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Commentary

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Follow Quebec's Lead:

Removing Disincentives To Work After 60 by Reforming the CPP/QPP

Yvan Guillemette

In this issue...
Because of population aging and the soon-to-begin wave of retirements, Canadian policymakers should implement systems that encourage those who want to work beyond the normal retirement age to do so. Proposed changes to the Quebec Pension Plan point the way to achieving that objective.

The Study in Brief

The greying of Canada's population poses a major economic challenge for the nation. The ratio of workers to retirees is expected to fall dramatically over the next 30 years. Exacerbating the demographic shift and the coming wave of baby boom retirement is a long-term shift to earlier retirement. In 1976, approximately 66 percent of Canadian men aged 60-to-64 participated in the labour force; in 2003, the ratio fell to 46.7 percent in Quebec and 54.7 percent in the rest of Canada.

The ability of Canadians to raise their standard of living in the coming decades depends on how effective we are at tapping into a deepening pool of seniors' capital. Success will depend on whether policies encourage older citizens to participate in productive activities. Recent economic research in many countries, including Canada, shows that part of the movement toward early retirement can be explained by the significant fiscal disincentives to work implicit in public programs providing income to seniors, which include the Quebec Pension Plan (QPP) and the Canada Pension Plan (CPP). The work disincentives take the form of means tests for income security programs such as OAS and the GIS, but also arise from the fact that by working after age 60, most workers do not increase their public retirement pension entitlement by enough to compensate for delaying its receipt and for the additional contributions they make while working.

This *Commentary* illustrates the work disincentives currently imposed by the QPP and the rest of the federal-provincial tax-transfer system in the case of three typical workers who together represent a large part of the near-retirement population. It also summarizes the proposals to modify retirement benefits advanced by the QPP and shows how their adoption would improve its actuarial fairness and substantially reduce the implicit tax on work.

Implementing the QPP reform proposals and adapting them to the CPP would go a long way toward ensuring that Canada remains a world leader in public pension reform and encourages healthy and productive individuals who want to work to do so.

The Author of This Issue

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The need to reform public-pension plans and encourage later retirement in light of the challenges arising from aging populations is currently a hot topic across most industrialized nations. In October 2003, the Régie des rentes du Québec responded to the situation with a working paper entitled *Adapting the Pension Plan to Québec's new realities*.[1] The document served as the discussion platform for public consultation on the proposed reform in the winter of 2004.

In this *Commentary*, I briefly review the reasons why public pension reform is on the Quebec agenda, including the increasing prevalence of early retirement for which public income security programs are partially responsible. After outlining the proposed changes to retirement pensions set out in the working paper, I model the retirement incentives currently embedded in the retirement pension rules of the Quebec Pension Plan (QPP) and evaluate the proposals according to their effects on these incentives. In line with previous work on the Canadian retirement system, I find that the current QPP provisions create substantial disincentives to work beyond 60 for a large number of contributors. I show how the proposed reform would reduce these disincentives and help encourage work after 60, although the rest of the tax-transfer system would somewhat mitigate the improvements, particularly for low-income workers. I argue that the proposed changes to QPP retirement benefits should be implemented, but also that governments in Canada should undertake a sweeping review of old-age income security programs to remove the remaining work disincentives. Given the similarities between the QPP and the Canada Pension Plan (CPP), as well as the comparable demographic situation prevailing in the rest of Canada, those findings also apply to the CPP, which should follow Quebec's lead and work on a comparable reform.

The Need for Reform

In many OECD countries, population aging has rendered existing public-pension systems unsustainable, making reforms inevitable. Canada and Quebec were relatively early in coming to that conclusion. Both the CPP and QPP enacted reforms during the 1990s that gradually increased contribution rates to a level that would ensure their long-term funding. Both plans' actuarial reports at the end of 2000 projected that the 9.9 percent total employee-employer contribution rate now in force would be sufficient to maintain reserve assets of more than twice the cash outflows of the following year for the entire projection period, a traditional criterion used to assess sustainability. A more recent actuarial projection for the QPP following the dismal performance of financial markets in 2001 and 2002 has somewhat altered this conclusion and contribution rates may eventually have to rise further. It is nevertheless important to point out that the financial situation of the QPP is not what officially motivates the current proposals for reform. Rather,

I would like to thank François Boulanger, Charles Cossette, Morley Gunderson, Jonathan Kesselman, Denis Latulippe, Jean-Claude Ménard, Kevin Milligan and Bill Robson for comments on earlier drafts.

1 See Régie des rentes du Québec (2003a). This document is also available in French under the title *Adapter le Régime de rentes aux nouvelles réalités du Québec.*

changes are thought to be necessary to accommodate new demographic and labour market realities and in particular to encourage later retirement.

The substantial demographic shifts facing Quebec and, to a slightly lesser extent, the rest of Canada, are well known. The working paper reviews these trends and highlights their particular acuteness in the Quebec context. Briefly, Quebec's demographic realities include a very low birth rate, a rapidly aging population and a proportion of seniors that is increasing faster than in the rest of Canada and the United States. It is estimated for example that the current ratio of 4.7 people of traditional working age (20-to-64) to seniors (65+) in Quebec will decline to 2.1 by approximately 2030. For the rest of Canada, this ratio is expected to fall from 4.9 to 2.5 over the same period. More forward-looking projections place this ratio even lower in 2050 for both Quebec and Canada as a whole.

In line with the decrease in the relative size of the labour force, population aging would naturally produce an increase in the proportion of retirees to workers, but one important factor amplifying this trend is that in Quebec, as in the rest of Canada — in fact, as in most industrialized nations — the second part of the 20th century was marked by a decline in the proportion of older people who were in the labour force. In Quebec in 1976, 82.5 percent of men aged 55-to-59, 65.8 percent of men aged 60-to-64 and 21.2 percent of men aged 65-to-69 were in the labour force; by 2003, the ratios had fallen to 73.2, 46.7 and 16.6 percent. Also, although the participation rate for women aged 55-to-64 increased over this period, along with a general increase for younger age groups, it remained stable for women 65-to-69 and fell in the case of women 70 and older. Similar trends are observed throughout Canada. Weighting the declining participation rates by the population shares of each age-sex group reveals that the growing inactivity of the older population stems primarily from the falling participation of men aged 55-to-64.

Research at the national level indicates that retirement is now the reason most often given for leaving the last job. In 2001, half of men 55-to-59 who had worked over the previous 12 months cited retirement as the reason for leaving the labour market, compared with 20 percent in 1976.[2]

The same trends are apparent from retirement-age statistics (Table 1).[3] In Quebec, in the mid-1970s, the median age of retirement was above 65 for both men and women. Since then, the trend has generally been downward. In 2003, men and women retired at a median age of 63.4 and 59.1, respectively, giving Quebec the second-lowest median retirement age in Canada after Newfoundland and Labrador.[4]

Men 55 and older who are no longer active in the labour market and who are still able to work are an important source of potential labour supply. Rising labour

2 Other possible reasons include, for example, illness, disability and economic conditions. See Habtu (2003).

3 These statistics are based on the Labour Force Survey (LFS). The LFS asks individuals who are no longer working, but who have worked in the previous 12 months, why they are no longer employed. Those who answer "retired" are considered to be retirees. This concept of retirement is used in combination with an age variable to calculate an annual median retirement age.

4 Participation rates and median retirement ages reached an all-time low toward the end of the 1990s. They have since increased significantly, but this is more likely a temporary effect linked to the collapse of equity markets in 2000 and the consequent decline in personal wealth that forced many workers to re-evaluate their retirement objectives.

Table 1: *Labour Force Participation Rates and Median Retirement Ages*

			1976	1986	1996	2003
			Percentage of working age population			
Quebec	**Males**	55 to 59 years	82.5	73.9	67.3	73.2
		60 to 64 years	65.8	50.0	37.4	46.7
		65 to 69 years	21.2	12.9	10.5	16.6
		70 years and older	7.4	4.8	4.5	4.7
		Median Retirement Age	65.2	63.3	62.3	63.4
	Females	55 to 59 years	29.3	32.6	41.0	51.7
		60 to 64 years	18.6	15.4	15.4	24.3
		65 to 69 years	6.6	6.6	4.4	6.5
		70 years and older	2.5	2.4	1.6	1.1
		Median Retirement Age	65.1	61.8	60.8	59.1
Rest of Canada	**Males**	55 to 59 years	84.7	80.1	73.2	76.6
		60 to 64 years	66.7	57.4	45.7	54.7
		65 to 69 years	25.5	19.0	18.4	22.4
		70 years and older	9.6	7.7	6.3	7.7
		Median Retirement Age*	65.1	64.7	63.1	63.3
	Females	55 to 59 years	41.5	45.1	51.0	62.5
		60 to 64 years	26.9	26.3	26.0	34.6
		65 to 69 years	8.2	7.0	8.0	11.0
		70 years and older	2.1	1.6	1.8	2.1
		Median Retirement Age*	64.8	63.7	60.8	60.4

*For the country as a whole.
Source: Statistics Canada (LFS)

market inactivity among increasingly skilled older men represents an enormous loss of economic potential — a loss that may become even more serious in the future: According to evidence from the 1994 General Social Survey (GSS) Cycle 9, today's younger workers are planning to retire even earlier than their predecessors (Gunderson, 2001b).

Why Early Retirement Is Increasing

Work by the OECD[5] has shown that the early retirement phenomenon observable in most industrialized countries is caused largely by public and private pension systems, and other income security programs, which by their institutional designs

5 See for example Blöndal and Scarpetta (1998), Casey et al. (2003), Duval (2003), OECD (2001), OECD (2002) and Whitehouse (2003).

and their interaction effects encourage people to withdraw from the labour force at a relatively early age.[6]

Of course, wealth accumulated in Registered Retirement Savings Plans (RRSPs) and employer-sponsored Registered Pension Plans (RPPs) has an important effect on workers' retirement decisions. The specific features of many RPPs also play an important role in the timing of retirement because in recent years they have often included provisions for early retirement. The pension surpluses generated during the stock market boom of the 1990s hastened the early retirement trend because in many cases employers used them to enhance such benefits. As a consequence, many employers are now looking at the coming retirement wave and anticipating a shortage of qualified and experienced workers. Fortunately, we can expect them to react quickly to labour market incentives and review their retirement plans to correct the situation. I say fortunately because, unavoidably, any complete policy package to alleviate the negative effects of the retirement boom will involve the private sector.

Such a policy package must also involve the public sector. Indeed, according to the 1999 Survey of Financial Security, government transfers are still the main source of income for approximately two-thirds of Canadian seniors. They also provide a substantial income supplement for the remaining third. CPP and QPP benefits alone accounted for 16 percent of the income of recipient families in 2001 compared with 10 percent in 1981, even as average income of recipient families grew by 17 percent.[7] Thus, it seems likely that the structure of these programs also have important effects on the labour supply decision of workers at the end of their careers.[8]

The critical issue of whether the retirement incentives embedded in Canada's public income security programs can be linked to observed behaviour is taken up in Baker, Gruber and Milligan (2003). Using various financial measures of the retirement incentive, they found that the work disincentives inherent in the Canadian income security system have a significant impact on retirement. For example, they estimated that income-security incentives accounted for 20 percent of the rise in the retirement rate of men in the period 1985-to-1995. Many other factors, such as a spouse's earnings and retirement decision, expected future earnings, accumulated RRSP and RPP wealth and personal preferences also influence retirement decisions. Still, the significance of these results for policy analysis is that, when evaluating a proposed public-pension plan reform, analysts can make basic assumptions about these other factors and look at the impact of the reform on conventional retirement incentive measures to determine its probable effect on retirement. This is the approach I use in looking at the proposed modifications to QPP retirement pensions.

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6 If the trend toward early retirement reflected only increased income and a higher preference for leisure, it would not be a policy concern from a welfare point of view. Both international and Canadian evidence indicates, however, that this is not the case.

7 Chawla and Wannell (2004).

8 Evidence to this effect pertaining to the Canadian retirement system is found in Diamond and Gruber (1999), Gruber (2001) and Gunderson (2001a,b).

Overview of the Proposed Changes to QPP Retirement Pensions

The QPP, like the CPP, is a mandatory public pension plan that insures 25 percent of the career earnings of a worker up to the Year's Maximum Pensionable Earnings (YMPE). Each year, both employers and employees pay contributions on earnings that fall between the Year's Basic Exemption (YBE) and the YMPE. In 2003, the YBE was $3,500 and the YMPE was $39,900. For a complete presentation of the current QPP provisions and the proposed changes to retirement, disability and survivor's benefits, see the working paper and the associated impact study (Régie des rentes du Québec, 2003a,b). This *Commentary* considers only the proposals that would affect retirement benefits. They are summarized in Table 2 on the following page.

The first proposal would allow individuals to take their QPP retirement pension starting at age 60, even if they continue to work. Currently, a person under 65 must be "substantially retired" to apply for a retirement pension.[9] For example, a career-end worker who chooses a less demanding job or reduced hours without an agreement is currently not eligible for an early pension. This change would encourage people to continue working because in so doing they would not have to forgo their QPP pension.

The second proposal would simplify the formula used to determine peoples' pension entitlement while providing an additional incentive to prolong their working life. Under the current formula, the number of years used in the calculation of average pensionable earnings (APE) increases with retirement age, so the later the retirement, the more years of contributions are required to be entitled to the maximum pension. Moreover, if a worker delays retirement and continues to work at a wage lower than his average career wage, the additional contributions may, perversely, lead to a reduction in his pension compared to what he would have received if he had retired earlier. Under the proposed formula, the pension would be equal to 25 percent of total insurable earnings, divided by 40, up to the maximum pension. Prolonging a career could never lead to a reduction in a pension entitlement. Compared to the current regime, the use of a constant divisor would increase the retirement pension of individuals with relatively long working lives; in counterpart, it would reduce the pension of people with relatively short careers (aside from drop-out years for parents taking care of children under 7).

The third proposal would change the treatment of QPP contributions made by individuals who return to work after starting to receive a pension.[10] While such individuals would still be required to contribute, their additional contributory earnings would be used to increase their pension up to the maximum amount payable by adding to total insured earnings.[11] Currently, an individual's earnings

9 The retirement tests are described in Table 2. The tests are only applied for the year in which the pension is claimed; however, after that point, there is no additional check on the individual's earnings.

10 Joint receipt of a QPP retirement pension and earned income is relatively rare. Among QPP pensioners at December 31, 2000, 10 percent of the 60-to-64 year olds and 8 percent of the 65-to-69 year olds had work earnings in 2001 greater than the YBE of $3,500 (internal QPP statistics).

11 CPP contributors have an additional incentive to apply for their pension early: unlike QPP contributors, they do not have to contribute to the plan when they return to work after starting to receive a retirement pension.

Table 2: *Summary of the Proposed Changes to QPP Retirement Benefits*

	Current Provision	Proposed Provision
1. Admissibility	Age 60-to-64: – If contributors stop working, or – If they expect, in the 12 months following their application, to earn less than 25 percent of the YMPE (less than $9,975 in 2003); or – If their pay is reduced by at least 20 percent following an agreement with the employer in view of phased retirement. Starting at age 65, contributors can request their pension even if they continue to work.	As of age 60 without other conditions connected to earnings.
2. Pension calculation	The pension is equal to 25 percent of the average indexed insurable earnings included in the contributory period (age 18 to retirement), after excluding from the calculation of the average 15 percent of the years in which the earnings were the lowest (the drop-out provision). [12] When the Plan is fully mature, in the sense of all new retirees having had a full contributory period, the pension will be calculated on the basis of 36-to-44 years of contributions after the drop-out provision.	The pension is calculated on the basis of all contributory earnings. It is equal to 25 percent of total indexed earnings divided by 40, up to the maximum pension.
3. Beneficiary who works	The beneficiary who works must make contributions in the same way as other workers (unlike under the CPP). In return, the pension may increase. The increase is made by substituting the new earnings for the lower earnings of a year already included in the contributory period and recalculating the pension.	The beneficiary who works must make contributions in the same way as other workers. The additional earnings are added to those already entered into the contributor's record and help raise the amount of the pension up to the maximum level.
4. Actuarial adjustment factor	Reduction of the pension claimed before 65 by 0.5 percent for each month preceding the 65th birthday. Conversely, increase in the pension claimed after age 65 by 0.5 percent for each month of postponement up to the 70th birthday.	Increasing the actuarial adjustment factor applied to the pensions of individuals who retire after 65 to 0.7 percent from the current 0.5 for each month of deferral.

Source: Adapted from the working paper (pp. 57-58).

12 There is also a provision to exclude years in which earnings were low that correspond to years in which a person took care of children under 7 if it increases the pension. The proposal is almost the same as the current provision.

in these periods may only be substituted for lower earnings of a year already included in the member's contributory period. Therefore, although a QPP pension already in payment cannot decrease, there is currently no guarantee that it will increase following additional contributions even if it has not yet reached the defined ceiling.

A fourth proposal would increase the actuarial adjustment factor used to increase the retirement pensions of individuals who retire after 65 to 0.7 percent from the current 0.5 per month of deferral, providing a clear incentive to delay retirement and an improvement in the actuarial fairness of the Plan.

If legislated, these proposals would progressively go into effect starting in 2008, when the Plan is more mature and the majority of new retirees have had a full contributory period. The new measures would not affect beneficiaries whose pensions have already started.

Methodology and Assumptions

The working paper sets out the main policy criterion to use in evaluating the proposals: improve the incentives to retire later for Quebec workers. To determine whether the proposals would achieve this policy objective, I use a model of benefits determination under the current QPP rules and then modify it to account for the proposed changes to retirement benefits described in the working paper. By taking into account the interactions of the QPP with Old Age Security (OAS), the Guaranteed Income Supplement (GIS) and some of the features most important to seniors in the federal and provincial (Quebec) income tax systems, I also evaluate the extent to which changes to incentives under the new QPP are amplified or absorbed by the rest of the tax-transfer system.[13]

In comparing the present rules to the proposed rules, I take the perspectives of three 60-year-old workers with continuous earnings histories who are considering retirement between the ages of 60 and 70.[14] Admittedly, approximately one third of Quebec workers have already retired by the time they are 60, as was shown in Table 1. It seems likely, however, that the QPP provisions play very little role in these people's decisions because they are not even entitled to a QPP pension when they quit the labour force. I consider only the range of retirement ages where the choice affects the value of the pension. Three cases are constructed in order to span the relevant range of income histories.

Mr. A represents a low-income earner with no outside retirement savings, a situation that typifies approximately 20 percent of the near-retirement population (Shillington, 2003). Mr. A only reaches 40 percent of peak average earnings during his working life Mr. B has a moderate earnings history and some accumulated retirement savings and is therefore intended to typify a very broad range of work-

13 These include the OAS and GIS clawbacks, the age amounts, the pension income tax credits and the QPP contributions tax credits, in addition to the income tax bracket structure for the federal and Quebec personal income tax systems. The tax provisions used are those for 2003 and are assumed not to change over the period considered.

14 The assumption of continuous earnings history starting at age 18 is used for simplicity. It has, however, the disadvantage of neglecting some of the effects of the 40-year divisor rule, which would strike most sharply individuals who entered the labour force relatively late or those with long unemployment spells.

ers. For example, median earnings by age for a male QPP contributor in 2000 would sit slightly higher than the earnings profile of Mr. B, while median female earnings by age would generally be slightly lower. Mr. B reaches 70 percent of peak average earnings at age 52. He receives $500 a month from various investments and is entitled to a private retirement pension of $1,000 per month once retired. Mr. C had an average level of earnings during his career and has therefore attained the YMPE level and contributed the maximum to the Plan throughout most of his working life. Mr. C therefore disposes of more outside retirement savings; that is, he will claim a private retirement pension of $1,600 per month once retired in addition to the $850 he currently makes from various investments. Levels of outside retirement savings are essential parameters in the simulation model because OAS, GIS and tax credits benefits are means tested.

I assume that these individuals were born on Jan. 1, 1948, and started their contributory periods at age 18 in 1966, when the QPP started. They turn 60 in 2008 and are assumed to be considering retirement between then and the year 2018, when they would turn 70. I construct their career earnings path using statistics on average earnings by age group for QPP contributors in 2000 and for CPP contributors in 2001 (top line in Figure 1).[15] Other assumptions underlying the simulations include:

- The QPP worker contribution rate and the nominal value of the YBE both stay constant over the period considered, as is currently planned, at 4.95 percent and $3,500 respectively.
- A real discount rate of 3 percent and inflation of 2 percent.
- Real earnings and the YMPE both grow at a real rate of 1.3 percent after 2003.[16]
- For mortality purposes, the individuals modelled are assumed to be males. They are also unattached with no children; so many features of the QPP and tax-transfer system applying to couples and families are ignored. To adjust for mortality prospects, I use the Quebec life tables from Statistics Canada.
- Individuals are assumed to retire on the day of their birthdays; age of retirement 62, for example, means that the individual has worked while he was 61 and would be retired all year while he is 62.

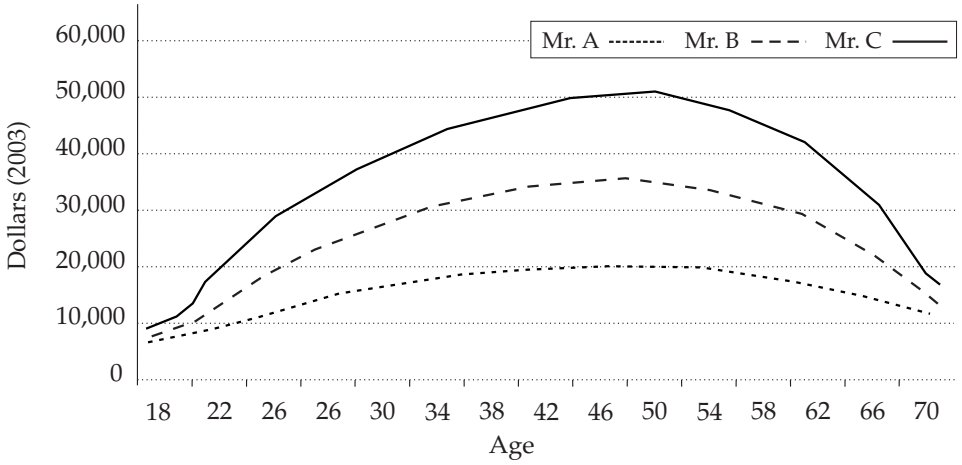
From the output of the simulations, I calculate several indicators of retirement incentives. Each takes into account a different slice of the overall retirement incentive. The first is the net-of-tax replacement rate, the rate at which after-tax income security receipts, including QPP, replace after-tax earnings should the individual continue working in a given year.[17] A relatively high replacement rate ensures that a

15 Published in Régie des rentes du Québec (2003c), Table 14 and HRDC (2003), Table 13. Average earnings include individuals with low or no earnings in a given year and therefore partly take into account the incidence of unemployment.

16 This is the average annualized growth rate in average weekly earnings in Quebec for the period 1992 to 2002.

17 It is important to do this calculation on an after-tax basis to account for the facts, among others, that a) GIS benefits are not taxable and b) even for taxable OAS and QPP benefits, the individual may be in a lower tax bracket once retired.

Figure 1: *Assumed Life Path of Salaries*



person has enough resources to support an adequate standard of living in retirement. A high replacement rate before the normal retirement age, for example, would provide a strong incentive to retire earlier. An often-cited rule of thumb is that income from all sources in retirement should replace 70 percent of pre-retirement income in order to maintain a constant living standard.

A drawback of the replacement rate is that it ignores dynamic effects. The decision to continue working or retire also depends on how much is gained or lost by continuing to work. If the income security accrual rate is positive (the would-be pensioner earns more income security rights), working longer increases future income security receipts. But working longer also entails the costs of paying additional contributions and drawing pensions for a shorter period of time.

QPP wealth and income security wealth (ISW) are summary measures for these dynamic effects, the former isolating the QPP and the latter embedding the QPP within the overall income security tax-transfer system. These measures correspond to the present (age 60) discounted value of the future stream of after-tax income security payments that a person can expect to receive for a given retirement age, net of all future contributions to the QPP that this retirement age implies. Calculating them requires projecting benefits out until individuals reach age 105 and then taking a weighted sum, which discounts future benefits and contributions back to an age-60 equivalent by both a real discount rate (time preference) and the prospect that the worker will live to a given age.[18]

From the values of ISW associated with different retirement ages, I calculate two other measures of the incentives to retire. The first is the ISW accrual, defined as the change in ISW from working an additional year. The second is an implicit tax/subsidy rate, defined as the negative of the ISW accrual over the total after-tax

18 Age 105 is an arbitrary cut-off point, but going further would not affect the results, and survival probabilities beyond this age become increasingly unreliable. I use the unconditional mortality risk beyond age 60, that is, the probability that the worker may be dead at each year after his 60th birthday. This approach is appropriate if the computation is taken from the perspective of the forward-looking 60-year-old who is considering retirement incentives at all future ages.

income the individual can expect to make in that extra work year. This represents the implicit tax (subsidy if negative) on continued work, measured as the share of the additional work year's after-tax income that is given up in ISW. This is the relevant concept for the worker who is trading off leisure (on receipt of income security and private retirement income) against continued work (Gruber, 2001).

Factors Influencing the Results

Before interpreting the results, it is useful to summarize the main mechanisms through which delaying retirement affects the computations in the model:

- The worker must pay QPP contributions on additional insurable earnings (4.95 percent).
- Additional years of earnings are used in the recomputation of QPP benefits. Under the current Plan, those earnings can replace a previous low earnings year; under the new Plan, additional contributory earnings are added to total contributory earnings.
- Since I assume that my individuals claim QPP benefits only when they fully retire, additional years of work imply a delay in claiming. This raises future QPP benefits through the actuarial adjustment but, for a given likelihood of mortality, implies fewer years over which benefits will be received.
- Additional years of work may lower OAS and GIS benefits through means testing, both because of the income from work and because of the higher QPP benefits that result from additional contributions.
- Assumed levels of outside retirement income influence OAS and GIS benefits through means testing and affect the amount of taxes paid through the tax bracket structure.

Results

Results are presented in Tables 3, 4 and 5 for Mr. A, B and C, respectively. The tables compare the current and proposed QPP rules according to the incentive measures discussed. All dollar figures are expressed in dollars of 2003.

In the three cases examined, the proposals would reduce the monthly QPP pension received by a worker who retires early by 5 or 6 percent. By delaying retirement, however, all three individuals would augment their pensions at a faster rate than they would under the current rules and could claim a pension 16-to-30 percent higher if they delayed retirement until age 70. For Mr. A and Mr. B, this effect of delaying pension receipts is strong enough that QPP wealth would virtually be the same in present value terms no matter the retirement age. In other words, under the proposals, their QPP time profiles are almost flat. For Mr. C, QPP wealth would continue to decline with retirement age after the reform, but would do so substantially less rapidly than under the current Plan.

Because of the slight decrease in QPP pensions taken early, income security replacement rates associated with young retirement ages are slightly lower under the proposals for the three individuals. After age 62, however, replacement rates

Table 3: *Mr. A: 40 Percent of Peak Lifetime Average Earnings, No Outside Retirement Income*

	QPP Only					QPP with Other Income Security Programs							
Retirement Age	**Monthly QPP Pension ($)**			**QPP Wealth ($)**		**Income Security Replacement Rate (%)**		**Income Security Wealth ($)**		**ISW Accrual ($)**		**Tax/Subsidy (%)**	
	Current	Proposals	% Change	Current	Proposals	Current	Proposals	Current	Proposals	Current	Proposals	Current	Proposals
60	259	245	-5	39,033	36,920	21.1	19.9	129,598	128,176	-1450	-825	9.8	5.6
61	285	276	-3	38,806	37,573	23.6	22.9	128,148	127,351	-2237	-1566	16.1	11.3
62	310	308	-1	38,394	38,135	26.3	26.2	125,911	125,786	-2105	-1688	18.3	14.6
63	337	342	2	38,015	38,673	29.3	29.7	123,806	124,098	-2431	-2072	22.6	19.3
64	363	378	4	37,293	38,931	32.4	33.7	121,375	122,026	-2687	-2450	26.8	24.5
65	390	415	7	36,360	38,926	79.6	80.1	118,688	119,576	-6160	-5519	48.5	43.5
66	417	464	11	35,178	39,591	82.1	83.2	112,529	114,057	-5908	-5494	50.1	46.6
67	444	516	16	33,835	39,889	83.9	85.4	106,621	108,563	-5706	-5723	51.7	51.8
68	471	569	21	32,236	39,817	86.4	88.2	100,915	102,840	-5433	-5470	53.1	53.5
69	499	625	25	30,566	39,380	89.8	91.8	95,481	9,370	-5417	-5213	57.8	55.7
70	527	683	30	28,711	38,589	74.7	71.9	90,064	92,157	-2785	-2236	26.1	19.7

Table 4: *Mr. B: 70 Percent of Peak Lifetime Average Earnings, $1,000 Private Pension Once Retired and $500 Other Income per Month*

	QPP Only					QPP with Other Income Security Programs							
Retirement Age	**Monthly QPP Pension ($)**			**QPP Wealth ($)**		**Income Security Replacement Rate (%)**		**Income Security Wealth ($)**		**ISW Accrual ($)**		**Tax/Subsidy (%)**	
	Current	Proposals	% Change	Current	Proposals	Current	Proposals	Current	Proposals	Current	Proposals	Current	Proposals
60	473	444	-6	71,260	66,828	16.7	15.7	96,268	92,895	-865	357	3.1	-1.3
61	520	500	-4	70,858	68,008	18.6	17.9	95,403	93,252	-1437	-106	5.6	0.4
62	567	559	-2	70,127	69,026	20.6	20.3	93,966	93,146	-1074	159	5.0	-0.7
63	616	620	1	69,442	70,001	23.1	23.3	92,893	93,305	-1556	-264	7.8	1.3
64	664	685	3	68,125	70,455	25.8	26.6	91,337	93,041	-1866	-731	10.2	4.0
65	712	752	6	66,403	70,417	40.2	41.4	89,470	92,311	-2352	-63	12.0	0.3
66	760	840	10	64,216	71,578	43.0	45.4	87,119	92,248	-2521	-495	13.9	2.7
67	809	932	15	61,723	72,060	45.9	49.8	84,598	91,753	-2779	-931	16.7	5.6
68	857	1027	20	58,758	71,845	49.7	55.2	81,819	90,822	-2731	-1338	18.2	8.9
69	907	1124	24	55,742	70,941	54.4	61.8	79,088	89,483	-2920	-2500	21.8	18.7
70	955	1205	26	52,329	68,210	46.2	50.2	76,168	86,983	-407	-405	2.7	2.5

Table 5: *Mr. C: Average Lifetime Earnings, $1,600 Private Pension Once Retired and $850 Other Income per Month*

	QPP Only					QPP with Other Income Security Programs							
Retirement Age	**Monthly QPP Pension ($)**			**QPP Wealth ($)**		**Income Security Replacement Rate (%)**		**Income Security Wealth ($)**		**ISW Accrual ($)**		**Tax/Subsidy (%)**	
	Current	Proposals	% Change	Current	Proposals	Current	Proposals	Current	Proposals	Current	Proposals	Current	Proposals
60	543	517	-5	81,691	77,758	12.8	12.2	96,392	93,587	-1131	188	3.0	-0.5
61	598	583	-3	81,125	79,041	14.3	14.0	95,262	93,775	-1778	-288	4.9	0.8
62	654	654	0	80,160	80,165	15.9	15.9	93,484	93,487	-1914	-1917	6.4	6.4
63	705	705	0	78,413	78,413	17.8	17.8	91,570	91,570	-2457	-2457	8.9	8.9
64	753	753	0	75,863	75,863	19.6	19.6	89,114	89,114	-2714	-2714	10.7	10.7
65	801	801	0	72,910	72,910	30.4	30.4	86,399	86,399	-2920	2622	11.3	-10.2
66	849	936	10	69,607	77,608	32.6	34.6	83,479	89,022	-3069	-2425	13.0	10.2
67	897	1003	12	66,002	74,949	35.0	37.5	80,410	86,597	-3183	-2714	14.7	12.5
68	945	1070	13	62,144	71,786	38.9	42.2	77,227	83,883	-3194	-2879	16.8	15.1
69	994	1138	15	58,134	68,248	43.4	47.4	74,032	81,004	-3163	-2994	19.0	18.0
70	1042	1205	16	54,024	64,394	38.8	41.3	70,869	78,009	-311	-310	1.7	1.7

are higher than under the present system.[19] So far, these results point toward significant improvements in the incentives to remain at work.

For the low-income earner, however, those improvements would be almost entirely washed out by the rest of the tax-transfer system. For all three individuals, switching from the current Plan to the reformed one does not flatten the time profile of ISW nearly as much as it does for QPP wealth, but this is especially true in the case of Mr. A, whose low employment income if he continues to work fails to increase the QPP pension amount by enough to compensate for delaying receipt. Another important reason is that Mr. A is entitled to GIS payments after 65. Those are clawed back as retirement is delayed and the QPP pension rises. For low earners entitled to GIS payments, the GIS clawback therefore cancels a lot of the positive incentive effects of the proposed QPP reform taken in isolation.[20]

For the low-income earner, improvements in ISW accruals and implicit tax rates on continued work brought about by the reform do not occur at every retirement age and are generally very modest. For example, the after-reform implicit tax on work at age 64 is still fairly high at 24.5 percent. The interpretation of this measure is that, in expected value at age 60, prolonging Mr. B's working life by one year from his 64th birthday to his 65th would lower ISW by 24.5 percent of what he can expect to earn, after-tax, while he is 64. Whether the loss of 24.5 percent of his income in ISW by working one more year, as opposed to 26.8 percent as he would under the present rules, would translate into a significant behavioural effect is highly unlikely, so there is certainly ample room to lower these implicit tax rates further.[21]

Still, for people who like Mr. A face shortfalls in their retirement savings, relatively small changes in behaviour can have surprisingly large effects. Because people who retire at 60 can expect to live another 20 years, each year they postpone retirement reduces their need for retirement savings by about 5 percent. An extra year of work also increases their public retirement pension by 6-to-10 percent. Taken together, those effects lessen the total amount that people need to save, and the additional year gives them the opportunity to save more and earn returns on the assets they have already accumulated. As a result, individuals can make up for earlier shortfalls in retirement savings with surprisingly little change in behaviour, so modest improvements in work incentives may help a great deal.

Changes in work incentives from the overall income security system are much more significant for the typical earner than they are for the low earner, as represented by the lower absolute ISW accruals and lower implicit tax rates on contin-

19 It may seem odd that the income security replacement rates for age 70 are lower than for age 69 for the three individuals. This is because they would start receiving QPP benefits at age 70 whether they were retired or not. As a *share* of income out of work, then, income security receipts are lower. A similar although more complicated effect explains why Mr. A's age 70 replacement rate is lower under the proposals than under the current system, even though the *level* of replacement income would be higher.

20 For a detailed study of the interaction effects between the GIS and the CPP/QPP, see Milligan (forthcoming 2004).

21 Measured implicit tax rates on continued work would be substantially higher (some would even be over 100 percent) if only the additional income earned in the extra work year were used as a divisor instead of total income, which also includes government transfers and income from retirement savings.

ued work calculated for Mr. B (Table 4). Implicit tax rates on continued work are driven down to near zero for retirement ages 60-to-66, with small negatives illustrating implicit subsidies. Significant declines are also observed at retirement ages 67 and 68. These results represent a significant boost in the incentives to remain at work. This is encouraging because Mr. B was constructed to be representative of a very large proportion of Quebec workers.

The third individual, Mr. C, is entitled to the maximum pension at most retirement ages, having earned the YMPE or more throughout most of his career. Since the YMPE closely follows the average Canadian industrial wage, one might think that this individual is representative of the average worker now approaching retirement. In fact, few retirees applying for QPP benefits currently are entitled to the maximum QPP pension.[22] Even fewer will be entitled as the Plan continues to mature because, until complete maturity, the number of years of full contributions required to qualify for the maximum pension keeps increasing. More will become entitled to a full pension when the Plan is fully mature, a time that would roughly coincide with implementation of the proposals. In this sense, Mr. C can be thought of as being more representative of the average worker who would retire after the changes discussed here might come into force.

For this individual, the proposed changes to the QPP have more limited incentive effects. At retirement age 60, the proposals create a small subsidy to continue working and they almost eliminate the implicit tax at age 61. For retirement ages 62-to-64, the QPP pension would be the same after the reform as under the current Plan, and so would all retirement incentive measures. One notable result is the fairly large implicit subsidy on work at age 65, which occurs because of the proposed increase in the actuarial adjustment factor for retirement after 65. At that age, the actuarial adjustment to the pension amount more than compensates for the decrease in ISW stemming from a shorter time of receipt. All work incentive measures are improved for retirement ages after 65 due to the higher actuarial adjustment factor only, which is responsible for a maximum payable pension at age 70 that is a full 16 percent higher than the current maximum.

For higher lifetime income levels and higher outside retirement income, the importance of QPP benefits in an individual's retirement budget diminishes and the incentive measures used here arguably become less significant determinants of that individual's behaviour. Calculating the retirement incentives for an individual with an earnings history above Mr. C's would yield results very similar to those shown in Table 5 because that individual would be entitled to the maximum pension just like Mr. C. Higher levels of private retirement income would produce slight differences but these would not be due to the QPP per se. Reforming QPP retirement pensions would therefore mostly affect work incentives for those who have earned close to or below the YMPE during their working lives. For such individuals, we have seen that the proposed changes would slightly reduce the income security replacement rates associated with early retirement (60-to-63). In general, however, they would penalize additional work, in terms of QPP and ISW accruals, to a lesser extent than does the current regime. The proposals would gen-

22 Among the QPP's new beneficiaries in 2000, only 21 percent of males and 3 percent of females were entitled to the maximum pension (Régie des rentes du Québec, 2003c, p. 66).

erally translate into lower implicit tax rates on continued work, although these remain relatively high for low earners.

I now turn to the proposed elimination of retirement tests, which in my opinion is the most significant change put forward in the working paper.

To Work or Retire? Why Not Do Both?

Typically, individuals apply for their QPP retirement pension when they actually stop working (or at 60 if they stopped earlier). This is the behaviour that I assumed in the simulations above. As we have seen, however, one of the most interesting proposals contained in the working paper would allow individuals to apply for their QPP retirement benefits between the ages of 60 and 65 even if they continue working; that is, it would completely eliminate the retirement test currently applied to pension applicants in that age bracket. Workers would continue paying into the Plan while working and any additional earnings would be added to their total career contributory earnings and augment their pensions accordingly in following years — consistent with the kind of phased retirement many have advocated for an older workforce (Robson, 2001). Since, unlike now, the pension's commencement date would not influence the earnings total on which the pension entitlement is calculated every year, even during work, it would seem that every worker would be better off commencing his pension as early as possible. In fact, why would anyone not apply for the pension at age 60? The answer, for a given level of work and other income, depends on the interactions between the actuarial adjustment factors, the individual's discount rate and his mortality risks.

To illustrate, consider Mr. B, used in the simulations above, but now assume that he intends to stop working at age 70. Assume also that all proposed changes to retirement benefits are adopted, including the increase in the actuarial adjustment factor after 65. The question here is not at what age he is better off retiring, but at what age he should apply for QPP, given that he expects to stop working at age 70. The answer, from his forward-looking perspective at age 60, is the age at which he expects to maximize ISW. It turns out that with average mortality risks, this age depends mostly on his rate of time preference, as embodied in the discount rate.[23] With either a 2- or 3-percent discount rate, the optimal age would be 63 (Table 6). With a 4-percent discount rate, the worker would be better off applying for his QPP at 61, a full 9 years before he plans to leave his job. Even with a zero discount rate, which means that the only discounting comes from average mortality risks, this individual would be better off applying for his pension before 70. For workers who intend to stop working before age 70, that is, for the vast majority of workers, the optimal age would of course be even lower.

Using conventional and fairly conservative discount rates then, we can deduce that it would be optimal for almost everybody to apply for their QPP retirement pensions before age 65. It is true that the proportion of workers who apply for an early QPP pension is already very high: More than 50 percent of males and more

23 Of course, subjective mortality prospects also matter: a person who, for some reason, expects to die early would be better off applying early, while someone who expects to live into the 100s might consider delaying.

Table 6: *Expected ISW at Age 60, Depending on QPP Pension Commencement Age. Mr B Intends to Stop Working at Age 70*

Retirement Age	Income Security Wealth ($)			
	Discount Rate			
	0%	2%	3%	4%
60	141,132	106,290	93,231	82,312
61	143,927	107,568	93,943	**82,554**
62	145,953	108,193	94,058	82,250
63	147,717	**108,686**	**94,096**	81,922
64	148,733	108,586	93,610	81,132
65	149,043	107,939	92,645	79,927
66	151,050	108,568	92,807	79,726
67	152,140	108,496	92,359	78,999
68	**152,324**	107,754	91,338	77,784
69	151,632	106,386	89,793	76,132
70	148,739	103,499	86,983	73,430

Note: Figures in bold are maximums, showing the most advantageous age to claim a pension

than 65 percent of females currently apply at age 60, so the potential for further increases in applications at this age is limited. Yet in the year 2000, 27 percent of new male applicants and 23 percent of new female applicants were 65 years old or older.[24] What these preliminary calculations highlight is that there is some work needed to determine the likely effects of the elimination of retirement tests on the QPP's financial situation. Even if other proposed changes were successful in increasing the average length of working lives, there could be substantial swings in the inflows and outflows of QPP funds if workers began drawing pensions at a younger age, while they are still working. The calculations for a typical worker show that, using reasonable assumptions, this would likely be the case for a large number of QPP contributors.

Conclusion

The proposed reform to QPP retirement pensions described in the working paper does in general meet the policy goal of improving the incentives to delay retirement. The reform would substantially improve the actuarial fairness of the Plan and would, in fact, render the present value of expected QPP benefits roughly constant across possible retirement ages for a large number of workers. When incorporating other features of the tax-transfer system affecting income security in old age, however, the improvements brought about by the proposals are somewhat limited, especially for low-income earners. For them, the improvements might be best described as reductions in the *disincentives* to work beyond 60, because significant deterrents remain. These were identified for modest earners in the form of high implicit tax rates on continued work. These findings highlight the need for a

24 These statistics are from Régie des rentes du Québec (2000c, pp. 59-60).

comprehensive review of the old-age income security system with special consideration given to the cross-effects between various government programs.

Overall, we can describe the proposed QPP reform as bringing modest improvements to the current retirement incentive climate. Because of many other factors influencing retirement decisions that together explain a larger part of the early retirement movement than do public income security programs alone, it may very well be that the effects of the QPP reform, once filtered through the rest of the tax-transfer system, would only have a very limited impact on actual retirement decisions. If we want to achieve a significant impact on the labour participation rates of older Quebeckers and Canadians generally, it would appear that much larger public pension changes than those being proposed would be required. At the same time, public income security programs alone cannot be expected to compensate for the large increase in early retirement incentives offered by the private sector.

Nevertheless, because it is feasible and represents a significant step in the right direction, the reform to QPP retirement benefits should be implemented. Moreover, because the need to improve work incentives in older age is as real in the rest of Canada as in Quebec, similar reforms should be contemplated and eventually implemented by the CPP. Such changes would help ensure that Canada remains a world leader in public pension reform, while maintaining one of the best retirement systems in the world.

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