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Labour Market Impact of a Work Earnings Exemption on Benefits for Low-income Seniors

Technical Study Prepared for the Evaluation of the Old Age Security Program

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Abstract

In 2008, the Canadian government significantly increased the work earnings exemption on benefits for low-income seniors (Guaranteed Income Supplement and Allowances). The new policy allows seniors to earn up to $3500 without having their benefits reduced. This paper examines the impact of this policy change on labour market outcomes, using T1 tax data. The study uses a control group in a difference-in-difference framework to take into account the increase in labour market participation of all seniors during this period. Results show the policy increased employment rates by one percentage point among 60-64 year old recipients. Among 60-64 year old recipients who worked for an employer, the policy increased work earnings by 15%. Results for older seniors were not as conclusive, but suggested similar increases in work earnings among those who worked. These results are significant given the relatively small policy change involved.

Table of Contents

1. Introduction

In 2008, the Canadian government significantly increased the work earnings exemption on benefits for low-income seniors (Guaranteed Income Supplement and Allowances). The new policy allows seniors to earn up to $3500 without having their benefits reduced. This paper examines the impact of this policy change on labour market outcomes, using a control group in a difference-in-difference framework to take into account the increase in labour market participation of all seniors during this period. Results show the policy increased employment rates among 60-64 year old recipients and work earnings among those who worked. Results for older seniors were not as conclusive, but suggested similar increases in work earnings among those who worked.

The Old Age Security (OAS) program is the first pillar of Canada's retirement income system, providing a basic pension to nearly all seniors, and a supplement to low-income seniors. The OAS program provides a modest base upon which individuals may add income from other sources, such as the Canada or Quebec Pension Plan (C/QPP), retirement pensions and personal savings. The benefits under the OAS program include the OAS pension, the Guaranteed Income Supplement (GIS) and the Allowances.

This paper examines one of the themes of the evaluation of the OAS program: the employment impacts of the 2008 increase in the GIS earnings exemption. This study is a part of the overall work being conducted for the evaluation of the OAS program.

The paper is divided as follows. Section 2 of the report provides a summary of the OAS program. Section 3 examines the data used in the report, Section 4 presents the analysis and Section 5 offers conclusions.

2. The Old Age Security Program

This section presents a general description of the different components of the OAS program and of eligibility rules. The OAS program is a cornerstone of Canada's retirement income system. The program includes the OAS pension, the GIS and the Allowances. The OAS pension is a quasi-universal basic pension received by seniors aged 65 years and older. The OAS program provides additional support through the income-tested GIS to low-income seniors with little or no other income. In addition, the Allowance and the Allowance for the Survivor are paid to low-income individuals aged 60-64 who are the spouses or common-law partners of GIS recipients or who are widows or widowers.

2.1 OAS Pension

The OAS pension is paid to Canada's seniors in recognition of the contribution they have made to Canadian society, the economy, and their community. In July 2015, the OAS pension provided benefits to 5.6 million seniors with the full basic pension amounting to $564.87 per month (or about $6,800 per year). All benefits under the OAS program are indexed quarterly.

Eligibility for the OAS pension is based on years of residence in Canada. In order to qualify, a person living in Canada at the time of application must be 65 years or older, and have resided in Canada for at least 10 years after the age of 18.[1] The full basic OAS pension is payable to seniors who have resided in Canada for at least 40 years after age 18. A partial pension is paid to seniors who have lived in Canada for at least 10 years after age 18, and their benefits are prorated at the rate of 1/40th of the full pension for each complete year of residence.[2]

The OAS Recovery Tax, which is part of the *Income Tax Act*, requires all higher-income pensioners to repay part of their OAS pension if their individual income exceeds a threshold. For the 2015 tax year, seniors must repay $0.15 for every dollar of income exceeding $72,809. Benefits are completely repaid when income reaches $118,055.[3] The recovery tax can be deducted at the source, but final amounts are determined when seniors file their income tax returns each year.

2.2 Guaranteed Income Supplement

When seniors have little or no other income, the GIS can be added to their OAS pension.[4] In July 2015, the GIS was paid to 1.7 million low-income seniors and could reach $765.93 per month for single seniors and $507.87 per month for seniors that were married or in a common-law relationship (or up to about $9,200

[1] Seniors living outside Canada need a minimum of 20 years of residence in Canada after age 18 to receive the OAS pension outside the country.

[2] If a Canadian resident has contributed to the social security program of a country with which Canada has a social security agreement, those years of contributions can count towards reaching these 10 years.

[3] These thresholds are indexed every year and are based on net income before adjustments (line 234).

[4] Note that the GIS and the OAS pension each have their own application form. Therefore, seniors must fill out both forms to receive both benefits.

or $6,100 per year respectively).[5] Adding the OAS pension and GIS, OAS benefits can reach $16,000 and $13,000 per year respectively.

In order to qualify for the GIS, a person must receive the OAS pension and have family income below the maximum annual thresholds.[6] GIS benefits are reduced by $0.50 for every dollar of income, other than the OAS pension and the GIS[7], until it reaches $2,048 for single seniors and $4,080 for couples, then by $0.75 for every dollar of other income between $2,048-$4,544 for single seniors and $4,096-$7,648 for couples. When income exceeds these amounts, GIS benefits are then reduced by $0.50 for every dollar of other income.[8] This implies that single seniors qualified for the GIS with incomes up to $17,136 per year and up to $22,608 for senior couples in July 2015.[9]

2.3 Allowances

The Allowances are designed to recognize the difficult circumstances faced by many low-income couples living on only one pension until the other spouse reaches age 65 and qualifies for his or her OAS pension, as well as by 60-64 year old low-income widows or widowers. In July 2015, the Allowance was paid to 56,000 people and the Allowance for the Survivor to 24,000 people. Benefits can reach $1,072.74 per month for the Allowance and $1,200.98 per month for the Allowance for the Survivor (or about $12,300 and $14,400 per year respectively, based on July 2015 rates).

In order to qualify for the Allowances, a person must be 60 to 64 years old and have resided in Canada for at least 10 years after the age of 18.[10] In addition, a

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[5] For seniors who qualify for GIS and receive a partial OAS pension (due to having less than 40 years of residence in Canada), the maximum GIS is increased by an amount equivalent to the difference between a full OAS pension and their partial OAS pension.

[6] Note that the GIS and Allowances benefits are suspended after six months outside the country.

[7] There is also an exemption for the first $3,500 of employment earnings. GIS and Allowance benefits are determined using a specific definition of net income, presented in Section 3.

[8] The variation in the reduction rate is due to the GIS top-up introduced in 2011, which increased GIS for the lowest-income seniors who rely almost exclusively on the OAS program. To ensure the top-up is targeted to those most in need, the top-up is reduced by $0.25 for every dollar of other income above $2,048 for singles and $4,096 for couples. Therefore, the top-up is reduced to zero when other income reaches $4,544 for singles and $7,648 for couples.

[9] Income thresholds are different if only one member of the couple receives the OAS pension or if one receives the Allowance.

[10] However, if a Canadian resident has contributed to the social security program of a country with which Canada has a social security agreement, those years of contributions can count towards reaching these 10 years.

person must be a low-income widow or widower to qualify for the Allowance for the Survivor, or the spouse or common-law partner of a recipient of the GIS to qualify for the Allowance.

Eligibility for the Allowances is also based on family income. Benefits are reduced by $0.75 for every dollar of other income until income reaches $2,048 for singles and $4,096 for couples, by $1.00 for every dollar of other income between $2,048-$4,544 for singles and $4,096-$7,648 for couples, and by $0.75 for every dollar of other income between $4,544-$9,096 for singles and $7,648-$9,120 for couples. When income exceeds these amounts, benefits are then reduced by $0.50 for every dollar of other income.[11] This implies that people qualify for the Allowance for the Survivor with income up to $23,088 per year and up to $31,680 for the Allowance in July 2015. Senior spouses of 60-64 year olds would still receive GIS benefits with family incomes up to $41,088.

2.4 Indexation of OAS Benefits

Benefits paid under the OAS program are, by law, adjusted quarterly (in January, April, July, and October) according to any change in the cost-of-living, as measured by the Consumer Price Index (CPI).[12] The CPI measures, on a monthly basis, the average change in retail prices of a "basket" of goods and services commonly purchased by Canadian households such as shelter, food, clothing, and transportation.

3. Data

The T1 data from the Canada Revenue Agency (CRA) is used for this paper. The T1 is the form used by individuals to file their personal income tax return to the CRA. The T1 data include information on income and demographic characteristics of all individuals who file a tax return.

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[11] The variation in the reduction rate is partly due to the top-up on the Allowances introduced in 2011, which increased the Allowances for the lowest-income recipients who rely almost exclusively on these benefits. To ensure the top-up is targeted to those most in need, the top-up is reduced by $0.25 for every dollar of other income above $2,048 for singles and $4,096 for couples. Therefore, the top-up is reduced to zero when other income reaches $4,544 for singles and $7,648 for couples.

[12] Note that maximum benefit amounts do not decrease, i.e. they stay at the same level during periods during which there is a decrease in the cost of living.

For this study, a 10% sample of individuals who were 60 years of age and older were selected from the T1 data from 2002 to 2014 (8 million observations).[13] Non-residents were excluded from the sample, as their income information could be incomplete (non-residents' income from overseas is not taxable in Canada).[14]

It should be noted that some people do not file tax returns. Table 1 examines the coverage of the T1 file by comparing the number of tax filers in the sample to population estimates from Statistics Canada among people 60 years of age and older living in Canada. It is estimated that 97 to 99% of this age group filed taxes (and are therefore included in the sample), with a slightly higher percentage among those who were 65 years old and older.

Table 1 – Proportion of Population 60+ Filling Taxes Based on Population Estimates

	Statistics Canada pop. estimates		# filed taxes (in T1)		% filed taxes (in T1 sample)		
	60 to 64	65+	60 to 64	65+	60 to 64	65+	60+
2002	1,338,885	3,980,081	1,286,870	3,884,410	96.1	97.6	97.2
2003	1,401,659	4,051,665	1,353,080	3,969,060	96.5	98.0	97.6
2004	1,467,107	4,127,579	1,421,560	4,056,880	96.9	98.3	97.9
2005	1,531,876	4,205,501	1,478,390	4,145,610	96.5	98.6	98.0
2006	1,603,269	4,309,958	1,544,800	4,247,700	96.4	98.6	98.0
2007	1,716,250	4,412,638	1,670,200	4,371,970	97.3	99.1	98.6
2008	1,810,449	4,532,605	1,765,060	4,506,260	97.5	99.4	98.9
2009	1,894,766	4,661,110	1,850,800	4,641,470	97.7	99.6	99.0
2010	1,981,692	4,796,143	1,936,910	4,771,570	97.7	99.5	99.0
2011	2,050,443	4,950,310	2,007,950	4,918,590	97.9	99.4	98.9
2012	2,071,097	5,167,113	2,019,020	5,122,370	97.5	99.1	98.7
2013	2,110,229	5,383,902	2,051,590	5,310,250	97.2	98.6	98.2
2014	2,167,800	5,589,292	2,067,550	5,465,190	95.4	97.8	97.1

Source: CANSIM 051-0001 (Statistics Canada) and 10% sample of T1 file from the CRA (8M observations). All estimates are based on age on July 1st, to be in line with Statistics Canada estimates. All other references to age in this paper use the age at the end of the calendar year, as usually defined.

Tax filing rates diminished significantly from year to year before 2002, making annual employment rate comparisons before 2002 less reliable.[15] Also note that tax filing rates of more recent years (e.g. 2013 and 2014) are based on

[13] The sampling method was selecting a random number from 0 to 9 and selecting all individuals whose Social Insurance Number ended with this number in the T1 data (and who were 60 years of age and older). This sampling method enables the tracking of individuals from one year to the next, as long as they file a tax return.

[14] Non-residents accounted for 0.4% of observations and almost half were OAS pension recipients.

[15] Estimated tax filing rates for people 60+ increased from 75% in 1987 to 97% in 2002.

information up to date and will usually increase in future versions of the T1 data. This version of the T1 data is from mid-2016.

Information on spouses of individuals in the sample was also added to the sample, allowing the examination of couples' characteristics (e.g. couples' total income, couples' income used to assess GIS benefit amounts, etc.). However, some of the spouses of individuals in the sample did not file a tax return, especially in earlier years. The percentage of couples with income information on their spouse increases every year, from 93% in 2002 to almost 99% in 2014. In addition, information on income in the two previous years (e.g. 2000 and 2001) was added to the sample to examine GIS or Allowance eligibility.

The family income used to assess eligibility for the GIS and the Allowances was estimated, as it is not included in the database. This estimated family income includes all sources of income (line 150) from which are subtracted OAS benefits, contributions to Employment Insurance (EI) and the Canada / Quebec Pension Plan (C/QPP), net Universal Child Care Benefits (UCCB), Registered Disability Savings Plan (RDSP) income, the estimated GIS earnings exemption, social assistance payments, Registered Pension Plan deductions, Registered Retirement Savings Plan deductions, the Saskatchewan Pension Plan deduction, Pension Income Splitting (line 210), union and professional dues, child care expenses, the Disability Supports deduction (line 215), allowable business investment loss (line 217), moving expenses, support payments made (line 220), carrying charges and interest expenses (line 221), exploration and development expenses (line 224), other employment expenses (line 229), the Clergy residence deduction (line 231) and other deductions (line 232). This corresponds to the income definition used to calculate GIS and Allowance benefits. However, due to data limitations, social benefits repayments (line 235, i.e. OAS Recovery Tax and repayments of EI benefits) were also subtracted from this estimated income, even though in reality they are not included in the calculation of GIS eligibility.[16] Also, net UCCB payments were not available in the data for years 2006 and 2007.

[16] In practice, the calculation to estimate income used in this paper to assess eligibility for GIS was: net income (line 236) minus OAS benefits (lines 113 and 146), net UCCB (lines 117 and 213), RDSP income (line 125), social assistance payments (line 145), and EI and C/QPP contributions through employment (lines 308, 312 and 317). Provincial Parental Insurance Plan premiums on self-employment income were added to this, as they are already subtracted in CRA's calculations of net income, but these premiums are not taken into account for GIS eligibility. This calculation is equivalent to what is defined in the text above.

Table 2 below shows that the sample provides estimates of the number of recipients of the OAS pension, the GIS and the Allowances that are similar to published numbers from OAS administrative data.[17]

Table 2 – Sample Comparison to OAS Administrative Data (2014)

	T1 sample (tax filers)	OAS admin data
# receiving OAS pension	5,408,390	5,436,361
# receiving GIS	1,882,180	1,742,132
# receiving Allowances	85,130	79,873

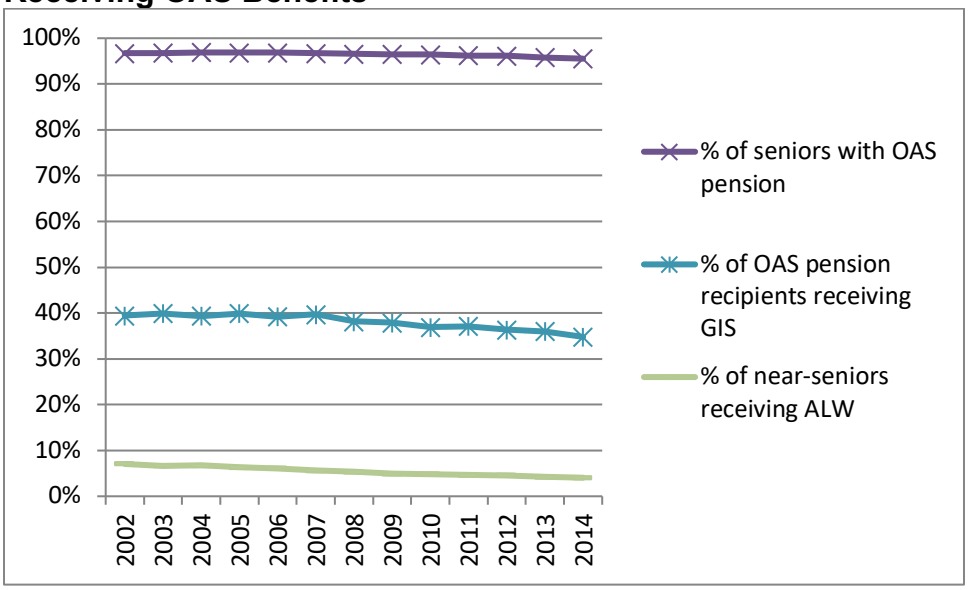
Sources: 10% sample of T1 file from the CRA (775,978 observations in 2014) and OAS administrative data (monthly average number of beneficiaries from "The CPP and OAS Stats Book 2015").

[17] Note that the T1 data provides an estimate of the number of people receiving benefits in a year while the published OAS administrative data provides the monthly average number of people receiving benefits in a year. As some people do not receive the benefit for the entire year, the monthly average can be lower than annual figures, as with the GIS and Allowances here.

4. Analysis

In 2014, about 96% of tax filing seniors aged 65+ received the OAS pension (Figure 1).[18] Among those who received the OAS pension 35% also received the GIS. The percentage of seniors receiving the OAS pension has been relatively steady since 2002. However, the percentage of OAS pension recipients who received the GIS has varied from year to year, decreasing from 40% in 2007 to 35% in 2014. Among tax filers aged 60 to 64 years old, 4% received the Allowances in 2014. The proportion of 60 to 64 year-olds receiving the Allowances has steadily decreased from 7% in 2002 to 4% in 2014.

Figure 1 – Percentage of Seniors (65+) and Near-Seniors (60-64) Receiving OAS Benefits



Source: 10% sample of T1 file from the CRA (8,434,625 observations of people 60+).

4.1 Labour Market Participation of Seniors and OAS Beneficiaries

This section examines the labour market participation of seniors (65+), near-seniors (60-64) and OAS program beneficiaries. More precisely, it examines employment rates, i.e. the percentage of people with employment income or self-

[18] The Office of the Chief Actuary estimates that 2.4% of OAS pensioners had to completely repay their OAS pension due to the OAS Recovery Tax in 2014. See Office of the Chief Actuary (2014).

employment revenue in the year.[19] Both seniors and near-seniors provide a significant contribution to the labour market in Canada. In 2014, there were 1.1 million seniors working and 1.3 million near-seniors that were working.

Note that this section examines employment rates rather than labour market participation rates, i.e. the focus is on the percentage that are working rather than the percentage that are working or looking for work, as individuals looking for work are not identified in the data used. Nevertheless, unemployed individuals looking for work represent a small percentage of this age group.[20]

4.1.1 Recent Trends in Employment Rates of Seniors

The employment rate of seniors (65+) has increased by over 50% since 2002, increasing from 12% of seniors in 2002 to 19% in 2014 (Figure 2), an increase of 7 percentage points. For near-seniors, aged 60 to 64 years old, there is also an increasing trend. In 2002, 50% of near-seniors were working, and this proportion reached 60% in 2014, an increase of 10 percentage points.[21]

The employment rates of women and men have followed similar increasing trends throughout this period, even though employment rates were higher for men than for women (Figure 3). Employment rates reached their highest point in 2014 when 14% of senior women worked and 25% of senior men (65+). Among near-seniors, 54% of women worked and 66% of men. As shown in the graph, the increase in the employment rates of senior women and men throughout this period is very similar (an increase of about 7 percentage points). However, the increase is more pronounced for near-senior women than men (an increase of 13 percentage points for women vs. 7 percentage points for men).

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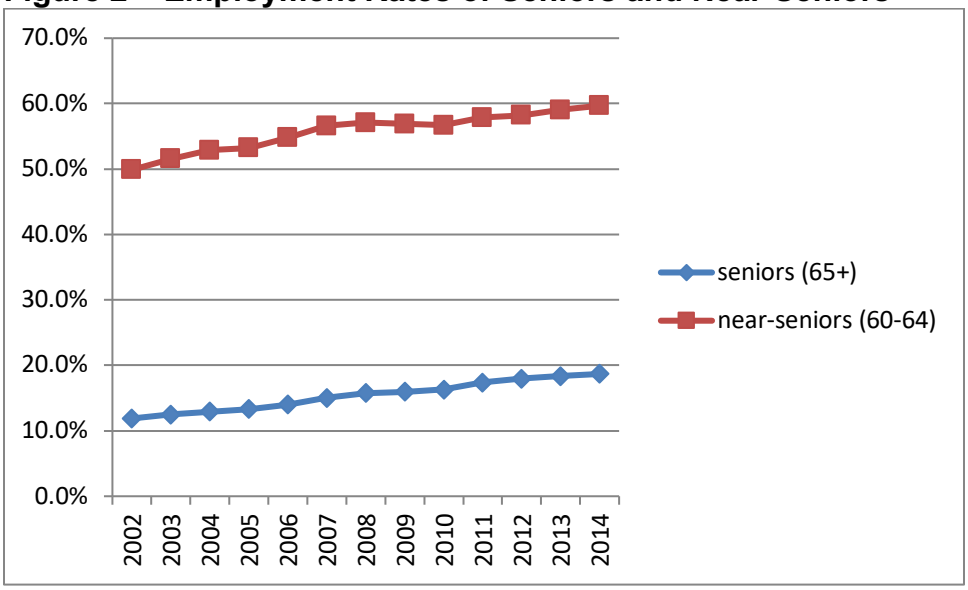
[19] Employment income and self-employment revenue (gross income) include lines 101, 162, 164, 166, 168 and 170 of the T1 CRA form.

[20] According to the Labour Force Survey, 0.6% of seniors aged 65 or older were unemployed and looking for work in 2014. This figure was higher for near-seniors aged 60 to 64, at 3.4% in 2014.

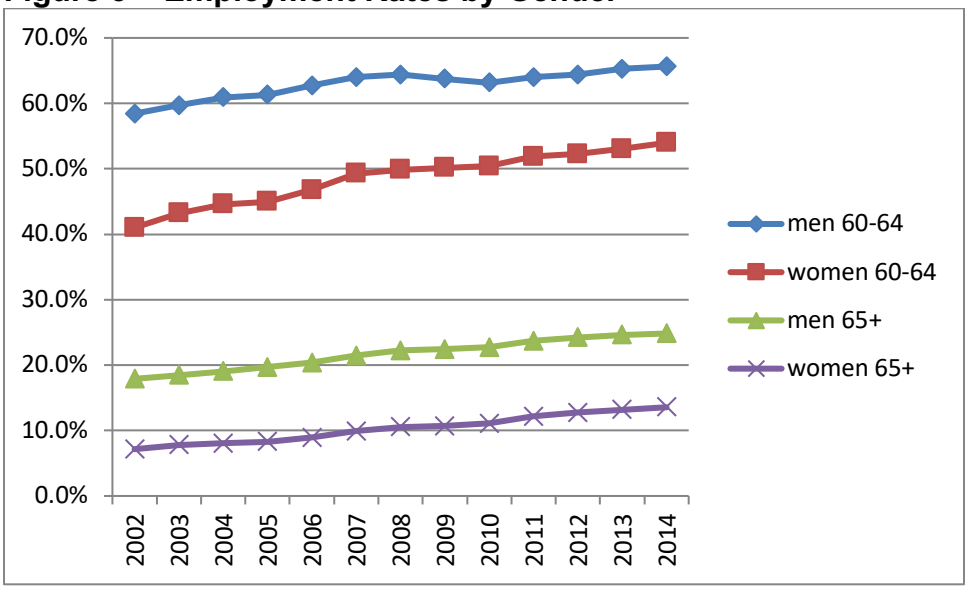
[21] Employment rates in the Labour Force Survey (LFS) are lower but show similar trends. In the LFS, the monthly average employment rate increased from 7% in 2002 to 13% in 2014 among seniors and from 37% to 50% among near-seniors. The difference in employment rates between the LFS and the T1 data are due to the different ways to measure employment in each source of data and simply imply that many people did not work for the whole year. The LFS considers someone employed if they were employed during the reference week of the survey, while for the T1 data, employment was determined by the presence of employment income or self-employment revenue in the year. Also, about 2% of seniors and near-seniors in the T1 data had very limited attachment to the labour market with employment earnings between $1 and $1,000 during the year. Employment rates using T1 data are used here as it is more comprehensive and it enables the identification of OAS recipients.

Figure 2 – Employment Rates of Seniors and Near-Seniors



Source: 10% sample of T1 file from the CRA (8,434,625 observations of people 60+).

Figure 3 – Employment Rates by Gender



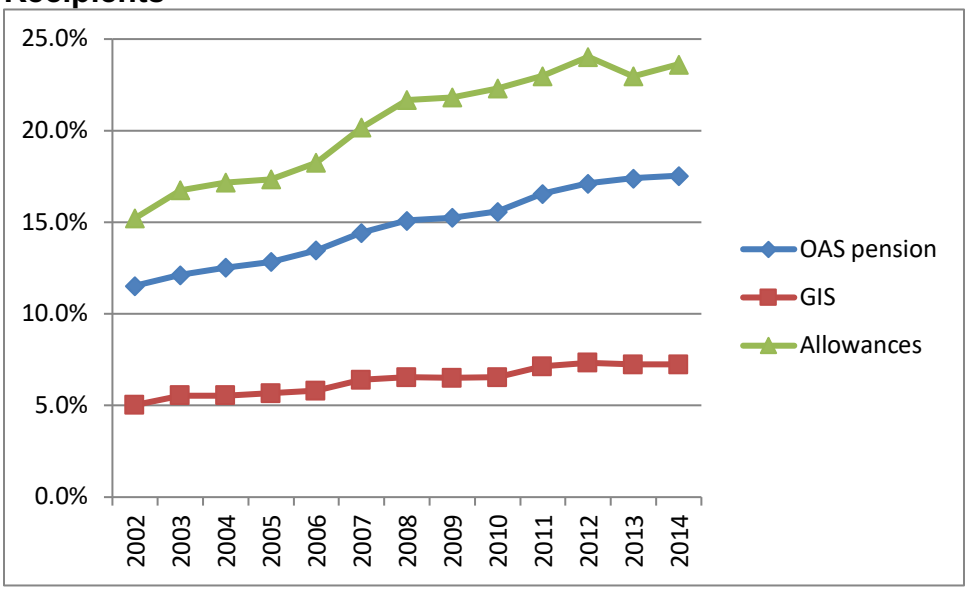
Source: 10% sample of T1 file from the CRA (8,434,625 observations of people 60+).

4.1.2 Recent Trends in Employment Rates of OAS Program Recipients

OAS pension recipients had employment rates that are very similar to rates of seniors in general (65+), with employment rates increasing from 12% in 2002 to 18% in 2014 (Figure 4). However, GIS recipients had much lower employment rates in comparison. Employment rates nevertheless increased from 5% in 2002 to 7% in 2014 among GIS recipients.

Allowances recipients also had much lower employment rates than 60-64 year olds in general. The employment rates of recipients of the Allowances increased by over 50% throughout this period, increasing from 15% of recipients in 2002 to 24% in 2014. However, this remained well below the employment rate of near-seniors in general, which reached 54% for women and 66% for men in 2014.

Figure 4 – Employment Rates of OAS Pension, GIS and Allowances Recipients



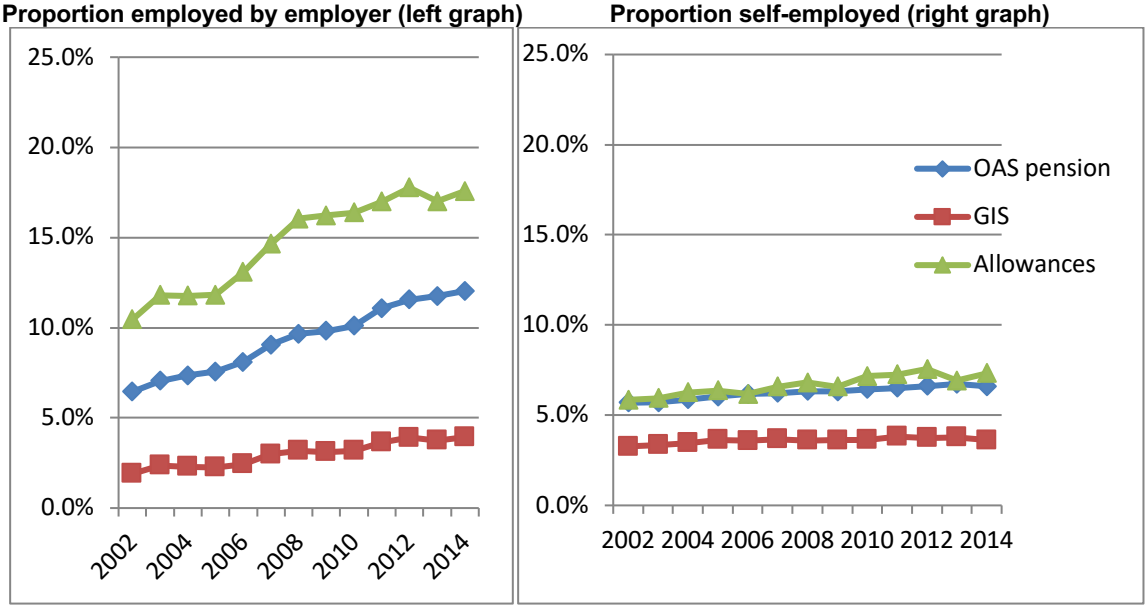
Source: 10% sample of T1 file from the CRA (8,434,625 observations of people 60+).

Figure 5 shows that most of the increase in the employment rate is due to the proportion of OAS recipients employed by an employer, rather than those that are self-employed. For example, among OAS pension recipients, the proportion

with salaried employment increased from 6% in 2002 to 12% in 2014, while the proportion that was self-employed increased from 6% in 2002 to 7% in 2014.[22]

Figure 5 – Employment and Self-Employment Status of OAS Program Beneficiaries

Proportion employed by employer (left graph) **Proportion self-employed (right graph)**



Source: 10% sample of T1 file from the CRA (8,434,625 observations of people 60+).

4.2 Impact of the Increase in the GIS Earnings Exemption

In 2008, the government increased the GIS earnings exemption to fully exempt the first $3,500 of work income so a "GIS recipient will be able to keep more of her or his hard-earned money without any reduction in GIS benefits, encouraging labour market participation and providing support for low-income seniors."[23] Before 2008, only 20% of work income up to $2,500 was exempt (providing a maximum earnings exemption of $500). These earnings exemptions also apply to beneficiaries of the Allowances.

Table 3 presents the percentage of recipients of the Allowances and the GIS that were working for an employer, before and after 2008, and compares them respectively to other 60-64 year old near-seniors and to other OAS pension recipients. Note that the GIS earnings exemption did not apply to self-

[22] About 1% of OAS pension recipients had both salaried employment and self-employment income in 2014. This figure increased steadily from 0.6% in 2002.

[23] Budget 2008, p. 118.

employment income during this period.[24] Therefore self-employment is excluded from the analysis of the earnings exemption.[25]

Table 3 – Proportion Working for an Employer and Average Employment Income, Before and After the Increase in the GIS Earnings Exemption

	% work for an employer				Mean employment income (if>0) (2014$)			
Year	Allowances	Other near-seniors (60-64)	GIS	other OAS pension recipients	Allowances	Other near-seniors (60-64)	GIS	other OAS pension recipients
2002	10.4	42.0	1.9	9.4	8,968	45,646	7,526	36,818
2003	11.8	43.5	2.4	10.2	8,417	44,552	6,431	35,548
2004	11.8	44.9	2.3	10.6	9,249	45,459	7,304	35,241
2005	11.8	45.2	2.3	11.1	9,833	46,950	8,085	36,444
2006	13.1	46.9	2.4	11.7	9,722	48,973	8,260	37,677
2007	14.6	48.7	3.0	13.0	9,472	49,066	7,632	37,258
2008	16.0	49.1	3.2	13.7	10,120	48,345	7,929	35,671
2009	16.2	48.8	3.1	13.9	11,374	47,662	8,358	35,243
2010	16.4	48.7	3.2	14.1	12,273	48,290	8,973	34,980
2011	17.0	50.0	3.6	15.5	11,392	47,772	9,002	33,784
2012	17.8	50.3	3.9	15.9	12,306	48,988	8,623	34,568
2013	17.0	51.3	3.8	16.2	12,125	50,287	8,904	34,266
2014	17.6	52.1	3.9	16.4	12,577	50,391	8,896	32,514

Source: 10% sample of T1 file from the CRA (8,434,625 observations of people 60+). The shaded area corresponds to the year of the increase in the GIS earnings exemption (2008). Note that self-employment is excluded from these results as it does not qualify for the GIS earnings exemption.

The percentage of Allowances recipients that were working for an employer increased following the increase in the GIS earnings exemption in 2008. In particular, this proportion was higher in 2008, 2009 and 2010, than in 2007, before the change.[26] By comparison, among other near-seniors (not receiving the Allowances) the proportion working for an employer stayed relatively constant in 2007, 2008, 2009 and 2010. Comparing these two trends reinforces the idea that the increase in the GIS earnings exemption might have had an effect on employment rates of recipients of the Allowances. More formal multivariate analysis is conducted below.

In addition, this policy might also have an impact on the amount of work done by recipients of the Allowances who choose to work. The average real work income

[24] Budget 2019 expanded coverage of the earnings exemption to self-employment earnings and increased the amount of the earnings exemption, starting in July 2020.

[25] A similar table also including self-employment income can be found in the Annex.

[26] Note that the employment rate was already increasing before 2008.

(2014$) of recipients of the Allowances who worked increased following the increase in the GIS earnings exemption in 2008, notably in 2008, 2009 and 2010. However, among other near-seniors (not receiving the Allowances), average real work income for those who worked continually decreased from 2007 to 2009. Comparing these two trends reinforces the idea that the policy change might have had an effect on the amount of work as well. Again, more formal multivariate analysis is conducted below.

For GIS recipients, the results are not as conclusive. The percentage of GIS recipients working for an employer did not increase significantly following the increase in the GIS earnings exemption in 2008. In particular, the proportion working in 2007 (before the change) was similar to the proportion in 2008, 2009 and 2010. However, if we compare this trend to the one of other OAS pension recipients, among which the proportion working for an employer continuously increased from 2007 to 2008, 2009 and 2010, it reinforces the idea that the increase in the GIS earnings exemption might not have had an effect on employment rates of GIS recipients. More formal analysis using multivariate regression analysis with this difference-in-difference framework could not be performed, as the two groups had different trends from 2002 to 2007, before the policy change.

Nevertheless, this policy might have an impact on the amount of work among GIS recipients who chose to work for an employer. The average real work income (2014$) of GIS recipients who work increased following the increase in the GIS earnings exemption in 2008, notably in 2008, 2009 and 2010. However, among other OAS pension recipients, average real work income for those who worked continually decreased from 2007 to 2011. A comparison of real work earnings from the period before the policy change (2002-2007) to the period afterwards (2008-2014) shows average work earnings increased by 14% among GIS recipients who work, while it declined by 6% among other OAS pension recipients who work. Comparing these two trends reinforces the idea that the policy change might have had a positive effect on the amount of work among GIS recipients who work. However, for the same reasons as above, a more formal multivariate analysis could not be used to measure this effect.

Note that the existence of the GIS earnings exemption is likely not known by all GIS and Allowance recipients. If this is in fact the case, it might also reduce its efficiency to encourage recipients to work if they wish to. In 2014, 4% of GIS recipients worked for an employer and only 2% of GIS recipients worked enough to take advantage of the full amount of the exemption ($3,500). Both these figures increased only slightly since 2008. Among recipients of the Allowances, 18% worked for an employer and 13% used the full amount of the earnings exemption in 2014.

4.2.1 Difference-in-difference framework and results

The section presents the difference-in-difference framework used for the multivariate regression analysis of the impacts of the increase in the GIS earnings exemption on the labour market participation of recipients of the Allowances. Two outcomes regarding labour market participation are examined here: 1) the likelihood of being employed (working for an employer), and 2) the amount of real work earnings ($2014) among those who chose to work.

Note that the GIS earnings exemption does not apply to self-employment income. Therefore self-employment income is not taken into account in the following analysis of the earnings exemption, except when examining robustness of results.

Methodology

The identification strategy used here to measure the effect of this policy change is a difference-in-difference framework, where outcomes are compared between a treatment and a control group, both before and after a program change. This can be illustrated by defining the effect as a difference between four averages of an outcome:

Effect = (Treatment group after change – Treatment group before change)
– (Control group after change – Control group before the change)

To increase the precision and reliability of the results, effects are measured using regression analysis with this difference-in-difference framework. In the current paper, the treatment group is recipients of the Allowances. The program change examined is the increase in the GIS earnings exemption in 2008. The control group used here is: near-seniors (60-64) not receiving the Allowances that have income other than work above Allowances thresholds or that are neither widows nor spouses of seniors[27]. The choice of this control group ensures assignment to the control group is not affected by the decision to work or not.[28]

[27] Income other than work to assess Allowances eligibility follows from the definition used in section 3 to which is subtracted net employment and net self-employment income while taking into account the most common employment income deductions (EI contributions (lines 312 and 317), C/QPP contributions (lines 222 and 308, Registered Pension Plan deductions (line 207), and union and professional dues (line 212)).

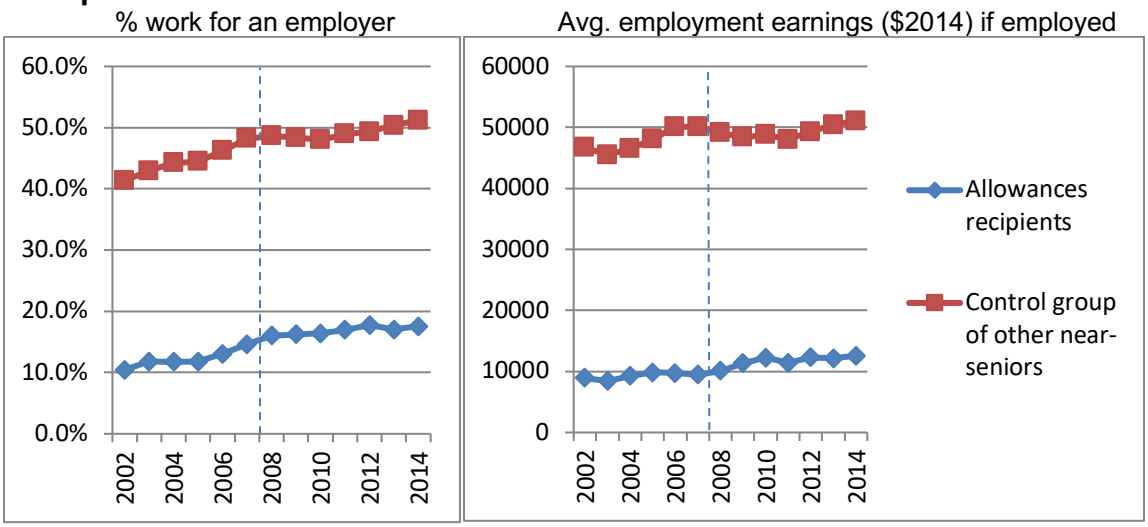
[28] Using a revealed preference approach inspired by Kline and Tartari (2016), we argue that assignment to the treatment group is not affected by the policy change either. The policy change did not expand the choices of baskets of leisure, work and family income (including benefits) which exclude Allowances benefits, i.e. all baskets with zero benefits available after the policy change were already available before

In the following analysis, the effect of the increase in the GIS earnings exemption in 2008 will be examined graphically to begin, then examined by comparing averages of different groups before and after the change, and finally examined using regression analysis with a difference-in-difference framework.

Comparison of treatment and control groups

Figure 6 compares recipients of the Allowances to the control group of other 60-64 year old near-seniors, looking at the percentage who worked for an employer and the average employment earnings ($2014) among those that are employed.

Figure 6 – Comparison of Recipients of the Allowances to the Control Group



Source: 10% sample of T1 file from the CRA (2,291,437 observations of 60-64 year olds). Control group includes near-seniors (60-64) not receiving the Allowances that have income other than work above Allowances thresholds or that are neither widows nor spouses of seniors. Note that self-employment income is not taken into account in these results as it does not qualify for the GIS earnings exemption.

Regarding the percentages that are employed, both groups followed similar upward trends before the change in 2008. In 2009, 2010 and 2011, this proportion continued to increase for recipients of the Allowances while it stayed relatively constant between 2008 and 2010 in the control group of other 60-64 year old near-seniors.

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the policy change (all else equal). Therefore, standard revealed preferences show that an individual receiving the Allowances before the policy change would not choose a basket with zero Allowances benefits after the policy change, given these baskets were already available and not chosen by the individual before the policy change. See Kline and Tatari (2016) for an example of an empirical application of revealed preferences or a standard microeconomic textbook for an illustration of revealed preferences (e.g. Varian, 1995).

Regarding average employment earnings among those that are employed, the trends follow a similar s-shape before 2008. In 2008, 2009 and 2010, average employment earnings increased among recipients of the Allowances while it remained below its 2007 level among the control group of other 60-64 year old near-seniors.

Overall, these two graphs show that these two groups were following similar trends before 2008, suggesting that the comparison group is adequate to examine the effect of this policy using a difference-in-difference framework. The graphs also suggest that this policy change might have had an effect. Further analysis below is required to confirm this.

Note that attempts were made to find a valid control group to also examine the effect of the increase in the GIS earnings exemption on GIS recipients. Unfortunately, no valid control group was found, as all potential control groups followed different trends than GIS recipients.

Table 4 examines the socio-economic characteristics of the treatment group and the control group. It shows that there are some significant differences between treatment and control groups beyond income. Notably, the treatment group (Allowances recipients) includes a higher percentage of women, a higher percentage of single people, older people, a lower percentage of people that are self-employed and a lower percentage of people whose spouse works. These differences between the control and treatment groups underline the importance of including these socio-economic characteristics in the regression framework, to take into account differences between the groups in the analysis.

Table 4 – Socio-economic Characteristics of Treatment and Control Groups

	ALW recipients	Control group of other near-seniors
Women (%) Men	89.6 10.4	43.6 56.4
Single (%) Married	33.1 66.9	29.7 70.3
Avg. age	62.6	61.9
Self-employed (%)	6.7	14.6
Spouse works (%)	11.9	43.2

Source: 10% sample of T1 file from the CRA (2,291,437 observations of 60-64 year olds). Control group includes near-seniors (60-64) not receiving the Allowances that have income other than work above Allowances thresholds or that are neither widows nor spouses of seniors. Note that married also includes those in a common-law relationship.

Comparing averages before and after the policy change

Next, Table 5 examines the percentages that worked for an employer and the average work earnings ($2014) of the treatment and control groups, before and

after the policy change. Differences in averages show that the proportion of recipients of the Allowances that were employed increased by 4.6 percentage points from the 2002-2007 period to the 2008-2014 period (before and after the policy change). In comparison, the proportion employed increased by 4.5 percentage points in the control group of other 60-64 year old near-seniors. Therefore, comparing these two differences, the proportion that worked among the treatment group increased by 0.1 percentage point more than among the control group. However, one could argue that because the proportions among the two groups were so different to begin with, we should compare growth rates (% change) in the proportion employed instead. The proportion of recipients of the Allowances that were employed increased by 32% from the 2002-2007 period to the 2008-2014 period while the proportion in the control group of other near-seniors that were employed increased by 10%.[29] Therefore, comparing the two growth rates, the growth in the proportion that were employed in the treatment group was 22 percentage points higher than growth in the control group. These two interpretations suggest a positive effect of this policy change on the proportion of recipients of the Allowances that worked. However, as discussed above, a regression framework should be used for the analysis to take into account differences in socio-economic characteristics between the treatment and control groups.

Table 5 – Proportion Working for an Employer and Average Work Earnings ($2014) for Treatment and Control Group Before and After 2008 Policy Change

		Treatment group (ALW recipients)			Control group (other near-seniors)			Diff.-in-diff.
		after	before	Diff.	after	before	diff.	
% work for employer	normal	16.8%	12.3%	4.6 p.p.	49.3%	44.8%	4.5 p.p.	0.1 p.p.
	% change			31.6%			9.6%	22.0 p.p.
avg. empl. earn. (if>0)	normal	$11,740	$9,306	$2,434	$49,353	$48,082	$1,271	$1,162
	% change			23.2%			2.6%	20.6 p.p.

Source: 10% sample of T1 file from the CRA (2,291,437 observations of 60 to 64 year olds). Note that % changes are calculated using differences in the natural logarithm of period averages. 'p.p.' stands for percentage points. Control group includes near-seniors (60-64) not receiving the Allowances that have income other than work above Allowances thresholds or that are neither widows nor spouses of seniors. Note that self-employment income is not taken into account in these results as it does not qualify for the GIS earnings exemption.

For average work earnings ($2014) among those who were employed, comparisons show that recipients of the Allowances had an increase that was

[29] Growth rates (% change) are defined here as differences in the natural logarithm of period averages.

$1,162 higher than among the control group, between the 2002-2007 and 2008-2014 periods. Comparing growth rates, recipients of the Allowances who worked had an increase in average work earnings that was 21 percentage points higher than the increase among the control group.

Regression results

As discussed above, a regression framework should be used to analyze the effect of this policy change. There are two hypotheses (H_o) we should test: 1) the increase in the GIS earnings exemption increased the proportion of recipients of the Allowances that were employed, and; 2) the increase in the GIS earnings exemption increased employment earnings ($2014) among recipients of the Allowances that are employed. Table 6 presents the main regression results; the effect of the policy change is presented in the first line.

Table 6 – Regression Results of the Effect of the Policy Change on the Proportion Who Worked for an Employer and Employment Earnings ($2014)

	ALW recipients	
	% worked for an employer	ln (employment earnings) if > 0
Effect	0.011*	0.150*
Group (0 or 1)	-0.176*	-0.841*
Time period (0 or 1)	0.004*	0.056*
Women	-0.070*	-0.448*
Single	0.061*	0.069*
Spouse 65+	-0.086*	-0.472*
Spouse works	0.192*	0.167*
Self-employed	-0.241*	-0.380*
Largest urban centers	0.026*	0.227*
Age:		
60	(reference)	(reference)
61	-0.048*	-0.113*
62	-0.088*	-0.190*
63	-0.122*	-0.264*
64	-0.154*	-0.350*

* indicates significant at the 1% level.
Source: 10% sample of T1 file from the CRA (2,291,437 observations of people aged 60 to 64). Regressions include bootstrapped standard errors clustered on individuals and dummies for each province/territory and each year. Note that self-employment income is not taken into account in these results as it does not qualify for the GIS earnings exemption.

Other variables included in the regression are an indicator variable for the group (treatment or control), an indicator variable for time (pre- or post-policy change), gender, marital status (single or not), an indicator variable for having a spouse 65+ years old, an indicator variable for having a spouse that works, an indicator variable for being self-employed, an indicator variable for living in one of Canada's largest urban centers (Vancouver, Calgary, Edmonton, Toronto,

Ottawa and Montreal), indicator variables for each age between 61 and 64 and indicator variables for each province and territory. Indicator variables for each year (2002-2014) were also added to the regression to take into account the changing economic situation during this period, notably the recession of 2008 and the recovery. It is assumed that the recession had similar effects among the control and treatment groups, given they were following similar trends beforehand. Income was not included in the regressions given it was used to select the treatment and control groups (which are recipients and non-recipients of income-tested benefits).

For recipients of the Allowances, the increase in the GIS earnings exemption increased the proportion that worked for an employer by 1 percentage point and increased employment earnings by 15% among those who are employed. Based on average employment earnings among recipients of the Allowances that worked in the 2002-2007 period ($9,306), a 15% increase represents almost $1,400 per year for the average Allowances recipient that works.

Different ways of defining the regression standard errors were explored (including robust, clustered on individuals and bootstrapped), without any change to the statistical significance of the results.

Table 7 – Robustness of Regression Results

Dependent variable	Specification	Effect of policy change	Effect with sample < 2011
% worked for an employer	normal	1.1* p.p.	1.0* p.p.
	ln	0.8* %	0.7* %
% worked (incl. self-empl.)	normal	1.5* p.p.	1.3* p.p.
Employment earnings (if > 0)	normal	$ 320	$ 639***
	ln	15.0* %	11.3* %
Employment and self-empl. earnings (if >0)	ln	11.3* %	7.5* %

*, **, *** indicate significant at the 1%, 5% and 10% level respectively.
Source: 10% sample of T1 file from the CRA (2,291,437 observations of people aged 60 to 64). Regressions include bootstrapped standard errors clustered on individuals. Growth rates (%) and percentage points (p.p.) increases are distinguished in the table to be precise. Note that as the natural logarithm of zero does not exist, 1 was added to all values of the employment variable (0 or 1) in the ln specification. Also note that self-employment income is not taken into account in these results as it does not qualify for the GIS earnings exemption.

Table 7 examines the robustness of results to different regression specifications. Similar regressions were estimated changing the dependent variable from a normal form to a natural logarithm (ln) form, restricting the sample to years before 2011 (using only the first three years after the policy change) and including self-employment in the dependent variable. All results were of the same sign and all except one were statistically significant, enhancing our

confidence in the results presented. Results were also of similar magnitude in all specifications.

5. Conclusions

This paper used T1 data from the CRA to examine the labour market impacts of the 2008 increase in the GIS earnings exemption. The study is one of many lines of evidence being produced for the evaluation of the OAS program.

This study showed that the increase in the GIS earnings exemption in 2008 has increased the labour market participation of recipients of the Allowances. Using a treatment and a control group in a difference-in-difference regression framework, it was estimated that this policy change increased employment earnings by 15% among those who work for an employer and increased the employment rate of recipients of the Allowances by 1 percentage point.

It was not possible to use this regression framework to examine the effect on GIS recipients. Nevertheless, descriptive statistics show a similar increase in employment earnings after the increase in the GIS earnings exemption, among GIS recipients who choose to work.

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Annex: Supplementary Tables

Table A1 – Proportion Working and Average Work Income

	% work				Mean work income (if individual works) (2014$)			
Year	GIS	Other OAS pension recipients	Allowances	Other near-seniors (60-64)	GIS	Other OAS pension recipients	Allowances	Other near-seniors (60-64)
2002	5.0%	15.8%	15.2%	52.4%	4,932	28,770	7,916	42,630
2003	5.5%	16.5%	16.7%	54.0%	4,422	28,582	7,508	42,100
2004	5.6%	17.0%	17.2%	55.4%	4,865	28,926	7,781	43,124
2005	5.7%	17.6%	17.4%	55.6%	5,284	29,466	8,633	44,282
2006	5.8%	18.4%	18.3%	57.1%	5,590	31,155	8,592	46,339
2007	6.4%	19.7%	20.2%	58.7%	5,586	31,787	8,522	46,811
2008	6.5%	20.4%	21.7%	59.0%	5,911	30,447	8,896	46,162
2009	6.5%	20.6%	21.8%	58.6%	5,944	30,151	9,965	45,358
2010	6.5%	20.9%	22.3%	58.4%	6,414	29,956	10,578	45,869
2011	7.1%	22.1%	23.0%	59.5%	6,605	29,936	10,005	45,402
2012	7.3%	22.7%	24.0%	59.8%	6,463	30,476	10,962	46,308
2013	7.2%	23.1%	23.0%	60.6%	6,522	29,833	10,760	47,429
2014	7.2%	23.0%	23.6%	61.2%	6,582	28,504	11,095	47,658

Source: 10% sample of T1 file from the CRA (8,434,625 observations of people 60+). Note that self-employment income values that were negative were replaced with zeros when calculating average work income.