal reason why the legislated actuarial adjustments, which were established in 1987, are no longer actuarially cost neutral is because the economic environment over the last 15 years was different than expected. First, the real rate of

return was higher than expected. Second, the real wage increases experienced by the work force were smaller than expected. If both a higher real rate of return and lower real wage had been assumed in 1987, the legislated actuarial adjustments would have been close to the ones presented in this study and would have resulted in cost neutrality. It is important to note that the actuarial adjustments applicable after age 65 were never cost neutral. Only 3% of contributors actually opt for the retirement pension after age 65.

The last column shows the results of what would have been the actuarial adjustments using low real-wage differential (0.6%) and high real rate of return on CPP assets (5.2%). This corresponds to the economic environment that prevailed over the last 15 years and is in line with the 18th CPP report short-term outlook.

(Slide 20) In the study, a section shows the actuarial adjustments used by six other countries. Most countries use approximate adjustment factors that are different before and after the normal retirement age. Sweden has no adjustment factor but directly links amount of pension to life expectancy through annuity factor. Some countries reduce benefits based on the level of post-benefit uptake earnings, namely the United States.

(Slide 21)   As discussed earlier, it may be possible to restore cost neutrality to the Plan without having to change the legislated adjustments. This could be achieved by modifying some of the existing Plan provisions. Requiring working beneficiaries to pay contributions or ending the contributory period at age 65 for everyone are examples of such possibilities. For instance, extending the contributory period to age 65 for everyone (under current Plan provision the contributory period ends at the age of benefit uptake) would increase the payment period component and help to restore cost neutrality without recourse to a change in current actuarial adjustments. In other words for someone who started to contribute at age 18 and then opts for the benefit at age 60, the contributory period would be 47 years and five years of zero earnings would be added between the ages of 60 and 65. Under such circumstances, the payment period component would be higher than under current plan provisions and could entirely offset the contribution component and bring the actuarial adjustments for early benefit uptake to the same level as the currently legislated actuarial adjustments. Having said that, I'm asking your views on this issue.

(Slide 22) In this study actuarial neutrality is used to mean Plan Neutrality, which exists when the net cost to the Plan (steady-state contribution rate) is the same regardless of whether contributors take the retirement benefit at age 65 as opposed to any other age between 60 and 70, inclusive. That is, the timing of any Plan member's retirement benefit uptake is neither advantageous nor disadvantageous to all Plan members taken

as a group. Plan neutrality takes into consideration all Plan provisions, including benefits and contributions.

(Slide 23) This study found that the current actuarial adjustments are too generous for contributors who elect to take their benefit before age 65 and are therefore disadvantageous to the Plan. That is, early retirement benefit uptake is subsidized. Conversely, benefit uptake after age 65 is penalized. With early benefit uptake being far more prevalent than late benefit uptake, the net result of the current actuarial adjustments is a disadvantage to the Plan. However, it is worth noting that the Plan is financially sustainable even though the legislated actuarial adjustments are no longer cost neutral. This is because the legislated contribution rate of 9.9% exceeds both the Eighteenth CPP Report steady-state rate of 9.8% and the steady-state rate of 9.7% where each individual opts for their benefit at age 65.

(Slide 24) If a revision is decided upon, for simplicity we recommend approximate monthly actuarial adjustment factors. To better replicate the exact actuarial adjustments by age, we recommend the use of a uniform approximate monthly factor for ages under 65 that would be different than for ages 65 and over. This approach is consistent with that adopted in a number of other social security programs. Also, the actuarial adjustments should be reviewed periodically to reflect changes in plan provisions and/or in the demographic and economic environments.

In the context of an aging population, where life expectancy at age 65 is expected to continue to increase and projected labour force shortages could induce older workers to stay at work longer, policymakers will have to determine whether the current actuarial adjustments should be changed or certain Plan provisions modified to restore neutrality.

Thank you.