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## Reforming Old Age Security: Effects and Alternatives

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and Steeve Marchand\*

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### PRÉCIS

Dans le budget de 2012, le gouvernement fédéral a annoncé son intention de hausser l'âge d'admissibilité à la Sécurité de la vieillesse et au supplément de revenu garanti de 65 à 67 ans. La hausse sera instaurée graduellement à compter de 2023. Lorsque la politique sera entièrement mise en œuvre en 2030, elle accroîtra les revenus nets du gouvernement fédéral de 7,1 milliards \$ par année, mais réduira les revenus nets provinciaux de 638 millions \$ (en dollars constants de 2014). En supposant qu'il n'y a aucun changement dans les comportements liés à la main-d'œuvre et à l'épargne, le fait de reporter la date d'admissibilité fera passer de 6 à 17 pour cent le nombre de particuliers âgés de 65 et 66 ans faisant partie du groupe à faibles revenus (pour 100 000 aînés à faibles revenus de plus dans cette catégorie d'âge), et sera le plus néfaste pour les aînés à faibles revenus et les femmes. Des réformes différentes à la Sécurité de la vieillesse pourraient permettre de réaliser des gains nets pour les finances publiques sans avoir de telles incidences négatives sur le taux de faibles revenus parmi les aînés.

### ABSTRACT

The federal government announced in its 2012 budget its intention to increase the age of eligibility for old age security and the guaranteed income supplement from 65 to 67 years. The increase will be introduced gradually, beginning in 2023. When the policy is fully implemented in 2030, it will increase the net revenues of the federal government by \$7.1 billion per year, but reduce net provincial revenues by \$638 million (in constant 2014 dollars). Assuming no change in labour and savings behaviour, delaying the date of eligibility will also increase the percentage of individuals aged 65 and 66 years who are in the low-income group, from 6 percent to 17 percent (for an additional 100,000 low-income seniors in this age group), and will be most harmful to low-income seniors and to women. Alternative reforms to old age security could make it possible to achieve net gains for public finances without having such large negative impacts on the low-income rate among seniors.

**KEYWORDS:** PROTECTION ■ REFORMS ■ OLD AGE SECURITY ■ POVERTY ■ PUBLIC FINANCE ■ CANADA

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**CONTENTS**

Introduction	358
Effects of the Announced Reform	360
Effects on Public Finances	361
Effects on Low Income	361
Alternative Scenarios	365
Scenario 1: A Decrease in the OAS Clawback Threshold	365
Scenario 2: A Uniform Decrease in OAS Benefits	366
Scenario 3: A Progressive Increase in Benefits	368
Can Individuals Affected by the Reform Avoid Falling Below the Low-Income Threshold?	368
Conclusion	371
Appendix	372
Gross Old Age Security (OAS) Payments	372
Guaranteed Income Supplement (GIS) Payments	372
OAS Clawback	372
Federal Income Tax	373
Provincial Income Tax	373
Social Assistance	373

**INTRODUCTION**

The government of Canada announced a major reform to old age security (OAS) and the guaranteed income supplement (GIS) in its 2012 budget.<sup>1</sup> The OAS regime (as of 2014) makes annual payments to nearly every Canadian aged 65 and over, up to a maximum of \$6,765<sup>2</sup> per year, subject to a clawback at the rate of 15 percent beginning once net income exceeds \$71,592. Seniors residing in Canada for less than 10 years do not receive any OAS, and those who have lived in the country for 10 to 40 years receive partial payments. GIS payments are made to Canadians who qualify for OAS and whose other sources of income are limited. The maximum amount of the GIS is \$9,173 for single people and \$12,165 for couples, including a new increase introduced in 2011. The amount of the benefit declines with family income, reaching zero when total pre-OAS family income is \$17,064 for singles and \$22,512 for couples.

In the 2012 budget, the government announced that, starting in 2023, the age to qualify for OAS and GIS payments would be increased by four months annually to reach 67 years of age by 2029. This article analyzes the effects that this policy is likely to have on federal and provincial public finances as well as on poverty among seniors. The effects of the reform on federal public finances have been partially studied by the Office of the Chief Actuary (OCA).<sup>3</sup> The OCA uses demographic forecasts and

1 See Canada, Department of Finance, 2012 Budget, Budget Speech, March 29, 2012, at 6.

2 All amounts in this paragraph are annual payments based on October 2014 effective amounts.

3 Office of the Superintendent of Financial Institutions, Office of the Chief Actuary, *Actuarial Report (11th) Supplementing the Actuarial Report on the Old Age Security Program as at 31 December 2009* (Ottawa: OSFI, 2012).

extrapolates from past tendencies to predict the resulting decreases in OAS and GIS payments in upcoming decades. Our goal in this article is to supplement the OCA's analysis using a microeconomic approach that can estimate the direct and indirect effects of the reform on public finances as well as on household incomes. We also consider the effects that the announced reform would have on provincial and federal income taxes, OAS clawback payments, provincial social assistance, and low-income rates. Moreover, we estimate the impact of three alternative reform scenarios that produce similar impacts on public finances; these scenarios are compared with the reform scenario proposed in the 2012 budget in terms of both their effects on public finances and their impact on poverty among seniors.

The analysis of these changes to OAS and GIS is of considerable importance.

- These two programs represent 17.3 percent of federal government program expenses and 2.4 percent of gross domestic product.
- Changes in OAS and GIS payments are likely to generate substantial impacts on tax revenues for both the federal and provincial governments.
- The design of OAS and GIS clawbacks is of primary tax-planning importance for middle-income Canadians.
- Finally, from a social-planning perspective, the increase in life expectancy has led to a generational increase in OAS and GIS claims, and this trend is expected to continue with the continued aging of the population.<sup>4</sup>

Our calculations are made using SIMUL, a dynamic microsimulation model developed by members of the Industrial Alliance Research Chair on the Economics of Demographic Change.<sup>5</sup> Dynamic microsimulation models are used in many countries to predict long-run distributions of incomes as a function of individual characteristics<sup>6</sup> or to predict economic effects of different redistribution policies.<sup>7</sup> They can also be used to assess how different retirement schemes may affect households in the long run.<sup>8</sup>

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4 Frank T. Denton and Byron Grant Spencer, "Age of Pension Eligibility, Gains in Life Expectancy, and Social Policy" (2011) 37:2 *Canadian Public Policy* 183-99.

5 See [www.cedia.ca](http://www.cedia.ca).

6 See, for instance, Marike Knoef, Rob J.M. Alessie, and Adriaan Kalwij, "Changes in the Income Distribution of the Dutch Elderly Between 1989 and 2020: Dynamic Microsimulation" (2013) 59:3 *Review of Income and Wealth* 460-85.

7 See Ramses H. Abul Naga, Christophe Kolodziejczyk, and Tobias Müller, "The Redistributive Impact of Alternative Income Maintenance Schemes: A Microsimulation Study Using Swiss Household Data" (2008) 54:2 *Review of Income and Wealth* 193-219.

8 See Geof Rowe and Michael Wolfson, "Public Pensions—Canadian Analysis Based on the Lifepaths Generational Accounting Framework," paper presented at the 6th Nordic Seminar on Microsimulation Models, Copenhagen, June 8-9, 2000; and Jad-Maarten Van Sonsbeek, "Micro Simulations on the Effects of Ageing-Related Policy Measures" (2010) 27:5 *Economic Modelling* 968-79.

Our model simulates demographic, economic, and fiscal evolution with regard to the population of Quebec up to 2030. Details of the model can be found in a paper we published in June 2012.<sup>9</sup> The model can also predict the long-term effects of fiscal reforms, accounting for anticipated demographic changes and the evolution of income distribution, personal income taxes, and social transfers. Because the model's calculations are made at the micro level, all of the relevant individual characteristics that are needed to calculate OAS and GIS are taken into account. As mentioned above, these characteristics include age, individual income, total family income, and years of residence in Canada. A number of income sources are modelled for each member of the family (labour income, pension income, investment income, etc.). The estimates of the model, generated using Quebec data, are generalized for Canada assuming constant demographic, economic, and fiscal ratios between Quebec and Canada as a whole (see the appendix to this article for details). While imperfect, this extrapolation seems reasonable, given the presence of other sources of error inherent in long-term forecasting.

The next section details the estimated effects of the announced changes to OAS and GIS on federal and provincial finances, as well as the impact on poverty in Canada. We then examine three alternative reform scenarios and compare their effects with those of the announced reform. We show that while these scenarios would have a comparable effect on public finances, the impact on poverty would be reduced.

## EFFECTS OF THE ANNOUNCED REFORM

Increasing the age of eligibility for OAS will obviously decrease direct program costs for the federal government. This gain in terms of public finances will nevertheless be partially counterbalanced by two factors. First, individuals aged 65 and 66 years who will no longer receive OAS and GIS payments will (if their income is too low) be eligible for provincial social assistance, and this will increase the costs of these benefits to the provinces. Second, since OAS benefits enter into calculations of taxable income, federal and provincial taxes paid by individuals aged 65 and 66 will decrease.

These factors have impacts on both public finances and personal incomes. As indicated above, the size of these impacts is estimated using a microsimulation model that specifies demographic and economic characteristics of Canadians over the next 20 years and accounts for a major share of the elements of the fiscal system and transfers to individuals. Note that the model assumes that individuals do not change their work or savings behaviour as a result of the reform. The likelihood and consequences of the effects of such behavioural changes are discussed in a later section of the article (see "Can Individuals Affected by the Reform Avoid Falling Below the Low-Income Threshold?").

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9 Nicholas-James Clavet, Jean-Yves Duclos, Bernard Fortin, and Steeve Marchand, "Le Québec, 2004-2030: Une Analyse De Micro-Simulation," rapport de projet, Centre interuniversitaire de recherche en analyse des organisations (CIRANO) (Juin 2012).

## Effects on Public Finances

Table 1 presents the estimated effects of the announced reform in 2030, the first year in which the reform will be fully implemented. The gross effect (without accounting for impacts on taxes and social assistance) of increasing the age of eligibility for OAS benefits would be to reduce federal spending by about \$6.4 billion (in constant 2014 dollars). The corresponding amount for GIS would be about \$2.1 billion.<sup>10</sup> As a result, overall, increasing the age of eligibility for OAS and GIS would reduce federal expenditures by about \$8.5 billion per year.

These positive effects on federal finances would be partially countered by a decrease in federal income tax of \$950 million, and a \$388 million decline in OAS clawbacks from those with high income. The net result of increasing the age of eligibility would be to reduce federal expenditures by \$7.1 billion in 2030. Public finances of the provinces would be negatively affected by the reform as a result of the two effects mentioned above. Since some individuals aged 65 and 66 would have to turn to social assistance rather than OAS and GIS benefits, provincial spending on social assistance would be about \$169 million higher in 2030. The provinces would also experience a \$469 million decline in income tax levied on OAS payments. The total cost to the provinces would thus be in the range of \$638 million annually. The overall effect on federal and provincial public finances is therefore estimated to be about \$6.5 billion annually.

## Effects on Low Income

The announced reform would have a greater impact on certain categories of individuals. To start with, annual income for the 65-66 age group is less than the population average. Within that age group, the individuals who would be most affected are those who would lose their eligibility for OAS and GIS at the same time. The loss of GIS payments would be only partially counterbalanced by greater reliance on social assistance payments, because these are less generous than the GIS.

Figure 1 presents the concentration curves of the effect of the reform in 2030 by percentile of disposable income. The concentration curves show the cumulative proportion of the total decline in revenues affecting a certain lower-income percentile of individuals. For example, about 60 percent of the personal income losses will be felt by the poorest 50 percent of individuals among the population aged 65 and 66. Thus, the negative impact of the reform is to a large extent targeted toward the

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10 Our OAS predictions compare generally well with those of the OCA. The OCA predicts a fall of \$9.2 billion in 2030 nominal dollars, which, according to its inflation assumptions, corresponds to a \$6.4 billion decrease in 2014 dollars—a figure that is very close to our own estimate. Our predicted decrease in GIS payments is, however, \$890 million higher than the OCA's 2030 forecast in 2014 dollars. The source of the difference is that GIS predictions depend significantly on trends in long-run income growth, and our trends (unlike those of the OCA, which rest on aggregate extrapolations) are based on microeconomic changes in population composition, human capital, and labour force behaviour.

**TABLE 1 Estimated Effects of the Announced Reform on Public Finances in 2030**

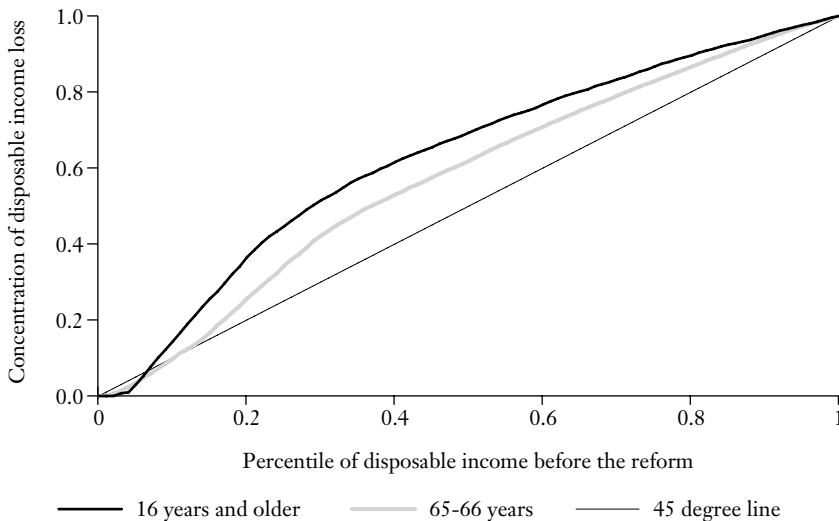
	<i>millions of constant 2014 dollars</i>
Federal finances	
Gross OAS payments . . . . .	6,354
OAS clawback . . . . .	(388)
GIS payments . . . . .	2,109
Federal income tax . . . . .	<u>(950)</u>
Net federal revenues . . . . .	7,123
Provincial finances	
Social assistance . . . . .	(169)
Provincial income tax . . . . .	<u>(469)</u>
Net provincial revenues . . . . .	<u>(638)</u>
Net federal and provincial revenues . . . . .	<u><u>6,485</u></u>

GIS = guaranteed income supplement.

OAS = old age security.

Source: Authors' calculations based on the SIMUL model; Office of the Superintendent of Financial Institutions, Office of the Chief Actuary, *Actuarial Report (11th) Supplementing the Actuarial Report on the Old Age Security Program as at 31 December 2009* (Ottawa: OSFI, 2012); and Statistics Canada's social policy simulation database (SPSD), version 21.

**FIGURE 1 Concentration Curve of the Effect of the Announced Reform on Disposable Income in 2030 (Individuals Aged 16 Years and Over and Those Aged 65-66 Years)**



Source: Authors' calculations based on the SIMUL model.

lower-income population among those aged 65 and 66. It is also useful to look at how the reform affects different percentiles of a broader population. If we consider those 16 years of age and over who have completed their studies, we observe a higher concentration of the reform. This is so because 65- and 66-year-olds tend to belong to the lowest percentiles of the income distribution in that broader population. We see in this case that 70 percent of the income loss would be felt by the poorest 50 percent of individuals.

We also find that the poorest individuals (the poorest 5 percent) are relatively unaffected by the reform because these poor do not receive much OAS, but instead receive more social assistance. The concentration of the effect increases strongly in the next percentiles, however. We see that the 20 percent poorest of those aged 16 and over face nearly 40 percent of the total cost of the reform, and that the share of the decline in income to be faced by the richest 10 percent is just over 5 percent.

Figure 2 presents the predictions for the low-income rate of individuals from 2012 to 2030 among those aged 65 and 66 years with and without the announced reform. The low-income rate is defined as the proportion of individuals whose family income, adjusted for family size, is below the market basket measure (MBM). This measure defines low income in relation to the cost of a pre-established set of goods and services.<sup>11</sup>

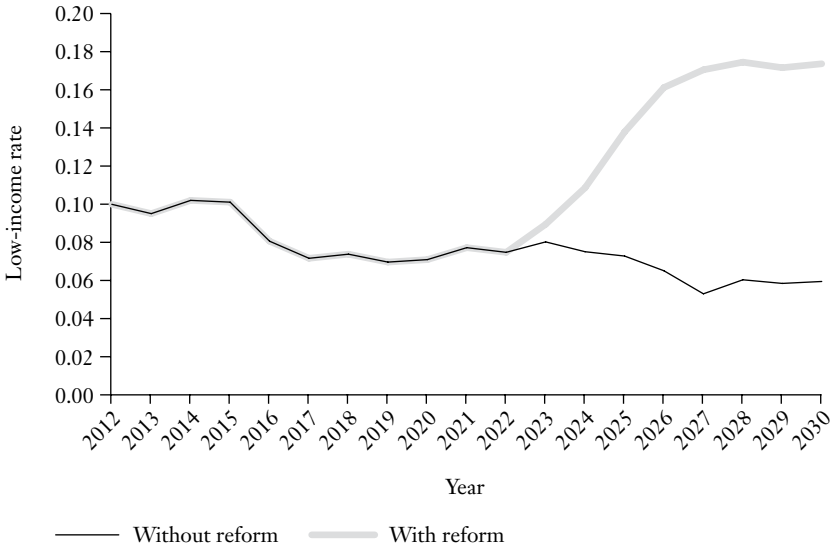
With the announced reform, the age of eligibility for OAS pensions and the GIS will increase gradually in each year starting in 2023; this explains the growing difference between these curves starting in that year. We observe that, in the absence of reform, the low-income rate among those aged 65 and 66 years predicted by the model goes from 10 percent in 2012 to about 6 percent in 2030. These results flow in particular both from the expected effect of technological progress and from growth in the level of education of those aged 65 and 66 years between 2014 and 2030. Since more highly educated individuals tend to receive larger private pensions, the model predicts an increase in the pension income of the 65-66 age group.<sup>12</sup> With the announced reform, individuals 65 and 66 years of age will gradually become ineligible for the OAS and GIS starting in 2023, and their low-income rate will increase rapidly to stabilize at about 17 percent in 2030, when the reform will be fully implemented in its final form. The announced reform will thus have the effect of increasing the low-income rate among those aged 65 and 66 years from 6 percent to 17 percent. The reform will thus lead to 100,000 or so additional individuals falling into a low-income situation.

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11 Since the data used to construct our model do not distinguish between regions within the same province, we use the Montreal MBM across the board. This measure is adjusted for family size in order to account for the differences in family needs related to family size. Note that the Montreal MBM is one of the lowest in Canada and that poverty measures would have been higher if we had used other regions as a reference.

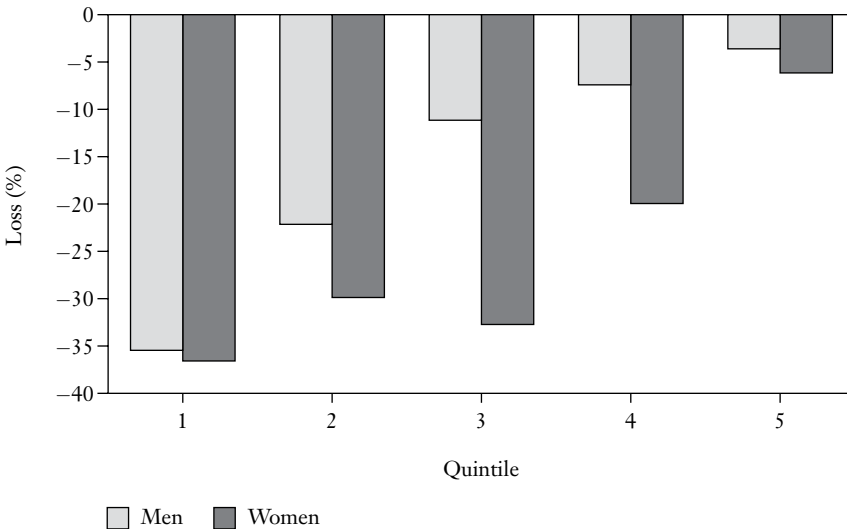
12 It is important to note that our model is better suited to predicting long-run effects of demographic changes than short-term fluctuations in economic variables. For instance, we believe we should not put too much faith in figure 2's shorter-term variations.

**FIGURE 2 Low-Income Rate in 2030 Among Individuals Aged 65-66 Years, With and Without the Announced Reform**



Source: Authors' calculations based on the SIMUL model.

**FIGURE 3 Effects of the Reform on Disposable Income of Individuals Aged 65-66 Years in 2030, by Income Quintile and Gender**



Source: Authors' calculations based on the SIMUL model.



Figure 3 shows the effects of the reform on the income of individuals aged 65 and 66 years in 2030, by quintile of income (the first quintile groups together the poorest 20 percent of individuals) and by gender. The lower income quintiles lose more than the higher quintiles. For example, men in the poorest 20 percent lose 35 percent of their income, while men in the highest quintile lose less than 5 percent of their income as a result of the reform. The effect is broadly similar among women; however, women systematically lose more than men in every quintile. The difference is considerable in some cases: men in the middle quintile lose about 11 percent of their income, while women in the same quintile lose 32 percent of their income.

Table 2 summarizes the effects of the reform on disposable income and the low-income rate, and now differentiates by gender. Women aged 65 and 66 years have lower disposable income than men of the same age group before the reform (a total of \$12.2 billion versus \$13.6 billion for men) but experience greater losses from the reform. Similarly, the proportion of women who live in a low-income household is higher than the proportion of men (7.0 percent for women versus 6.0 percent for men), but this rate increases by more among women than among men (to 19.3 percent for women versus 16.7 percent for men).

## ALTERNATIVE SCENARIOS

Considering that the announced reform risks having significant effects on the low-income rate, is it possible to consider alternative reform scenarios that would have similar impacts on public finances but less negative impacts on low-income individuals? The effects on public finances and the low-income rate are discussed below for three alternative scenarios.

### Scenario 1: A Decrease in the OAS Clawback Threshold

According to the fiscal parameters used, only taxpayers with net income before adjustments greater than \$71,592 face the clawback of at least a portion of their OAS payments. The clawback rate is 15 percent, implying that the entire payment is reimbursed when the taxpayer's net income before adjustments reaches \$114,815. These thresholds may seem high, so it seems natural to analyze the effects of extending the clawback over a larger share of the population without affecting low-income individuals.

A \$36,000 decrease in the clawback threshold for all OAS recipients aged 65 and over (not only those aged 65 and 66) would be necessary to generate approximately the same overall gains in public finances (federal and provincial) in 2030 as the announced reform. As a result of this change, the threshold at which additional income leads to OAS clawbacks would be reduced to \$35,592, and the threshold at which OAS payments are fully reimbursed would be lowered to \$80,194. The effects of this scenario are summarized in column 2 of table 3, and can be compared with the effects of the announced reform in column 1.

It may seem surprising that the decline in the threshold required to have the same impact on finances is so large. Table 3 shows that the amount that the federal

**TABLE 2 Estimated Effects of Reform on Disposable Income and the Low-Income Rate, 2030**

	2030, no reform	2030, with reform	Change
Disposable income (millions of constant 2014 dollars)			
Men .....	13,967	11,040	(2,927)
Women .....	12,545	8,987	(3,558)
Proportion living in a low-income household (%)			
Men .....	6.0	16.7	10.7
Women .....	7.0	19.3	12.1

Source: Authors' calculations based on the SIMUL model; Office of the Superintendent of Financial Institutions, Office of the Chief Actuary, *Actuarial Report (11th) Supplementing the Actuarial Report on the Old Age Security Program as at 31 December 2009* (Ottawa: OSFI, 2012); and Statistics Canada's social policy simulation database (SPSD), version 21.

government can recover by this approach would be substantial (around \$9.5 billion). However, the amounts recovered would be deducted from taxable income, and since the marginal tax rates for individuals affected by this alternative reform would be much higher than the rates for those affected by the announced reform, taxes on income would fall significantly. Federal taxes would decline by \$1.95 billion and provincial taxes by \$934 million. We thus find a total impact on public finances comparable to that expected by the announced reform. The difference is that the low-income rate would remain unchanged, whereas under the announced reform it would increase by 11.42 percentage points.

### Scenario 2: A Uniform Decrease in OAS Benefits

An alternative scenario would be to implement a uniform decrease in OAS payments for all eligible individuals. According to our model, we would need to reduce benefits by \$926 annually to achieve total gains in public finances comparable to those under the announced reform. This amount may seem rather high; but, as with the preceding reform, the direct gain would be countered by a major decrease in taxes on income. In effect, the taxable revenues that would be affected by this reform would be subject to marginal tax rates that would on average be higher than those of the announced reform, given that they would apply to individuals in higher income segments.

Thus, the reform in scenario 2 would have the direct effect of decreasing total OAS payments by \$9.6 billion in 2030. The effect on clawbacks for high income and on social assistance payments would be comparatively small (\$254 million and \$7 million respectively), while income taxes would decline substantially (\$1.76 billion for federal and \$920 million for provincial). While the total gains would be comparable to those under the announced reform, the increase in the low-income rate would be low (0.65 percentage points for those aged 65 and 66 years and 0.39 percentage points for those aged 67 to 69).

**TABLE 3 Comparison of Announced Reform and Alternative Reform Scenarios — Effects on Public Finances and on the Low-Income Rate in 2030**

	Scenario 1: \$36,000 decrease in clawback threshold	Scenario 2: uniform \$926 decrease in OAS	Scenario 3: progressive increase in amount of benefit
<i>millions of constant 2014 dollars</i>			
Federal finances			
Gross OAS payments . . . . .	6,354	9,584	6,764
OAS clawback . . . . .	(388)	(254)	(361)
GIS payments . . . . .	2,109	0	2,014
Federal income tax . . . . .	(950)	(1,759)	(1,127)
Net federal revenues . . . . .	7,123	7,570	7,291
Provincial finances			
Social assistance . . . . .	(169)	(7)	(69)
Provincial income tax . . . . .	(469)	(920)	(563)
Net provincial revenues . . . . .	(638)	(926)	(632)
Net federal and provincial revenues . . . . .	6,485	6,644	6,659
Effect on low-income rate, age 65-66 years (%) <sup>a</sup> . . . . .	11.42	0.65	9.51
Effect on low-income rate, age 67-69 years (%) <sup>a</sup> . . . . .	0	0.39	3.99

GIS = guaranteed income supplement.

OAS = old age security.

Note: Columns may not add because of rounding.

<sup>a</sup> Increase in percentage points with respect to the no-reform scenario.

 Source: Authors' calculations based on the SIMUL model; Office of the Superintendent of Financial Institutions, Office of the Chief Actuary, *Actuarial Report (11th) Supplementing the Actuarial Report on the Old Age Security Program as at 31 December 2009* (Ottawa: OSFI, 2012); and Statistics Canada's social policy simulation database (SPSD), version 21.

### Scenario 3: A Progressive Increase in Benefits

Scenarios 1 and 2 have the advantage of not significantly increasing the low-income rate among seniors while having a comparable fiscal impact. One possible drawback is that, as opposed to the announced reform, those scenarios would affect some individuals who have already retired and hence may be unable to adjust their work behaviour.<sup>13</sup> This concern would be avoided under the third alternative scenario, which consists of a gradual increase in OAS and GIS benefits each year, starting at the age of 65. Our calculations suggest that the effect on public finances would be comparable to those for the announced reform when the following formula is used for the sum of OAS and GIS payments:

$$R_i^* = \begin{cases} R_i (Age_i - 64) & \text{if } 65 \geq Age_i \leq 70, \\ \frac{6}{R_i} & \text{if } Age_i > 70, \end{cases}$$

where  $R_i$  is the sum of OAS and GIS payments that individual  $i$  would receive without the reform and  $Age_i$  is the age of the individual. The individual would thus receive the amount  $R_i^*$ , which corresponds to one-sixth of the normal payment at age 65. In each of the following years, the individual's payment would increase by one-sixth of the normal payment, to reach the full payment amount by the age of 70 years.

The last column of table 3 presents the effects of this reform. Since the impact of the reform would be distributed over a longer period of time, the effect on social assistance would be lower than for the announced reform. However, the low-income rate would increase by 9.51 percentage points for those aged 65 and 66 years and by 3.99 percentage points for those aged 67 to 69.

### CAN INDIVIDUALS AFFECTED BY THE REFORM AVOID FALLING BELOW THE LOW-INCOME THRESHOLD?

The results presented above assume that economic behaviour is not affected by the reform scenarios. It is not difficult to imagine that individuals would react to the announced modifications to the OAS and GIS payment regime: participation in the labour market could be extended, and savings could become higher as a result of increasing the eligibility age. These adjustments in behaviour are at least one of the major motivations for the announced reform put forward by the Canadian government, in particular in a context of an aging population and growing pressures on public finances.

13 It should also be noted that from 1952 to 1971 OAS was funded by three taxes: a tax on personal income, a sales tax, and a corporate income tax. Because a high proportion of current seniors paid a nominally dedicated tax for OAS, there is some degree of benefit-tax linkage that could play a role in how people would view any move to limit OAS benefits for older retirees. We thank the editors of this journal for this useful remark.

The behavioural effects of different scenarios are difficult to predict quantitatively. However, economic theory can be used to support some conjectures regarding how the reform may alter behaviour qualitatively. Let us first focus on the impact of the reform on individual savings. One important role of savings is to smooth the consumption profile over an individual's life cycle, given the variability of income patterns and particularly the reduction in labour earnings after retirement.<sup>14</sup> Given that the announced reform may reduce expected income at 65 and 66 years of age for individuals eligible for OAS and GIS payments, those individuals may be led to increase their savings before and after this age interval in order to prevent too large a negative shock in their consumption. Milligan<sup>15</sup> shows that even if poverty measured by income is spiking during years prior 65, the pattern for poverty measured by consumption is different. Also, income effects may encourage an increase in the labour supply (in terms of both participation in the labour market and hours of work) as long as leisure is a normal good. In particular, the reform may stimulate some OAS and GIS recipients who would otherwise have planned to retire at the age of 65 or 66 to delay their retirement.

On the other hand, as regards substitution effects, the reform could have the perverse effect of reducing labour supply and savings of those who become recipients of social assistance, because the implicit tax rate of social assistance payments is much higher than that of the GIS. This last effect is nevertheless ambiguous, because the implicit tax rate of social assistance payments influences individuals less than the rate faced by those who receive the GIS, which applies to a larger range of income. All in all, as long as these substitution effects are not too high, one can expect the reform to increase overall labour participation rate and savings. Gustman and Steinmeier<sup>16</sup> and Klaauw and Wolpin<sup>17</sup> estimate that increasing the social security retirement age in the United States would lead some people to delay their retirement and to increase hours of work before becoming eligible for social security.

Compared to the announced reform, scenario 1 (decreasing the clawback threshold by \$36,000) could, via substitution effects, discourage labour supply and savings among individuals earning between \$35,592 and \$80,194; it would, however, have the opposite effect on those earning between \$80,194 and \$114,815. Owing to the greater redistributive effect of this scenario, its income effect of increasing labour and savings would be weaker among low-income individuals and stronger among high-income individuals.

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14 See Albert Ando and Franco Modigliani, "The 'Life Cycle' Hypothesis of Saving: Aggregate Implications and Tests" (1963) 53:1, part 1 *American Economic Review* 55-84.

15 Kevin Milligan, "The Evolution of Elderly Poverty in Canada" (2008) 34:4 *Canadian Public Policy* 79-94.

16 Alan Gustman and Thomas Steinmeier, "The Social Security Early Entitlement Age in a Structural Model of Retirement and Wealth" (2005) 89:2-3 *Journal of Public Economics* 441-63.

17 Wilbert van der Klaauw and Kenneth Wolpin, "Social Security and the Retirement and Savings Behavior of Low-Income Households" (2008) 145:1-2 *Journal of Econometrics* 21-42.

Again, as compared with the announced reform, scenario 2 (a uniform reduction in OAS payments) would have positive income effects on labour and savings, but those effects would be weaker among low-income individuals and stronger among high-income individuals. As in the case of the reduced clawback threshold, a uniform reduction of \$926 in payments would displace toward the lower end of the income distribution the disincentive effects on labour supply and savings associated with the 15 percent OAS clawback rate.

As for scenario 3 (a gradual OAS payment increase), this alternative would have similar effects to those of the announced reform, but they would be distributed gradually between the ages of 65 and 70. Given its more redistributive character, the income effects of this scenario would nevertheless be weaker among low-income individuals and stronger among higher-income individuals.

These behavioural effects would obviously affect not only the low-income rate, but also all of the public finance results presented in tables 1 and 3. Higher incentives to work would increase the reform's and the scenarios' effects on public finances through a smaller decrease in income taxes and a smaller increase in social assistance.

This discussion suggests that individuals could in principle adjust their behaviour following the announced reform, and thereby possibly avoid falling into a significantly lower standard of living. It is not certain, however, that this adjustment would be sufficiently strong to prevent shifting so many people below the low-income threshold. Certain individuals have difficulty maintaining a rigorous savings discipline in order to counter anticipated future losses in living standards. Research in behavioural economics suggests, for example, that the most elderly individuals make inconsistent decisions more often<sup>18</sup> and that the poorest individuals are more negligent in their financial management than those in higher income groups.<sup>19</sup>

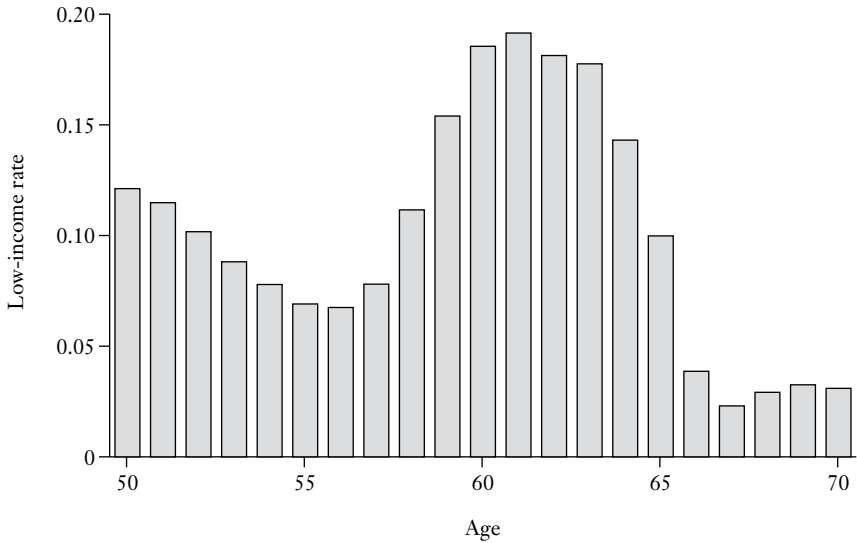
A simple analysis of the current distribution of income also shows that many individuals are unable to maintain sufficient living standards before the age of 65. Figure 4 shows the low-income rates of individuals between 50 and 70 years of age in 2012. We observe that the rate increases considerably with age until it stabilizes around 26 percent just before the age of 65. With full annual payments of OAS and GIS being applicable as of the age of 66, the low-income rate is low after this age. (For the year in which an individual turns 65, the annual payment may be smaller, depending on the month in which that individual's birthday falls.) The years leading up to the age of 65 thus seem to be the most difficult in terms of low income.

The foregoing analysis suggests that, in many cases, individuals do not manage to work enough before the current age of eligibility or to save enough in anticipation of future income loss. The currently elevated low-income rate among those aged 64

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18 See Sumit Agarwal, John C. Driscoll, Xavier Gabaix, and David Laibson, "The Age of Reason: Financial Decisions over the Life-Cycle with Implications for Regulation" [2009] *Brookings Papers on Economic Activity* 51-117.

19 See Barry Scholnick, Nadia Massoud, and Antony Saunders, "The Impact of Wealth on Financial Mistakes: Evidence from Credit Card Non-Payment" (2013) 9:1 *Journal of Financial Stability* 26-37.

**FIGURE 4 Low-Income Rate by Age in 2012**

Source: Authors' calculations using Statistics Canada's social policy simulation database (SPSD), version 21, and the 2009 Montreal market consumption basket; see [www.statcan.gc.ca/pub/75f0002m/2012002/tbl/tbl04-eng.htm](http://www.statcan.gc.ca/pub/75f0002m/2012002/tbl/tbl04-eng.htm).

years suggests that individuals at the age of 65, deprived of their OAS and GIS, will also have an elevated low-income rate. The announced reform is thus likely to extend the low-income rates currently observed prior to the age of 65.

## CONCLUSION

The dynamic microsimulation model of the Industrial Alliance Research Chair on the Economics of Demographic Change allows us to predict the effects of the Canadian government's announced reform of the OAS and GIS regimes on federal and provincial public finances. The model accounts simultaneously for predicted demographic change, income distribution, taxes on individual incomes, and social transfers. Thus, it allows us to estimate not only the direct effects of the reform (decreases in OAS and GIS payments), but also the effects on personal incomes and taxes as well as on provincial and federal social transfers.

Considering all of these effects, the announced reform would decrease net federal outlays in 2030 by \$7.1 billion but would generate fiscal losses of \$638 million for the provinces (in constant 2014 dollars). The overall gain (federal and provincial) would thus be about \$6.5 billion. This reform would have the greatest impact on the least wealthy Canadians. About 60 percent of the losses in living standards would be experienced by the poorest 50 percent of the population aged 65 and 66, or by the poorest 40 percent of the population aged 16 and over who have completed their

studies. The low-income rate of individuals aged 65 and 66 years in 2030 would rise from 6 percent to 17 percent in 2030 as a result of the reform.

We have also studied the effects of three alternative reform scenarios. These scenarios have comparable effects on overall public finances (federal and provincial) but different impacts on low-income individuals.

Scenario 1 proposes the reduction of the OAS clawback threshold by \$36,000. This would bring the threshold at which OAS begins to be reimbursed to \$35,592 and would reduce the income at which the payment would be completely clawed back to \$80,194. This scenario would not result in an increase in the low-income rate. Scenario 2 proposes a uniform \$926 decrease in the annual payment for all eligible individuals; it would have a negligible impact on the low-income rate. Scenario 3 would gradually increase payments from the age of 65 to the age of 70. This scenario leads to a higher low-income rate, by 9.51 percentage points for those aged 65 and 66 and by 3.99 percentage points for those aged 67 to 69. Thus, relative to the announced reform, scenarios 1 and 2 would have the advantage of not significantly increasing the low-income rate among seniors while having a comparable fiscal impact.

## APPENDIX

The estimates of the model are generated using Quebec data. They are then generalized for Canada as a whole, using the rules set out below.

### Gross Old Age Security (OAS) Payments

The model predicts that the government's announced reform will diminish total gross OAS payments by 10.9 percent in Quebec in 2030. We apply this proportion to the gross OAS payments of \$58.29 billion (in constant 2014 dollars) predicted by the Office of the Chief Actuary (OCA) for Canada in 2030. This results in a decrease of \$6.354 billion. For each of the alternative scenarios, a proportion is calculated by the same method and is used to extrapolate the scenarios' effects on OAS to Canada.

### Guaranteed Income Supplement (GIS) Payments

Our model predicts that the reform will diminish total GIS by 13.23 percent in Quebec in 2030. We apply this proportion to the OCA's prediction of total GIS payments of \$15.94 billion (in constant 2014 dollars) in 2030. This results in a decrease of \$2.109 billion. For each of the alternative scenarios, a proportion is calculated by the same method and is used to extrapolate the scenarios' effects on GIS to Canada.

### OAS Clawback

We use Statistics Canada's social policy simulation database (SPSD) to estimate the share of gross OAS payments that is paid back through clawbacks in Quebec and in Canada. The proportion is 2.20 percent in Quebec and 3.42 percent in Canada, so the ratio is 1.556 times higher in Canada than in Quebec. We then apply this factor to our predicted Quebec ratio of OAS clawback on gross OAS.



**Federal Income Tax**

We use the SPSD to estimate the share of total federal income tax in Canada that comes from Quebec. That share is 16.58 percent. We then use this percentage to adjust our predictions of federal income tax.

**Provincial Income Tax**

We use the SPSD to estimate the share of total provincial income tax in Canada that is paid in Quebec. That share is 32.22 percent. We then adjust our predictions of provincial income tax by dividing our provincial income tax predictions for Quebec by 0.322.

**Social Assistance**

We use the SPSD to estimate the share of total social assistance in Canada that is paid in Quebec. That share is 26.1 percent. We then adjust our predictions of social assistance by dividing our predictions for Quebec by 0.261.

