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Making It Pay to Work:

Improving the Work Incentives in Canada's Public Pension System

Kevin Milligan

In this issue...

The Canada and Quebec Pension Plans (CPP/QPP) promote longer working life by paying later retirees higher pensions. But the income-tested Guaranteed Income Supplement claws these CPP/QPP payments back from modest-income Canadians. Eliminating this clawback would make longer work more rewarding for many seniors.

The Study in Brief

While income-security arrangements for older Canadians have greatly reduced poverty among their recipients, the means-testing provisions of many of these programs reduce the rewards from work and saving for many seniors and near-seniors. One acute problem arises from the interaction of the rewards the Canada and Quebec Pension Plans (CPP/QPP) provide for later retirement, and the clawback provisions of the Guaranteed Income Supplement (GIS).

CPP/QPP retirement benefits are 0.5 percent higher for each month the recipient delays commencement, and 0.5 percent lower for each month the recipient brings it forward. This provision aims to reward later retirement. But the GIS, which operates outside the tax system, reduces its benefit by 50 cents for every dollar of outside income (other than Old Age Security). This provision aims to target the benefit to those most in need. By adding a 50-percent clawback to other taxes recipients face, however, the GIS makes longer working life much less rewarding for modest-income Canadians.

While the impact of high taxes on work effort generally is a matter of debate, the net effect of the GIS clawback is likely to induce older workers to retire earlier. The clawback of the GIS with higher CPP/QPP payments and earnings can account for a reduction of as much as 11 percent of potential work between the ages of 60-69 for some groups of Canadians. Those affected are, by definition, at the lower end of the income scale — people for whom a few more years of work would provide a welcome boost to their standard of living in retirement.

One solution to this problem would be to shelter the actuarial adjustment in CPP/QPP payments from the GIS clawback. The calculation of income for the GIS clawback could, for example, assume that the recipients CPP/QPP income was whatever the recipient would have been entitled to had he or she commenced receipt at age 60. This solution would reward work better and also ensure that no one receives lower GIS payments under the reform.

The Author of This Issue

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The pace of change in Canada's public pension policy has abated following a flurry of reforms in the 1990s. This slackening may result from success: the 1998 reforms of the Canada and Quebec Pension Plans (CPP/QPP) delivered long-term stability for future contribution rates, albeit at the cost of substantially higher contributions and a slightly reduced pension benefit. Meanwhile, on another important front, poverty among Canada's elderly has diminished greatly over the past generation.[1] Compared to the severe public pension problems most other member countries of the Organisation for Economic Co-operation and Development (OECD) are experiencing, Canada is in a relatively strong position.

Notwithstanding these accomplishments, Canada's income security system exhibits some flaws. One common critique, advanced by Shillington (2003) and Poschmann and Robson (2004), concerns the impact of income-tested benefits, such as the Guaranteed Income Supplement (GIS), on incentives to save. Because extra income reduces GIS benefits by 50 cents on the dollar, low-income Canadian seniors who receive this benefit face extraordinarily high implicit tax rates on the return to their savings.

Beyond their effect on savings, high implicit tax rates also influence the labour market decisions of older workers. Because earned income decreases the GIS income-tested entitlement, older Canadians receiving the supplement have stronger incentives to retire earlier than they otherwise would. In simulations, I compared retirement decisions under the actual system with those in a "neutral" system with no financial incentives to retire early, and found that work after age 60 for low-income males decreases by about half a year because of the distortions imposed by Canada's income security system. The system encourages retirement too early with too little pension income. It is particularly striking that this problem hits low-income seniors the hardest — precisely those who may want to work a few more years in order to buttress their retirement well-being.

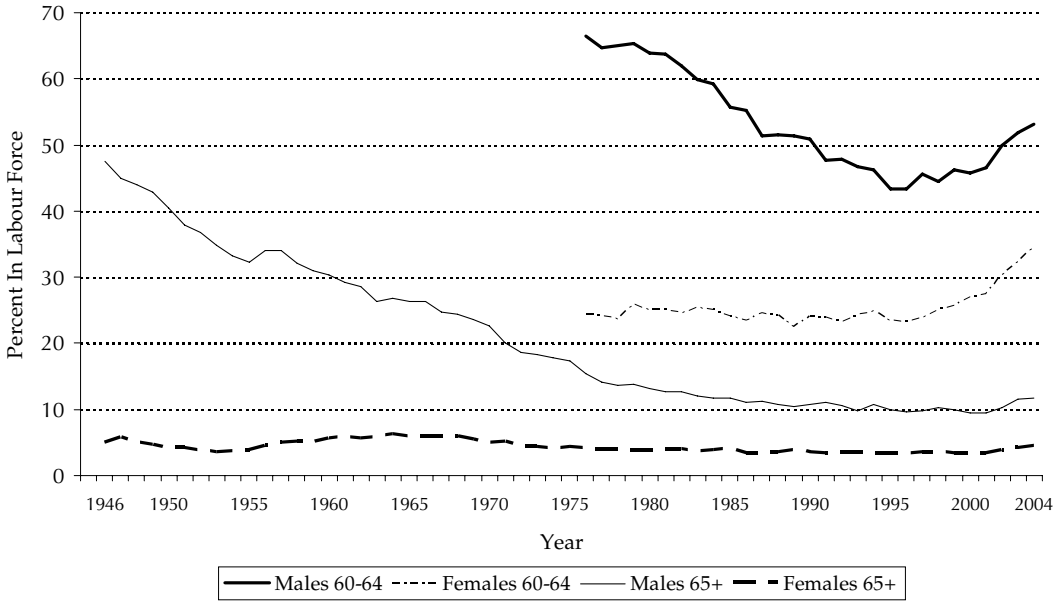
As a partial solution to the problem, I propose that the GIS be expanded in a way that improves work incentives. The GIS should allow exemptions that remove the distortions imposed on low-income workers and that encourage them to stay in the labour market until their pensions reach a desirable level.

In this *Commentary*, I first explain why work disincentives for older workers present an important policy concern. I then detail the exact mechanisms that generate the work disincentives, and I demonstrate the magnitude of these effects. I close with the details of my proposals for reform of the GIS and an assessment of different options.

I thank Christina Caron, Yvan Guillemette, Jon Kesselman, David Laidler, Jack Mintz, and Bill Robson for very helpful comments. This paper grew out of continuing collaborative work on Canada's public pensions with Michael Baker and Jonathan Gruber, both of whom I absolve from responsibility for what appears here.

1 See Osberg (2001) for evidence on the downward trend of elderly poverty in Canada.

Figure 1: *Labour Force Participation Rate, Ages 60 and Over, 1946–2004*



Source: Statistics Canada CANSIM database; Historical Statistics of Canada.

The Nature of the Problem

The long-run trend in labour force participation among older Canadian men is down, as Figure 1 shows: for males ages 65 and older, the participation rate dropped from 47.5 percent in 1946 to 11.8 percent in 2004. In contrast, the participation rate of women in that age group has remained low and relatively flat. Although there has been a recent upsurge in labour participation among those 60 to 64 years old, today's male elderly Canadians are working less than did their fathers.

The trend toward earlier retirement has important implications.[2] When an individual stops working earlier, the annual pension income he receives for the rest of his life typically will be smaller than if he had retired later. Earlier retirement means that the build-up of savings stops sooner and that existing savings must be stretched over more years. As well, actuarial reductions imposed on the pensions of those who retire early might reduce their income from both public and employer-provided pensions. Furthermore, the economy as a whole loses a worker and the government loses the worker's tax payments on employment income. On the positive side, earlier retirement allows the individual the obvious benefit of more leisure time to pursue other activities and to rest after a life's work. The timing of retirement, therefore, is a tradeoff between more income and more leisure.

2 Many of these implications are summarized in Gunderson (1998).

Should this decline in labour market activity by older male Canadians concern policymakers? If the decline reflects older Canadians' undistorted choices about the right mix between income and leisure, then there is no obvious role for policy — after all, the goal of Canadians is surely not to work for as long as they can, but to maximize the enjoyment they glean from life. If Canadians' enjoyment is maximized by their retiring earlier, then government should not interfere. Evidence strongly suggests, however, that part of the decline in labour market participation by older Canadians is the result of disincentives to work contained in public pension plans. To the extent that this is a factor, increased retirement reflects not the older individual's undistorted decision to trade off higher income for a longer retirement but a choice from a distorted set of options imposed by policy.[3]

The international literature on public pensions and retirement is extensive.[4] One of the most interesting recent studies is Gruber and Wise (2004), who compare the effect of public pensions on retirement behaviour across 12 OECD countries by focusing on two effects. The first is the rather obvious one that the greater the total retirement income an individual receives, the more leisure time he or she can afford; the capitalized value of this future income therefore influences the retirement decision through a "wealth" effect. The second effect is that the rate at which one earns the right to a higher pension income also affects the retirement decision. If working an extra year increases future retirement income, then there is an incentive to work longer. On the other hand, if working an extra year causes a decrease in future retirement income, then there is an incentive to retire earlier. Because the rate of public pension accrual affects the retirement decision, this is known as the "accrual" effect.

In the Canadian context, Baker, Gruber, and Milligan (2003a) find evidence for both the wealth and the accrual effects. For example, it appears that changes in the structure of the public pension system might account for around 20 percent of the increase in male retirement between 1985 and 1995. The effect is strongest among those with the lowest lifetime earnings — that is, those who are most likely to receive the GIS. In another study, Pollock and Sargent (2004) run simulations showing that removing the retirement test from the CPP would delay the decision to retire by up to four years.

Of course, the public pension system is not alone in influencing individuals' retirement decisions: as Pesando and Gunderson (1988) document, employer-provided pensions also offer strong incentives to retire. Some plans contain incentives to leave at certain ages because of kinks in the accrual schedule — some "magic number" involving age and years of service, for example. However, while such incentives might induce workers to leave particular firms, their effect on overall labour market participation might be mitigated by workers' choosing to

3 The concern that an increase in the participation rate of older workers in the labour market might leave less "room" for younger workers actually carries no weight. Although an increase in working seniors might mean that fewer jobs open up in particular firms, older workers also spend the money they earn, which generates additional demand for workers and makes the economy grow. Just as the addition of females and immigrants to the Canadian labour pool helped to grow the economy in the past, so additional work from older Canadians could help to grow it more in the future.

4 A review of the evidence can be found in Lumsdaine and Mitchell (1999).

Table 1: *Summary of Incentive Effects*

	Age Range		
	55–59	60–64	65-69
Labour market earnings decrease GIS?	no	no	yes
High earnings increase eventual CPP/QPP pension?	yes	yes	yes
Delayed retirement increases CPP/QPP pension through actuarial adjustment?	no	yes	yes
GIS payments decreased by CPP/QPP income?	no	no	yes

work part time for a few years before retiring completely. In contrast, the work disincentives in the public pension system are nationally pervasive: they affect workers in any firm, and are far harder to avoid. For this reason, public pension incentives have different implications from those that affect workers in employer-provided plans.

How Canada's Public Pensions Influence Retirement

As I noted above, Canada's public pension system affects retirement through both "wealth" and "accrual" channels. For some components of the pension system, the effect is obvious; for others, it is subtler. Here, I provide a brief description of each component of Canada's public pension system and an explanation of how it affects retirement incentives. Table 1 presents a brief summary of the effects by age group.

Old Age Security

Old Age Security (OAS) pays up to $471.76 per month (as of the last quarter of 2004) to every Canadian over age 65, as long as the recipient has lived in Canada for at least ten years before making a claim. The benefit is taxable and indexed quarterly to changes in the consumer price index. For income above $59,790, a clawback of 15 cents per dollar applies, until the benefit reaches zero at an income level of $97,075. The federal government expects to pay out $22.2 billion in OAS benefits in fiscal year 2004/05.

Because the entitlement to OAS does not change with the date of retirement, the effect of the OAS on the retirement decision is limited to the impact of the 15-percent clawback. Thus, those who choose to work after age 65 and who have income that will be clawed back must decide whether it is worthwhile to do so given that their labour will be taxed at an extra 15 percent. However, this affects relatively few seniors.[5]

5 Using data from Statistics Canada's 2000 Survey of Labour and Income Dynamics, I calculate that 4.4 percent of individuals age 65 and older had non-OAS, non-GIS income that exceeded the then-clawback threshold of $53,215.

The GIS and the Allowance

The GIS is an income-tested, price-indexed benefit paid to qualified Canadians age 65 and above. In the last quarter of 2004, the full monthly benefit was $560.69 for singles and $365.21 each for couples. The income test is applied to all family income, except for OAS benefits, at a rate of 50 percent,[6] and the income cutoff for receiving GIS was $13,464 for singles and $17,568 for couples. In 2004, 34.5 percent of OAS recipients were also receiving GIS benefits, so the GIS can be thought of as affecting those in approximately the bottom third of the over-age-65 income distribution. In addition, an Allowance is paid to those ages 60 to 64 and who are married to an OAS recipient as well as widows and widowers in the same age range. The Allowance is also clawed back on family income at rates of 50 and 75 percent. In fiscal year 2004/05, Ottawa expects to spend $6.0 billion on the GIS and $0.4 billion on the Allowance.

The GIS gives Canada's low-income seniors a very strong disincentive to work, since an extra dollar of earnings lowers the benefit by 50 cents — in other words, reducing the return from working by half. If the worker also pays income tax, the overall effective tax rate on work can be very high.[7] The story is the same for those between ages 60 and 64 who receive the Allowance — indeed, Baker (2002) shows that the introduction of the Allowance has had a large impact on the retirement behaviour of eligible workers, since continuing to work pays such a low return for those who receive it.

The CPP/QPP

The CPP and QPP are earnings related, contributory public pensions. The CPP is jointly managed by the federal and provincial governments and the QPP by the Quebec government, although the two plans' benefit structures are similar. Retirement benefits are based on career earnings, which are capped at the Year's Maximum Pensionable Earnings (YMPE) in each year. In 2004, the YMPE was set at $40,500. Regular benefits are paid beginning at age 65, but benefits may be taken as early as 60 or as late as 70, subject to an actuarial adjustment. To receive CPP benefits before age 65, the eligible individual must stop working, although benefits continue to be paid in full if the individual resumes work after initiating a claim. In the QPP, the individual can also continue to work while receiving the pension under certain circumstances. In fiscal year 2004/05, payments out of the CPP for retirement and other benefits are expected to total $23.6 billion and from

6 For couples, each spouse's benefit is reduced by 25 cents for an extra dollar of family income, netting a family loss of 50 cents per dollar (see Social Development Canada 2004).

7 Taking into account just the GIS and provincial and federal income taxes, the marginal tax rate on an extra dollar of work for, say, a British Columbian in the lowest tax bracket in 2004 was more than 72 percent: 50 percent for the GIS, 16 percent in federal income tax, and 6.05 percent in provincial income tax. Although tax credits (personal amount, age amount, and pension amount) shield the first $12,924 of earnings from taxation, many GIS recipients still would have seen their earnings taxed, since OAS payments are taxable but not included in the GIS clawback calculations.

Box 1: *The Calculation of the CPP/QPP Retirement Benefit*

CPP/QPP retirement benefits are determined by a formula that multiplies together the following four parts:

- Earnings rating: a measure of average earnings over the worker's work life, relative to the Year's Maximum Pensionable Earnings.
- Pension adjustment factor: a reflection of average earnings at the time of retirement — that is, an average of the Year's Maximum Pensionable Earnings for the last five years an individual works.
- Actuarial adjustment factor: an adjustment applied to a worker who retires before age 65 that discounts the pension by 0.5 percent per month before age 65 to a maximum of 30 percent for retirement at age 60; the adjustment is made symmetrically for retirement after age 65 up to age 70.
- Replacement rate: the rate is set at 25 percent.

The resulting annual benefit is then divided by 12 to arrive at the monthly benefit. This benefit is indexed quarterly to the consumer price index and is paid until death.

As an example, consider someone with an earnings rating of 0.8 who retired in 2004 on his sixty-second birthday. He would receive:

Monthly benefit = (earnings rating = 0.8) × (pension adjustment factor for 2004 = 39,080) × (actuarial adjustment factor for age 62 = 0.82) × (0.25) ÷ 12 = $534.09.

the QPP, $7.5 billion.[8] (For more detail on the CPP/QPP benefit calculations, see Box 1.)

The accrual effect of the CPP/QPP on the incentive to continue working comes through the actuarial adjustment for retirement at ages other than 65. After age 60, an extra year of work means foregoing a year of pension benefits. Both the CPP and QPP apply an adjustment rate of 0.5 percent of the full pension for each month that the pension is deferred or brought forward. So, for example, an individual who retires at age 60 receives a pension that is 30 percent (30 = 60 months x 0.5) smaller than the full pension, while every month an individual works after reaching age 60 increases the pension payment by 0.5 percent until the full benefit is payable at age 65.

A well-chosen actuarial adjustment rate can correct for changes in interest rates and mortality rates over the period of deferment, making the pension equally valuable whether it is taken now or later. If the actuarial adjustment is not carefully chosen, however, the balance can swing in favour of one side or the other, causing a change in the incentive to retire. In principle, the rate could vary by personal characteristics such as gender, age, and longevity prospects; in practice, however, a single rate is used for all Canadians, so that it is able to balance these factors only for the average person, at best. According to a study by the Office of the Superintendent of Financial Institutions (2003), the current CPP

8 In July 2004, retirement benefits amounted to 71.9 percent of CPP outlays, while survivor benefits were another 14.1 percent, disability benefits 11.2 percent, and children's and death benefits 2.8 percent.

adjustment rate is too low for those under age 65, meaning that those who retire at age 60 are effectively being subsidized. Recent proposals to reform the QPP have included increasing the adjustment from 0.5 to 0.7 percent per month after age 64 (see Guillemette 2004).

In addition to the actuarial adjustment, an extra year of work can change the CPP/QPP benefit in other ways. If earnings are high enough, the extra year of work can improve the individual's lifetime earnings rating used in the calculation of the pension benefit, since a month of high earnings would replace a month of low earnings in the calculation. Of course, if the extra month of earnings pulls down the average, then the extra time at work will decrease the pension.

The Interaction of the CPP/QPP and the GIS

A subtle yet strong effect of public pensions on the incentive to work comes from the interaction of the CPP/QPP with the GIS. An individual considering an extra year of work between the ages of 60 and 64 must compare the worth of receiving a lower but immediate pension and that of the "bonus" paid by the actuarial adjustment for delaying retirement. On the other hand, the pension recipient who also receives the GIS will have 50 percent of the actuarial "bonus" clawed back from the GIS benefit. Moreover, CPP/QPP benefits are taxable while the GIS is not, which reduces still further the net benefit from delayed retirement. Thus, this subtle interaction of the two programs eats away at the incentive to continue to work for many Canadian seniors.[9] This disincentive to work matters because, if the GIS clawback decreases the actuarial adjustment, an individual must work more years in order to receive the same net pension increase as someone who is not subject to the clawback. Alternatively, the individual might conclude that the extra time working is not worth the effort and decide to retire earlier with a smaller pension income for the rest of his life. Either way, the worker is worse off.

The Size of the Impact

We have seen that Canada's public pension system contains incentives that distort the labour market decisions of older Canadians, but just how large are these incentives? To answer that question, I present results from a simulation based on estimates in Baker, Gruber, and Milligan (2003a). (For details of the estimations of the parameters used in the simulations, see the appendix.) In the simulations, I consider some working individuals and calculate the pension entitlement each would receive if he stopped working. From these pension entitlements, I then calculate the incentive to continue working. Next, using the estimated responsiveness of work to the incentives, I calculate the impact of the incentives on retirement.

The simulations reveal that the interaction between the CPP/QPP and the GIS is a major contributor to the incentive to retire. For this reason, much of the

9 The worth of the actuarial adjustment is also affected by the clawing back of other benefits in addition to the GIS. As one example, in 2004, the age credit was clawed back on net income above $29,124 at a rate of 15 cents on the dollar.

analysis focuses on comparing those who are eligible for the GIS when they retire and those who are not. In order to make these comparisons as transparent as possible, I simulate the cases of two single men, one of whom (Mr. GIS) has no workplace pension and is eligible for the GIS and the other (Mr. No-GIS) whose workplace pension gives him an income too high to qualify for the GIS. Whether married or single, male or female, the mechanism that connects the GIS, the CPP/QPP, and retirement is the same. The goal of this illustration is to clarify the mechanisms, rather than provide calculations representative of the Canadian population.[10]

To emphasize the role of the GIS, I keep all other attributes of the two men exactly the same: both men earned the average industrial wage throughout their careers, without earnings interruptions, so that neither of them has years of extremely low earnings in his earnings history;[11] both were born in 1942; both are residents of Ontario; and neither man has savings or a registered retirement savings plan (RRSP). The illustration is set in 2002, making both men 60 years of age, and the calculations incorporate the CPP, the GIS, and the OAS, as described in the appendix.[12] The sole difference between the two men is that Mr. No-GIS receives a workplace pension of $15,000 per year, which makes him ineligible to receive the GIS.[13]

Table 2 shows mortality rates and pension flows at different ages. Not surprisingly, survival rates are higher for women than for men as age increases. The table also shows the substantial difference in CPP and GIS benefits when the individual retires at age 60 rather than at 65 because of the actuarial adjustment for early retirement.[14] The final two rows of the table clearly illustrate the negative financial effect on GIS entitlements of continuing to work until age 65: fully half of the financial benefit of delaying retirement disappears because of the GIS clawback. These calculations give a preliminary indication of the mechanism and the magnitude of the interaction between the CPP/QPP and the GIS.

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10 In simulations not shown here, I find that the incentives for females are generally more positive than for males, resulting from women's greater longevity. Since women live longer, an annual increment to their pension will pay off for more years.

11 If an extra year of work after reaching age 60 replaces a very low earnings year in the CPP/QPP benefit calculation, the payoff for continuing to work will be higher than if the extra year of work replaces a relatively high earnings year.

12 The calculations are done on an after-tax basis, so that provincial and federal income tax owing on taxable retirement income sources (OAS, CPP/QPP, and Mr. No-GIS's pension) is accounted for.

13 It may be extreme to assume no savings on the part of Mr. GIS, but it serves to sharply differentiate between the two cases. In simulations not shown here, adding some savings to Mr. GIS has two effects. First, if income from savings is high enough then Mr. GIS would no longer receive any GIS and would look very similar to Mr. No-GIS. Second, the savings may move Mr. GIS into a higher tax bracket, meaning that more of his actuarial adjustment is lost to income taxes, which makes the negative accruals even stronger since the return to working longer is diminished even more.

14 In the real world, benefits might also be lower if extra years of work between ages 60 and 65 improved the earnings-rated component of the CPP formula. In the simulations presented here, however, earnings in the extra years of work are assumed to be no higher than in the rest of the two men's work histories.

Table 2: *Mortality and Pension Flows*

	Ages				
	60	65	75	85	95
Male, age 60, probability of living to indicated age	1.000	0.933	0.690	0.312	0.040
Female, age 60, probability of living to indicated age	1.000	0.962	0.817	0.506	0.116
CPP entitlement if claiming CPP at age 60 ($)	6,413	6,413	6,413	6,413	6,413
CPP entitlement if claiming CPP at age 65 ($)		9,147	9,147	9,147	9,147
GIS entitlement if claiming CPP at age 60 ($)		3,130	3,130	3,130	3,130
GIS entitlement if claiming CPP at age 65 ($)		1,763	1,763	1,763	1,763

Sources: Probabilities of living are derived from Statistics Canada (2002); pension flows are author's calculations.

The Size of the Disincentive

The best way to illustrate the differences in annual pension flows for retirement at different dates is to sum up all the flows for each possible date of retirement. The stream of future income from retirement income security programs can be converted to an equivalent lump sum amount — called "income security wealth" — by discounting for interest rates and mortality probabilities. This lump sum represents the discounted expected value of the future pension flows — that is, the lump sum amount that would be a financially fair trade for the entire future flow of pension income.

Figure 2 shows the income security wealth for the two men in the sample for each possible retirement age between from 60 to 70. Notice, first, that Mr. No-GIS's income security wealth is lower than that of Mr. GIS because of his ineligibility for GIS payments. Looking across the ages, Mr. No-GIS's pension profile is quite flat because of the 6 percent annual actuarial adjustment in the CPP/QPP: without the adjustment, waiting a year to retire would mean foregoing a year of pension benefits; with it, the foregone year of pension benefits is compensated for by a higher pension in the remaining years of life. If the actuarial adjustment for delayed retirement were chosen perfectly, this profile would be completely flat, meaning that the size of the pension would not change depending on the date of retirement. Mr. GIS's level of income security wealth, however, traces a more pronounced contour over the age profile, declining from $176,395 at age 60 to $117,762 at age 70.

As Figure 3 shows, the accrual rate — calculated as the difference between income security wealth next year and this year — for the two men at each age differs sharply. For Mr. No-GIS, the rate of decline falls fairly smoothly from only $290 at age 60 to $3,138 at age 69. The reason for the larger declines at older ages is that survival rates decrease with age. For example, at age 60, average life expectancy is another 19 years, meaning that the actuarial bonus for delaying retirement for one year pays dividends for 18 future years, on average. In contrast, average life expectancy at age 69 is only another 12 years, so delaying a year to retire must pay off over that shorter time. Since the actuarial adjustment is the

Figure 2: *Income Security Wealth Levels at Ages 60 to 70*

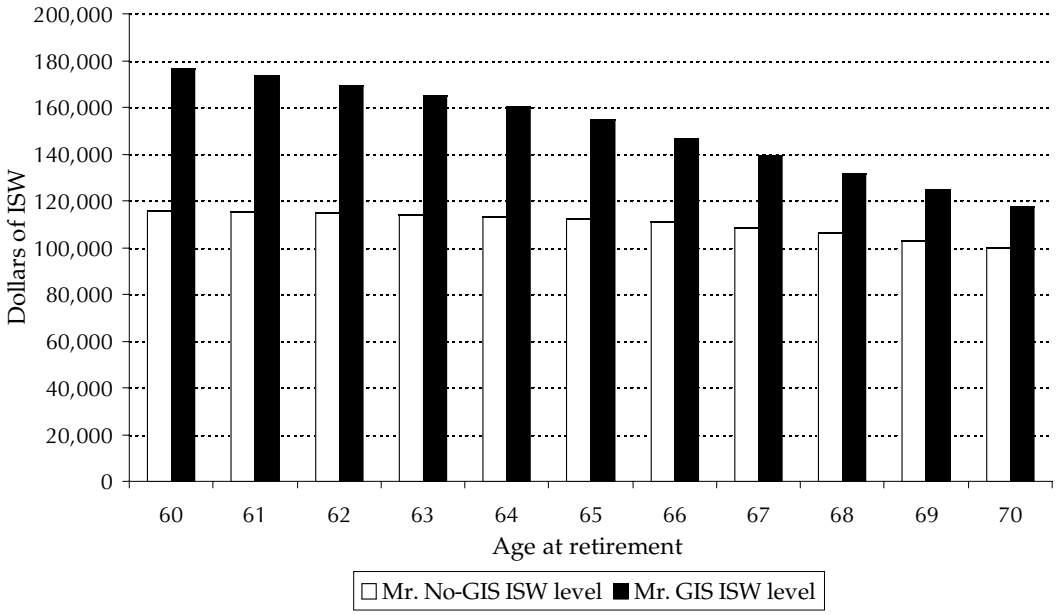
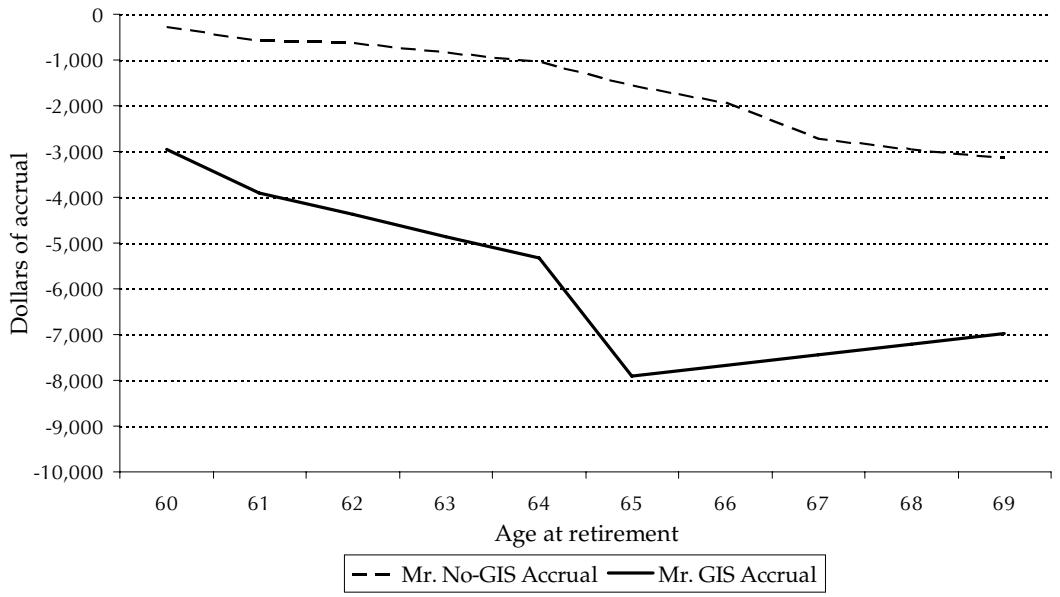


Figure 3: *Income Security Wealth Accruals, Ages 60 to 69*



same at age 60 as at age 69, delaying a year to retire is necessarily a worse deal at age 69 than at age 60.

For Mr. GIS, in contrast, the annual decline in accrual rates starts at more than $2,600 more than for Mr. No-GIS because of the interaction of the GIS and the CPP/QPP. If Mr. GIS delays retirement by a year from age 60 to age 61, the clawback of the GIS takes half of the 6-percent CPP/QPP actuarial bonus from age 65 until the end of his life. At age 65, there is a sharp drop in the accrual rate down to just under $8,000. As at earlier ages, delaying retirement at age 65 leads to a 6-percent bonus that lowers the GIS at future ages through the clawback. However, at age 65 there is an additional clawback of GIS benefits, since income earned at that age affects the GIS contemporaneously.

This illustration makes clear the two ways that the GIS affects work incentives. First, the GIS penalizes extra work between ages 60 and 64 because the actuarial adjustment in the CPP/QPP is clawed back from future GIS payments. Second, the labour of the small percentage of Canadians who continue work after age 65 is penalized both directly because earned income claws back the GIS and indirectly through the actuarial adjustment. These strongly negative accrual rates are effectively a tax on work after age 60 — a tax that is imposed on just those in the bottom third of the retirement income distribution, who collect the GIS. This tax has the effect of encouraging individuals to retire earlier with lower pensions than they might otherwise have done.

The Effect on Retirement

How sensitive is the retirement decision to incentives of the magnitude described above? To address this question, I simulate Mr. GIS's labour market behaviour under a perfectly "neutral" regime that has a perfectly flat age profile of public pension wealth, implying a zero accrual rate at all ages. Accordingly, under such a regime, there is neither an incentive nor a disincentive to exit the labour market because of changes in public pension accruals across different ages. In practice, this ideal would be very difficult to attain since it would have to account perfectly for all parts of the tax and transfer system that contribute to the rate of pension accrual. Nevertheless, the supposition of a neutral regime provides a convenient benchmark against which to assess the magnitude of the distortion in the current system.

Table 3 reports the simulation results under the public pension regime that currently prevails. The "ISW level" and "Accrual" columns show the level of income security wealth and the accrual rate corresponding to the graph for Mr. GIS in Figures 2 and 3. The "Exit Rates" column displays the proportion of workers who exit the labour force at a given age.[15] For example, the 0.206 at age 64 means that 20.6 percent of workers who are still working on reaching age 64 retire during the following year. For the simulations, I apply these exit rates to a set of 1,000 individuals to see how many retire at each age. The number still active appears in the "Remain in Labour Force" column. By age 65, only 230 of the

15 These exit rates are taken from the data used in Baker, Gruber, and Milligan (2003a) and are representative of the labour force exit rate among male Canadian workers in the 1980s and 1990s.

Table 3: *Simulations of Labour Force Exits: Current Regime*

	Current Regime				
Age	ISW level	Accrual	Exit Rates	Remain in Labour Force	Cumulative Work
	$	*$*	*%*	*per 1,000 at 59*	*years*
60	176,395	-2,963	0.160	840	840
61	173,432	-3,913	0.152	713	1,553
62	169,519	-4,369	0.162	597	2,150
63	165,150	-4,861	0.175	493	2,642
64	160,289	-5,328	0.206	391	3,033
65	154,961	-7,903	0.411	230	3,264
66	147,058	-7,668	0.285	165	3,428
67	139,390	-7,453	0.200	132	3,560
68	131,937	-7,208	0.195	106	3,666
69	124,729	-6,967	0.217	83	3,749

Source: Author's calculations.

original 1,000 are still in the labour force. The final column sums the cumulative person-years of work from age 60. Over the ten years from ages 60 to 69, there are 10,000 potential person-years of work, of which 3,749, or 37.5 percent, are realized.

I carry out the same simulation for a neutral regime and report the numbers in Table 4. Here, the level of income security wealth remains constant at $154,961, which corresponds to the level of wealth at age 65 reported in Table 3. The predicted exit rate is calculated using the estimates from Baker, Gruber, and Milligan (2003a). Before age 65, the level of income security wealth is lower under a neutral regime, which implies later retirement. The accrual rate is higher, as the negative accrual from the current regime no longer applies, which also leads to later retirement. Combining these effects, the exit rate at age 60 falls from 16.0 under the current regime to 13.6 percent under a neutral regime.

The decrease in the predicted exit rate leads to higher labour market participation in the simulated neutral regime. This can be quantified in three ways. First, one can look at the number of workers still in the labour force at age 65, which increases by 20.9 percent from 230 workers to 278. Second, one can look at total cumulative work to age 69, which increases by 11.3 percent under a neutral regime over the corresponding level under the current regime. Third, one can calculate the median age at which workers leaves the labour force — that is, the age at which 500 of the original 1,000 individuals have retired. Under the current regime, the median is 2.93 years after age 60. In contrast, under a neutral regime, the median is 3.52 years of work after age 60 — an increase of more than half a year.

The analysis in Tables 3 and 4 demonstrates that the retirement incentives inherent in Canada's public pension system have a potentially strong impact on labour market behaviour. Indeed, although the simulation considered only the particular case of an unmarried man, the same incentives affect all GIS-eligible workers, be they married or single, male or female. Baker, Gruber, and Milligan (2003a) find that the sensitivity of females to retirement incentives is in the same

Table 4: *Simulations of Labour Force Exits: Neutral Regime*

Neutral Regime					
Age	ISW Level	Accrual	Exit Rates	Remain in Labour Force	Cumulative Work
	$	*$*	*%*	*per 1000 at 59*	*years*
60	154,961	0	0.136	864	864
61	154,961	0	0.126	755	1,619
62	154,961	0	0.138	651	2,270
63	154,961	0	0.151	553	2,823
64	154,961	0	0.184	451	3,274
65	154,961	0	0.383	278	3,553
66	154,961	0	0.263	205	3,758
67	154,961	0	0.183	168	3,926
68	154,961	0	0.184	137	4,063
69	154,961	0	0.211	108	4,171

Source: Author's calculations.

range as that for males, so it follows that the labour supply response by females to the same incentives would be similar.

Pension Reforms to Enhance Employment

If the disincentives to continue working were removed from Canada's public pension regime, workers could decide when to retire without being penalized through insufficient actuarial adjustments. Putting in place an idealized, actuarially neutral system would be difficult to achieve, although Sweden and other countries have introduced reforms to their public systems that remove the disincentive to work through the explicit annuitization of a worker's public pension wealth.[16] Reform of a pay-as-you-go public pension system is, however, a notoriously difficult political project because of the intergenerational conflicts and expensive transitions that would arise.[17] Indeed, in Canada, the difficulty of such structural reforms was only too evident in the political challenges that arose in response to the modest reform embodied in the 1996 proposal to introduce the Seniors' Benefit.

The federal government announced plans to expand the GIS in the October 2004 Speech from the Throne and in the February 2005 budget. Moreover, a May 2004 prime ministerial task force included the recommendation to allow "GIS recipients to earn up to $4,000 per year from employment with no impact on their GIS benefits." (Canada 2004).

16 Sweden's new public system uses "notional" personal accounts that allow contributions to accumulate, then to be withdrawn at the retirement date of choice. In such a system, there is no loss of pension wealth if retirement is delayed. See Palmer (2000) for a fuller description.

17 The debates about Social Security reform in the United States have become more intense with the Bush administration's proposal to introduce private accounts. For Europe, the political challenges of reforms are documented in Feldstein and Siebert (2003).

Since changes to the GIS are being discussed, policymakers in Ottawa face a unique opportunity to consider reforms that leverage the expansion of GIS resources to improve work incentives rather than entrench the status quo. In this section, I set out and assess a number of such reforms.

Improving Work Incentives for 60-to-64-Year-Olds

The crux of the disincentive problem is generated by the interaction between the actuarial adjustment in the CPP/QPP and the GIS. The best way to solve the problem is to attack it directly. A cleverly designed system would allow the actuarial adjustment in the CPP/QPP to be "sheltered" from the GIS clawback, which would nullify the strong disincentive to work.

Such a reform would be simple to implement by changing the calculation of income for the GIS clawback in the following way. Instead of using the actual amount of CPP/QPP pension income in calculating the GIS entitlement, the amount of CPP/QPP pension income in the GIS calculation could be held fixed. With a fixed amount, the dynamic interaction between the CPP/QPP actuarial adjustment and the GIS clawback would disappear, as the GIS entitlement would no longer depend on the size of the actuarial adjustment made to CPP/QPP benefits. In principle, the pension income for the GIS calculation could be fixed at any level; in practice, it would make the most sense to fix it at the age 60 level — that is, whatever the actual amount of CPP/QPP pension, the GIS calculation would use the actuarial adjustment for age 60 (which is 30 percent less than the full pension). This solution would sever the link between work after age 60 and lower future GIS payments. It would also ensure that no one receives lower GIS payments under the reform.

The core of the idea is to liberate the GIS from dependence on the age of retirement. It is important to note that a simple blanket exemption of a certain amount of income for the GIS calculation, as suggested by the 2004 task force (Canada 2004), would not affect the CPP/QPP-GIS interaction that is the source of the problem. The reason that a blanket exemption, unless very large, would fail is that the exemption would have to adjust for the incremental CPP/QPP benefit that arises when an individual delays retirement after reaching age 60. The exemption might cover some of the CPP/QPP benefit, but unless it also exempts the incremental benefit from the actuarial adjustment, the large disincentive to work low-income seniors ages 60 to 64 now face would not be abated.

There are, however, two problems with changing the income definition for the GIS. First, it would require additional resources, as the new system effectively would exempt some income from the clawback, leading to larger GIS payments. Mathematically, the work disincentives could be removed on a fiscally neutral basis if GIS or OAS payments were lowered simultaneously, although there would obviously be distributional consequences to such a move. However, since the government has already promised to expand the GIS, this proposal would simply spend the "new" GIS money more effectively. Second, using a fictive amount of income for the GIS clawback could undermine the distributionary role of the GIS in the income security system. Under the proposal, two seniors with the same retirement income might receive different GIS cheques if one worked longer past

age 60. This slight clouding of the policy coherence of the GIS would have to be weighed against the good that would be done by removing the work disincentives.

Introducing an Earnings Exemption for Those Past Age 65

For workers ages 65 and over, the current pension system's strong work disincentives result from the effect of earned income on the GIS: for Mr. GIS, the GIS is clawed all the way back to zero so long as he continues working. The only possible solution to this problem is to exempt earned income from the GIS clawback calculation. This is precisely the recommendation of the prime ministerial task force (Canada 2004), although it suggested a cap of $4,000 per year. A cap, however, would simply move the disincentive problem from the first dollar of earnings to the threshold of the cap — like the effect of squeezing a balloon, the problem would be relocated rather than relieved. On the other hand, the absence of a cap would further obscure the distributionary role of the GIS, since some very high earners would nevertheless receive the supplement.

The cost of this proposal would depend on how many seniors would continue to work after turning age 65. In 2000, 12.8 percent of those ages 65 and over had positive earnings from employment, and only 7.2 percent had more than $4,000 of earnings.[18] Of course, if the reform were successful in encouraging work, then these percentages would grow. This cost would be partially offset by the increase in taxable income by those who continue to work. In addition, exempting only earnings from employment might lead to an increase in attempts to avoid tax, such as converting other types of income into earnings.

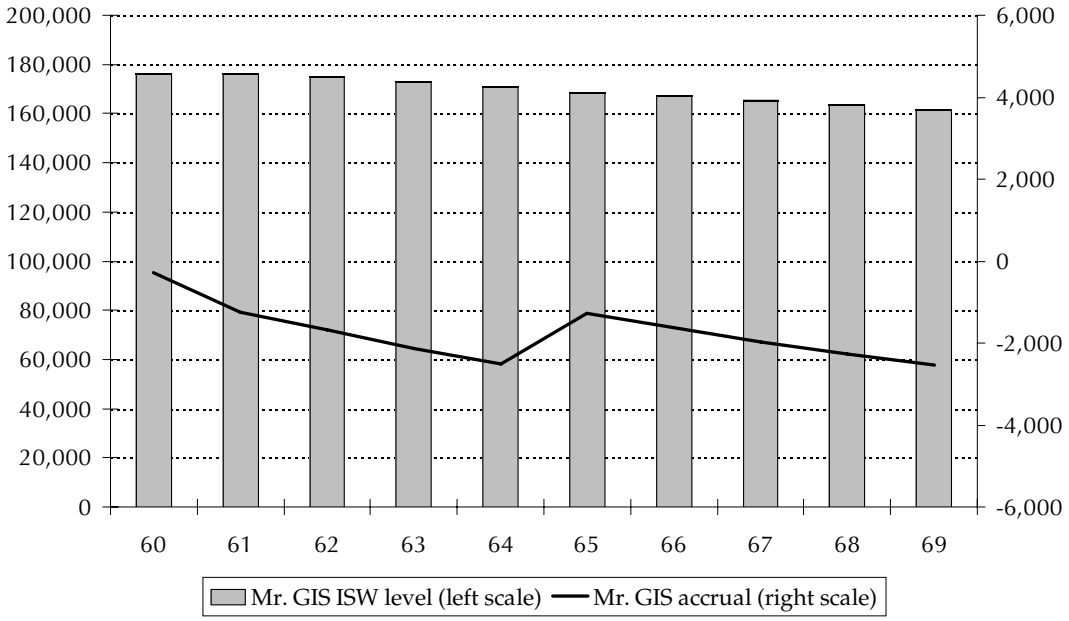
Assessing the Options

To illustrate the empirical relevance of the two proposals above, Figure 4 displays the trajectory of the level and the accrual rates for Mr. GIS's income security wealth under the fixed "age 60" CPP/QPP income definition and the after-age-65 earnings exemption. The time path for the level of income security wealth is now flatter than it was in Figure 2. The accrual values are closer to zero but not completely removed, hovering around -$2,000 per year.[19] Compared to the accrual values in Figure 3, however, they are clearly improved at all ages. The decrease in the distortions before age 60 is a result of the sheltering of the incremental CPP/QPP income from the GIS clawback. After age 65, the improvement in the accrual rate results from the worker's keeping his full GIS if he continues working. Using simulations similar to those in Tables 3 and 4, I calculate that fixing the CPP/QPP income for the GIS calculation would increase work between the ages of 60 and 69 by around 3 percent for the simulated single male. If this were

18 Author's calculations based on data derived from Statistics Canada's 2000 Survey of Labour and Income Dynamics.

19 The accrual does not go all the way to zero because the current actuarial adjustment is too low, favouring earlier retirement for the average person (see Office of the Superintendent of Financial Institutions 2003).

Figure 4: *Income Security Wealth with Exemptions, Ages 60 to 69*



accompanied by the exemption for earned income after age 65, work between ages 60 and 69 would, however, increase by only another 1 percent because so few people are in the labour force after age 65.

Implementing these changes to the GIS definition of income for older workers would help to correct the distortion imposed on low-income workers by the interaction of the CPP and the GIS, at relatively little cost to the treasury or to the role of the GIS. An exemption for earned income past age 65 would also improve the incentive to continue working, but might detract from the coherence of the distributionary role of the GIS.

I recommend that the next expansion of the GIS include changes to the definition of income from the clawback calculation of the type I propose here. The extra resources devoted to the GIS could be used to allow more Canadian seniors the freedom to work longer if they desire without facing punitive incentives. An expansion of the GIS that simply extends the status quo would just make the work disincentive problem worse.

Other Options

In addition to the two reforms outlined above, three others might be considered. One possibility is to change the way the CPP/QPP treats work after age 60. Currently, an individual who works an extra year after age 60 may discard an extra 0.15 of a year from the pension calculation. If this discarded time were increased to, say, a full year, it would strengthen the incentive to continue working because additional work would lead more directly to a higher CPP/QPP pension. On the downside, the pay-out of higher CPP/QPP benefits could threaten the

current actuarial stability of the public pension system's contributions and benefits.

Another option is to adjust the actuarial adjustment rate for the CPP for each month delayed after age 60, as Quebec is contemplating for the QPP for those age 65 and above. Increasing the rate from the current 0.5 percent to, say, 0.65 percent would mean that a worker who delays retirement for a year would receive a pension that was 7.8 percent larger, rather than one that was 6.0 percent larger, as is now the case. The rate of accrual would also increase, diminishing the disincentive to work. At the same time however, those who retired before age 65 would receive a smaller pension than under the present regime. For example, under the current system, an individual who retires on his sixtieth birthday receives 70 percent of the full pension; increasing the actuarial adjustment rate to 0.65 percent would reduce such an individual's pension to 61 percent of the full amount. Of course, one could compensate for such a reduction in benefits by increasing the amount of the full pension,[20] which would make the change revenue neutral. Such a move would still leave winners and losers, however, as early retirees would face a steeper discount on their pension than under the current system.

A third option is a twist on the change to the actuarial adjustment rate. If an individual were paid a lump-sum "bonus" — say, one equal to 10 percent of earnings (capped at the YMPE) — for each year of work after turning 60, then the accruing rights to the bonus would provide an incentive to stay in the labour market.[21] Such a bonus could be payable as a supplement to the first OAS cheque the individual received at age 65,[22] although additional resources would be needed to pay bonuses unless offsetting cuts were made to other parts of the income security system.

Conclusion

In this *Commentary*, I have presented the case for improving the labour market incentives in Canada's income security system. The existing system disproportionately hurts those who receive the GIS in retirement — the bottom one-third of the income distribution — by encouraging them to retire too early, leaving them with lower retirement income over the rest of their lives. An immediate solution to the problem would be to provide exemptions to the GIS clawback calculation, which would allow seniors to keep more of the benefit from

20 For example, the 0.25 factor used in the CPP benefit formula could be increased.

21 In the United Kingdom, a bonus for deferring the Basic State Pension was implemented in April 2005. The bonus may be taken as a lump sum or as a supplement to the pension when it is eventually taken up. See Emmerson and Wakefield (2003) for an analysis of the reforms.

22 Paying the bonus as a supplement to the OAS would offer two advantages. First, it would be taxed as income, giving some progressivity to the benefit. Second, since OAS income is not included in the calculation for the GIS clawback, the bonus would not affect GIS amounts. A disadvantage would be that such a move might muddle the coherence of Canada's income security programs.

continuing to work past age 60, rather than watch their hard effort result in a shrinking GIS benefit.

The simulations I have presented here demonstrate that removing the existing disincentives in the public pension system could encourage Canadians in their sixties to continue working longer if they wish, without being penalized for doing so.[23] In the longer term, improving labour market incentives for older workers should be a primary policy goal for future reforms of all parts of the income security system.

Beyond allowing older workers to keep more of the fruits of their work, employment-enhancing pension reform would have direct benefits for the federal government as well. As Baker, Gruber, and Milligan (2003b) demonstrate, additional work brings in higher revenues from income, consumption, excise, and payroll taxes to the treasury. Although such pension reforms might not provide Ottawa a completely free lunch, they might at least subsidize its midday meal, since higher tax revenues would be set against the direct cost of the reforms.

Unfortunately, however, all of the proposals I have outlined here should be treated with caution because they have one important drawback: they would further complicate a byzantine tax system that is already incomprehensible to nonspecialists and they would add to the burden of most taxfilers. Yet, in the absence of significant pension reform, the only choice is between slightly increasing the current system's complexity and living with the distortions it imposes.

23 Another solution might be tax-prepaid savings plans, as described by Kesselman and Poschmann (2001) and seconded by Shillington (2003), to help low-income seniors avoid the punitive disincentives to save that the GIS imposes. Indeed, the GIS exemptions I propose here would complement such a reform by helping seniors avoid similar disincentives to their labour.

Appendix

In this appendix, I offer a short summary of the methodology underlying the simulations in this *Commentary*. The simulations are based on estimates from Baker, Gruber, and Milligan (2003a), who examine the retirement behaviour of male and female Canadians over the 1985-95 period.

The data for the Baker, Gruber, and Milligan (2003a) study are drawn from administrative files held at Statistics Canada that allow the construction of individuals' wage histories back to 1975. The data include a large (10 percent) sample of older Canadian workers. Individuals are counted as having retired in the year before they show zero earnings. This measure of retirement is compared to the incentives to retire, as measured by the income security wealth level and the rate of accrual.

The income security wealth variables are the output of a simulation based on individuals' earnings histories, age, marital status, private pension status, and nonlabour income. Some key aspects of the simulation are as follows:

- data are measured at the family level, accounting for spousal benefits and survivor benefits;
- the tax and transfer system is assumed to stay constant in real terms into the future;
- future earnings are projected forward to stay constant in real terms;
- mortality is measured using conditional life tables for Canada, up to age 102;
- future flows are discounted back to the present using a real interest rate of 3 percent; and
- federal and provincial taxes, CPP/QPP retirement and survivor benefits, OAS, GIS, and the Allowance are accounted for.

The estimated coefficient for the accrual variable in the male sample implies that a $1,000 increase in the accrual measure leads to a 0.39 percent drop in the probability of retirement. For the income security wealth measure, an extra $10,000 increase in the level of wealth is associated with a 0.69 percent increase in the probability of retirement. Both of these estimates are statistically precise, far exceeding standard tests for statistical significance. In addition, they are subjected to a variety of sensitivity tests, showing results that vary sensibly across specifications.

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