The Impact of Cohort Size on Labour Force Participation in Canada

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Due to decreasing birth rate and long-run decreasing mortality rates, the cohort size of each age group has changed considerably during the past three decades in Canada. This study examines the effects of age cohort changes of the population on the labour force participation rate for Canada. Using a panel dataset consisting of 10 Canadian provinces from 1983 to 2015 and the least squares dummy variable corrected (LSDVC) estimation method for dynamic long-panel data, we found that cohort size has negative effects on the labour force participation for both prime-age men and women in Canada.

INTRODUCTION

Labour force participation is a key indicator of economic wellbeing of a nation. Defined as the percentage of the population that is either employed or unemployed, it is the result of individual decisions to take part in labour market. The literature on labour market decisions and economic theory have identified several factors that impact the labour force participation rate. For example, Mincer (2001) found that wages, the income level of the household, life cycle, business cycle, education, and economic development all play a significant role in determining the labour force participation rate. Moffitt (1987) found that social security had a negative effect on the labour force participation. Others have found that welfare programs had an impact on the labour force participation rate (e.g., Blau and Robins (1986), Hansen and Liu (2015)).

Strand and Dernburg (1964) introduced three hypotheses concerning the labour force participation: "the discouraged worker", "the additional worker" and "the offset" hypothesis. The "discouraged worker" hypothesis holds that when economic activity declines, workers become discouraged and leave the labour force. The "additional worker" hypothesis maintains that the labour force participation increases at low levels of economic activity when "secondary" workers enter the labour force under the pressure of the loss of work by the "primary" workers. The "offset" hypothesis asserts that any inflow of additional workers is offset by an outflow of discouraged workers so that, on balance, the over-all participation rate remains virtually constant, or that at least there is no clearly discernible cyclical relationship.

Macunovich (2012) examined the effects of relative cohort size and relative income on married women's labour force participation in the United States, from 1968 to 2010, and found that income has a significant positive effect on the labour force participation of white married women. However, for African American and most of other non-white women, the estimated effects of income are negative.

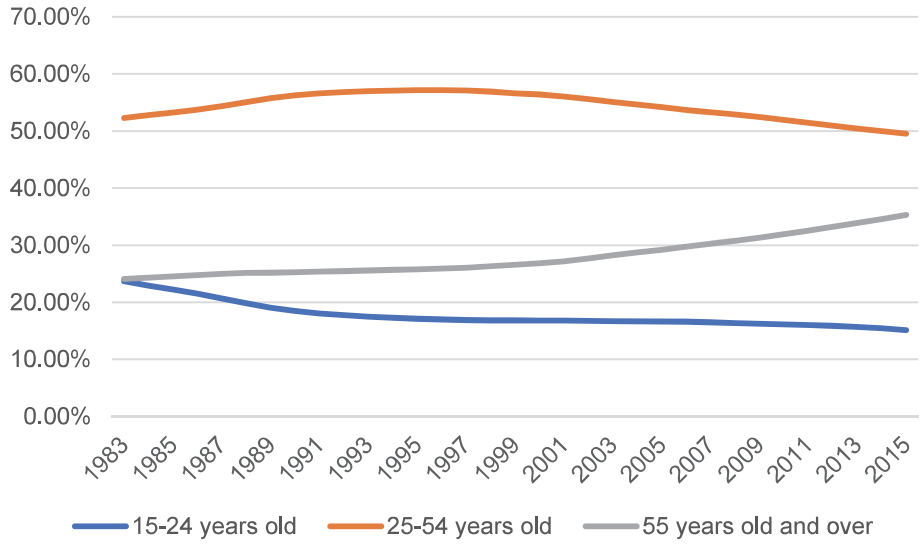
Furthermore, Macunovich also examined the effect of relative cohort size on women's starting wage relative to that of prime-age males. He found the effect of relative cohort size on women's relative wage is negative.

Most studies on labour force participation in the literature assume that the population was homogeneous. Fair and Dominguez (1991) introduced cohort size to their study that allows them to analyze the effects of cohort size on the macro variables, including the labour force participation rate. Their study used a time series data set, for the United States over 30 years. In their study, all workers were divided into several groups by age and gender. They mainly focused on prime-age (25-54) groups. They found that the labour force participation rates of both prime-age men and women were affected by the percentage of prime-age people in the total population. The relationship between the cohort size and the labour force participation was positive for men and negative for women. Furthermore, the authors explained the relationship by using the substitution and income effect, and stated: "If the substitution effect dominates, it means wage rate has a positive effect on labour force participation. If the income effect dominates, it means wage rate has a negative effect on labour force participation." They found that the income effect dominates for prime-age men and the substitution effect dominates for prime-age women.

Easterlin (1987) and Berger (1985) showed that larger cohorts face a lower wage rate on average, because of the increased competition for jobs. If this is the case, the size of the cohort would affect the labour force participation of individuals in the cohort. Easterlin also suggested that the baby-boom generation delayed marriage and children, and increased labour participation of young women in response to lower average wages. So, the results of Fair and Dominguez support Easterlin's hypothesis that relative wages vary inversely with cohort size but fail to support his other hypothesis that income effect dominates for women.

This paper follows Fair and Dominguez (1991) to examine the relationship between cohort size and the labour force participation in Canada from 1983 to 2015 by assuming that population is not homogenous. Figure 1 shows the percentage of people in the working-age (≥15 years) population over the past three decades.

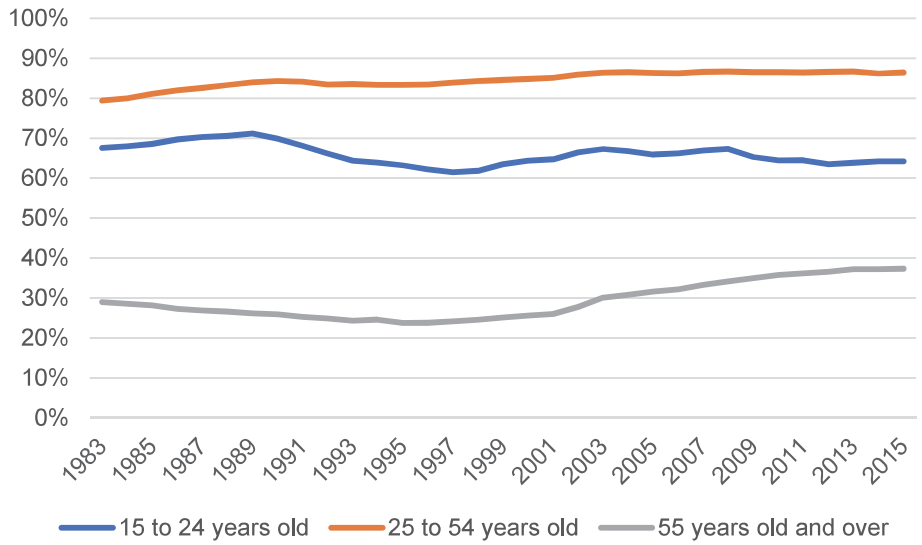
FIGURE 1
PERCENTAGE OF PEOPLE IN WORKING-AGE POPULATION, 1983-2015



Source: Statistics Canada. CANSIM Table 051-0001-Estimates of population, by age group and sex for July 1, Canada, provinces and territories, annual (persons unless otherwise noted).

Due to the baby boom from the 1940's to the early 1960s, changes in the cohort size of the prime-age (25-54), the younger group aged 15-24 years and the older group aged 55 years and over followed different patterns. In 1983, the percentage of prime-age (25-54) people was around 52%; by 1996 it increased to about 57.1%. Since 1997, the percentage of prime-age people had decreased steadily. The percentage of 15 to 24 years old people was about 23% in 1983; by 2015 the percentage was only about 15%. The percentage of 55 years and over was around 23% in 1983. By 2015, the percentage was around 35%.

FIGURE 2
LABOUR FORCE PARTICIPATION RATE, 1983-2015



Source: Statistics Canada. CANSIM Table 282-0002 - Labour force survey estimates (LFS), by sex and detailed age group, annual (persons unless otherwise noted).

Figure 2 shows labour force participation rates from 1983 to 2015, in Canada, for those major age cohorts. The labour force participation of prime-age people in 1983 was about 79%. However, by 2016, the labour force participation rate of prime-age people increased to about 86%. The labour force participation rate of people 15 to 24 years old reached its highest point in 1989, about 71%. By 2015, it fell to about 64%. The labour force participation rate of people 55 years old and over declined to its lowest point in 1998,

To understand the relationship between cohort size and the total labour force participation rate in America, Fair and Dominguez (1991) explored the effect of cohort size on the labour force participation of the United States. The link between cohort size and labor force participation is that the cohort size can affect the average hourly wages (Easterlin, 1987) which in turn affects the labour force participation. According to Easterlin (1987), a large cohort size usually means a low average hourly wage. The average hourly wages can affect labor force participation directly. Fair and Dominguez (1991) found the relationship between cohort size and labour force participation is positive for men and negative for women.

The purpose of this study is to examine the effects of age cohort changes of the population on the labour force participation rate for Canada. Using a panel dataset consisting of 10 Canadian provinces from 1983 to 2015 and the least squares dummy variable corrected (LSDVC) estimation method for dynamic long-panel data, we found that cohort size has negative effects on the labour force participation for both prime-age men and women in Canada.

DATA AND METHODOLOGY

The data used in this study is a dynamic long-panel data set consisting of 10 Canadian provinces from 1983 to 2015 for two reasons: 1) the data for average hourly earnings are available only from 1983 to 2015; and 2) the percentage of prime-aged workers started to rise from the 1980s due to the baby boomers going to their prime-age. All data used were from Statistics Canada (See Appendix 1 for detailed sources).

For the dependent variable, we use the labour force participation rate. As for the principal independent variables, we use the relative cohort size. According to Fair and Dominguez (1991), to pick up the effects of last period's decisions, we include the lagged labour force participation rate. In general, if people were in the labour market last period, they are more likely to stay in the labour market. The expected sign of the coefficient for the lagged labour force participation rate is positive. According to Strand and Dernburg (1964), we also include the unemployment rate. Similar to the "discouraged worker", "additional worker" and "offset" hypothesis, if the sign of the coefficient for the unemployment rate is positive, the "additional worker" effect dominates; if it is negative, the "discouraged worker" effect dominates; if it is insignificant, the "offset" hypothesis holds. Similar to Fair and Dominguez (1991), we also include real earnings. If the coefficient of real earnings is negative, income effect dominates. That means if real earnings increase, people would like to spend less time on working and spent more time on leisure. If the coefficient is positive, the substitution effect dominates. That means if real earnings increase, people would like to spend more time on working to earn more money and reduce their time on leisure.

Following Moffitt (1987), we use the real transfer income from the general government to pick up the effects of social security. As we mentioned in the literature review, the coefficient for the real income from the general governments is expected to be negative. We also include real income from corporations, because "income from corporations" are essentially non-government pension benefits. Real income from corporations is different with real earnings. Real income from corporations here is a kind of secondary distribution, such as pensions from corporations. Only people who have a job can get this income. When people realize that they can get an abundant pension and do not worry about food when they retire, people would more likely to go into the labor market. The coefficient for the real income from corporations is expected to be positive. Adding time trend instead of every year's time dummy variables to our model was due to two considerations: first, it saves some degrees of freedom (Chen, 2010); second, the time trend variable could pick up some unobserved effects on the labour force participation, such as "women's movement", attitudes towards education, etc. However, there are also some disadvantages on using time trend instead of time dummy variable. For example, using time trend may not capture the structure break, even though there is no obvious structural break.

A key feature of this study is to assume that population is not homogeneous. So, we divided all the population into six groups by age and sex: 15 to 24 years old men, 15 to 24 years old women, 25 to 54 years old men, 25 to 54 years old women, 55 years old men and over, and 55 years old women. Additionally, we assume that there is no perfect substitution across age-groups in the labour market and run separate regressions for each group. The thoughts of variable selection start from general to specific. So, we use the same variables for all groups. Table 1 contains the summary statistics of all variables used in this study. The estimated equation is:

$$LFP_{it}^{j} = f\left(L.LFP_{it-1}^{j}, UE_{it}^{j}, IC_{it}, IG_{it}, W_{it}, Wp_{it}^{j}, T\right) \quad (1)$$

where:

$LFP_{it}^{j} = the\ labor\ force\ participation\ rate\ in\ group\ j, province\ i\ and\ year\ t,$

$L.LFP_{it-1}^{j} = the\ labor\ force\ participation\ rate\ in\ group\ j, province\ i\ and\ year\ t-1,$

$UE_{it}^{j} = the\ unemployment\ rate\ in\ group\ j, province\ i\ and\ year\ t,$

$IC_{it} = the\ real\ income\ from\ corporations\ in\ province\ i\ and\ year\ t,$

$IG_{it} = the\ real\ income\ from\ government\ \ in\ province\ i\ and\ year\ t,$
$W_{it} = the\ real\ average\ hourly\ earnings\ in\ province\ i\ and\ year\ t,$
$Wp_{it}^{j} = W\ times\ the\ proportion\ of\ people\ in\ group\ j, province\ i\ and\ year\ t,$
$T = time\ trend.$

Although most of the variables in the equation are disaggregated by age and sex, the real average hourly earnings data are typically not available on an age-sex specific basis. Statistics Canada only provides the age-sex specific data for average hourly wages from 1997 onwards. The aggregate real average hourly earnings are used in place of the more specific but unobserved real average hourly earnings of the particular age-sex group. However, Easterlin (1987) showed that real average hourly earnings relevant to one age group are proportional to the aggregate real average hourly earnings. So, in this study we follow the hypothesis of Easterlin (1987) and construct the following variables:

$$W_{it}^{j} = \alpha_j W_{it}, \tag{2}$$

$$W_{it}^{j}/W_t = \alpha_j. \tag{3}$$

where:

$W_{it}^{j} = the\ real\ average\ hourly\ earnings\ in\ group\ j, province\ i\ and\ year\ t.$

The Easterlin hypothesis also suggested that α_j is a negatively related to the percentage of people in age-group j (p_{jt}) in the total population. Thus,

$$W_{it}^{j}/W_t = \alpha_j = \gamma_0 + \gamma_1 p_{it}^{j}, \quad \gamma_1 < 0 \tag{4}$$

$$W_{it}^{j} = \gamma_0 W_t + \gamma_1 p_{it}^{j} W_t. \tag{5}$$

Thus, Equation (1) becomes:

$$LFP_{it}^{j} = f\left(L.LFP_{it-1}^{j}, UE_{it}^{j}, IC_{it}, IG_{it}, W_{it}, Wp_{it}^{j}, T\right) \tag{6}$$

The key hypotheses to be tested are whether if Wp_{it}^{j} is correlated with LFP_{it}^{j} and whether the relationship is negative or positive.

Before doing the regression analysis, we conducted some unit-root tests on the variables since non-stationary panel data may lead to spurious regressions and misleading statistical inference. In this study, the Fisher-type test based on augmented Dickey-Fuller (Choi, 2001) and Levin-Lin-Chu unit-root test are used to determine if the variables are stationary. Our results show that the hypothesis of a unit root is rejected for all the variables at the 10% level of significance.

With respect to estimation method, since our data is a long dynamic panel data set from 1983 to 2015, we used the least squares dummy variable corrected (LSDVC) estimation model. According to Kiviet (1995), and Judson and Owen (1999), for a dynamic long-panel data set, the results of their Monte Carlo studies show that the LSDVC is better than the difference General Moment Methods (GMM) and system GMM in both standard error and root-mean-square error (RMSE).

As to the initial estimator, the system GMM estimator (also called Blundell-Bond estimator) is used. The accuracy of the approximation is up to O ($n^{-1}T^{-3}$). The repetitions of calculating a bootstrap variance-covariance matrix for LSDVC is 50 (Chen 2010). As a check of robustness, we also break the sample in 2000 and run separate regressions.

RESULTS

TABLE 1
REGRESSION RESULTS FOR (15-24 YEARS OLD) MEN

Independent Variables:	Coef.	Std. Err.	Z	P>|Z|
$L.LFP$	0.838***	0.0289	29.00	0.000
UE	-0.197***	0.0475	-4.16	0.000
IC	0.107*	0.0638	1.67	0.094
IG	-0.00371	0.0378	-0.10	0.922
W	35.316**	18.0259	1.96	0.050
Wp	-0.371	1.234	-0.30	0.764
T	-0.134***	0.0363	-3.69	0.000

Notes: *Statistically significant at the 10% level; **statistically significant at the 5% level; *** statistically significant at the 1% level.

TABLE 2
REGRESSION RESULTS FOR (15-24 YEARS OLD) WOMEN

Independent Variables:	Coef.	Std. Err.	Z	P>|Z|
$L.LFP$	0.799***	0.0308	25.97	0.000
UE	-0.381***	0.0619	-6.16	0.000
IC	0.0739	0.0667	1.11	0.268
IG	-0.0036	0.0410	-0.09	0.930
W	25.36	21.261	1.19	0.233
Wp	1.720	1.4056	1.22	0.221
T	-0.0894**	0.036	-2.50	0.012

Notes: *Statistically significant at the 10% level; **statistically significant at the 5% level; *** statistically significant at the 1% level.

Tables 1 and 2 show that the regression results for 15-24 age groups. The dependent variable is the labour force participation rate for young men and young women. As we can see, the cohort size has an insignificant effect for young men and young women. Not surprisingly, the results show that lagged

labour force participation, unemployment rate, and real average hourly earnings are significant determinants of the labour force participation for young men and women.

TABLE 3
REGRESSION RESULTS FOR (25-54 YEARS OLD) MEN

Independent Variables:	**Coef.**	**Std. Err.**	**Z**	**P>|Z|**
$L.LFP$	0.861***	0.0294	29.26	0.000
UE	-0.077*	0.0421	-1.83	0.067
IC	0.0878***	0.0279	3.14	0.002
IG	-0.0143	0.0191	-0.75	0.454
W	18.972***	7.12	2.67	0.008
Wp	-0.421*	0.249	-1.69	0.091
T	-0.0593***	0.0153	-3.86	0.000

Notes: *Statistically significant at the 10% level; **statistically significant at the 5% level; *** statistically significant at the 1% level.

TABLE 4
REGRESSION RESULTS FOR PRIME-AGE (25-54 YEARS OLD) WOMEN

Independent Variables:	Coef.	Std. Err.	Z	P>|Z|
$L.LFP$	0.996***	0.0192	57.87	0.000
UE	-0.0333	0.0509	-0.66	0.512
IC	0.0726**	0.0305	2.38	0.017
IG	-0.0847***	0.0199	-4.25	0.000
W	27.37***	9.530	2.87	0.004
Wp	-1.077***	0.309	-3.49	0.000
T	-0.066***	0.0167	-3.94	0.000

Notes: *Statistically significant at the 10% level; **statistically significant at the 5% level; *** statistically significant at the 1% level.

Tables 3 and 4 show the results for prime-age men and women. The estimates reveal that cohort size has significant negative effects on the labour force participation for prime-age men and women. This variable is at the 10% level of significance for prime-age men and at the 1% level of significance for prime-age women. That means with the increase in the cohort size, the labor force participation rate for prime-age men and women will decrease. Oppositely, the labor force participation rate will increase with the decrease in cohort size. However, since we combine the cohort size and real average hourly earnings together, so we could not estimate precisely how changes of labor force participation rate when the cohort size changes by 1-percentage-point. We can only know that with the increase in the cohort size for these two groups, the labor force participation rates will decrease.

As to other variables, the lagged labour force participation rate is at the 1% level of significance for prime-age men and prime-age women. The unemployment rate is at the 10% level of significance for prime-age men. Real transfer income from corporations is at the 1% level of significance for prime-age men and at the 5% level of significance for prime-age women. Real transfer income from government is at the 1% level of significance for prime-age women. A 1-point increase in the real transfer income from government will decrease the labour force participation rate by 0.087% for prime-age women. The coefficients of real average hourly earnings are at the 1% level of significance for prime-age men and women.

TABLE 5
REGRESSION RESULTS FOR 55 YEARS OLD MEN AND OVER

Independent Variables:	Coef.	Std. Err.	Z	P>|Z|
$L.LFP$	0.897***	0.0338	26.54	0.000
UE	-0.0829*	0.0444	-1.86	0.063
IC	0.0300	0.0509	0.59	0.556
IG	-0.0735**	0.0341	-2.16	0.031
W	15.28	15.986	0.96	0.339
Wp	0.378	0.838	0.45	0.652
T	0.075***	0.0269	2.77	0.006

Notes: *Statistically significant at the 10% level; **statistically significant at the 5% level; *** statistically significant at the 1% level.

TABLE 6
REGRESSION RESULTS 55 YEARS OLD WOMEN AND OVER

Independent Variables:	Coef.	Std. Err.	Z	P>|Z|
$L.LFP$	0.912***	0.0326	27.97	0.000
UE	-0.0096	0.0374	-0.26	0.797
IC	-0.0136	0.0429	-0.32	0.750
IG	-0.0458*	0.0261	-1.76	0.079
W	26.16*	14.384	1.82	0.069
Wp	-0.27	0.6815	-0.40	0.689
T	0.112***	0.02374	4.71	0.000

Notes: *Statistically significant at the 10% level; **statistically significant at the 5% level; *** statistically significant at the 1% level.

Finally, Tables 5 and 6 contain the results of regressions for 55 years old and over. The estimates show that the coefficients of cohort size are insignificant for neither men nor women. When it comes to other variables, the coefficient of lagged labour force participation rate is at the 1% level of significance for both men and women. The coefficients of unemployment rate are at the 10% level of significance for men.

However, the coefficient of the unemployment rate is insignificant to the labour force participation rate for women. Real average hourly earnings are significant at the 10% level of significance for women.

SUMMARY AND CONSLUSION

Due to the post-WW II baby boom, decreasing birth rate after baby boom and decreasing mortality, the cohort size in Canada has changed a lot. Empirical studies had found that the changes in cohort size have effects on labour force participation in the United States. Many studies also showed that the labour force participation plays an important role in economic growth. In this paper, the key question considered was: "What is the effect of the cohort size on the labour force participation in Canada?"

Based on the paper by Fair and Dominguez (1991) for the United States, we analyzed the impact of changes in cohort size on the labour force participation in ten Canadian provinces from 1983 to 2015 for the following six groups by age and sex: 15 to 24 years old men, 15 to 24 years old women, 25 to 54 years old men, 25 to 54 years old women, 55 years old men and over, 55 years old women and over.

We found the negative relationship between cohort size and the labour force participation for 25 to 54 years old men and women in ten Canadian provinces. This finding is different from that by Fair and Dominguez (1991) which found a positive relationship between cohort size and the labour force participation for 25 to 54 years old men and a negative relationship between cohort size and the labour force participation for 25 to 54 years old women. We also found that in 25 to 54 years old groups, the real average hourly earnings have a negative relationship with the cohort size, which is consistent with Easterlin (1987). That means a large cohort usually faces low real average hourly earnings.

Moreover, the real average hourly earnings have positive effects on the labour force participation for 25 to 54 years old men and women. That means the substitution effect dominates for 25 to 54 years old men and women. Fair and Dominguez (1991) However, Fair and Dominguez (1991) found a negative relationship between the real wage and the labour force participation for 25 to 54 years old men and a positive relationship for 24 to 55 years old women. That means income effect dominates for prime-age men and substitution effect dominates for prime-age women.

There could be a number of reasons for the different results. For example, data for our study is for Canada from 1983 to 2015 while Fair and Dominguez used the US data from 1954 to 1987. The economy is very different from then. People in Canada from 1983 to mid-1990s were facing low average hourly earnings due to the large cohort size. Those people then quitted the labor market. After the mid-1990s, people in Canada faced increasing hourly earnings due to decreasing cohort size. More and more people who quitted the labor market before went to labor market to earn more money. However, in the United States from 1952 to about 1974, real wage generally grew in this period. For prime-age men, with the increase in real wage, they could earn the same amount of money by working less time. After 1974, real wage flattened out. The labor force participation rate also flattened out.

For prime-age women, facing the rising real wage, prime-age women were more likely to take part in the labor market. Second, the population size in Canada is far smaller than the United States, which could have contributed to the difference. As to the comparison in magnitude between men and women, the labour force participation for 24 to 54 years old men are affected less than that for women by the cohort size. Also, the labour force participation for 24 to 54 years old men are affected less than that for women by the real average hourly earnings. The results may reflect the conventional view that men as the main bread earners have more responsibilities to support a family thus could not quit the labour market easily.

Furthermore, the labour force participation rate for 25 to 54 years old men is far higher than that for women which indicating that there was less room for men to increase in the labour force participation, even though with the increase the real average hourly earnings.

However, our results show that the relationship between cohort size and the labour force participation for 15 to 24 years old men, 15 to 24 years old women, 55 years old men and over, 55 years old women and over were insignificant in determining on the labour force participation. As to the relationship between the real hourly earnings and the labour force participation, we found that the real average hourly earnings only have a significant effect on the labour force participation for 15 to 24 years old men and women.

Concerning other variables, our results show that the lagged labour force participation has a significant and positive effect in all groups; the unemployment rate has a negative effect on the labour force participation for 15 to 24 years old men and women, 25 to 54 years old men, and 55 years old men and over indicating the "discouraged worker" effects. This effect appears to be very strong for 15 to 24 years old groups. Income from corporations has positive effects on the labour force participation for 15 to 24 years old men, 25 to 54 years old men and women. Income from general governments has negative effects on the labour force participation for 25 to 54 years old women, 55 years old people and over. That indicates that with the increase in social security, fewer people will participate in the labour market. Finally, the labour force participation for 55 years old people and over had an increasing trend while for other groups there was a decreasing trend.

Regarding policy implications, our results show that for the prime-age (25-54) people, a large cohort size does not necessarily translate to a high labour force participation rate. That the labour force participation rate changes with the cohort size implies that policy makers should take into consideration of the cohort size to increase the labour force participation. Otherwise, a large population and a low labour force participation will give a heavy burden to the social security system. Furthermore, it could also lead to social instability.

This study is subject to a number of limitations: First, by combining the percentage of people and the real average hourly earnings, we could not estimate precisely the effect of the cohort size on the labour force participation. Statistics Canada only provides us specific data for average hourly wages by age and sex from 1997 onwards. However, if we use the data from 1997 onwards, the deviation of cohort size is

too small to be detected. Second, besides the variables we mentioned, there are still many factors that can affect the labour force participation, such as education, monetary policy, divorce rate etc. The results, therefore, are subject to potential omitted variable bias. In the future studies, we can use the more specific data and include more variables to improve our results. Moreover, our findings very depend on the length of the period. A short period will lead to different results with the results of a long period.

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APPENDIX 1

Data Sources

Labour force participation rates and unemployment rates for ten provinces are from Statistics Canada, CANSIM Table 282-0002 - Labour force survey estimates (LFS), by sex and detailed age group, annual (persons unless otherwise noted). The data for average hourly earnings for ten provinces comes from two tables. From 1983 to 2000, the data are from Statistics Canada, CANSIM Table 281-0008 - Average hourly earnings and average weekly hours of employees paid by the hour, (SEPH), annual. From 2001 to 2015 the data are from Statistics Canada, CANSIM Table 281-0030 - Survey of Employment, Payrolls and Hours (SEPH), average hourly earnings for employees paid by the hour, by overtime status and detailed North American Industry Classification System (NAICS), annual (current dollars). The data for consumer price index for ten provinces is from Statistics Canada, CANSIM Table 326-0021 - Consumer Price Index, annual (2002=100 unless otherwise noted). The data for the population for ten provinces by age and sex are extracted from Statistics Canada: CANSIM Table 051-0001 - Estimates of population, by age group and sex for July 1, Canada, provinces and territories, annual (persons unless otherwise noted).

The data for income from corporations for ten provinces and income from general governments for ten provinces are from Statistics Canada, CANSIM Table 384-0040 - Current accounts - Households, provincial and territorial, annual (dollars unless otherwise noted). All the data for real value are divided by consumer price index and all the data for per capita are divided by working-age (15 years old and over) population.

SUMMARY STATISTICS

TABLE 7
SUMMARY STATISTICS OF THE VARIABLES USED IN THIS STUDY

Variable	Mean	SD	Min	Max
LFP^1 (%)	66.83909	6.654483	44.3	78.1
LFP^2 (%)	63.59576	6.318404	38.2	73.7
LFP^3 (%)	90.63939	3.493288	77	95.9
LFP^4 (%)	76.92909	7.086367	49.8	87.9
LFP^5 (%)	37.20091	7.045956	20.8	55
LFP^6 (%)	21.26394	7.399216	9.2	39.8
UE^1 (%)	17.61121	5.679438	7.2	39.1
UE^2 (%)	13.29818	4.07369	6	27.4
UE^3 (%)	8.642424	3.615782	2.5	19
UE^4 (%)	8.089394	3.394888	3	17.4
UE^5 (%)	7.971515	3.880249	2	21.5
UE^6 (%)	7.074697	3.298144	2.1	17.4
IC ($)	12.06827	5.374512	3.347614	26.85028
IG ($)	44.58886	9.18023	26.02517	66.88677
W ($)	0.1592814	0.019168	0.1074928	0.2073701
Wp^1 ($*%)	1.465142	0.2259279	1.085231	2.444666
Wp^2 ($*%)	1.413006	0.2176302	1.039263	2.364513
Wp^3 ($*%)	4.258267	0.5974792	2.71471	5.96059
Wp^4 ($*%)	4.222779	0.5455205	2.680776	5.594248
Wp^5 ($*%)	2.106757	0.5011682	1.316978	3.645263
Wp^6 ($*%)	2.40316	0.5142546	1.423319	3.924675

Notes: $^{1, 2, 3, 4, 5, 6}$ represent 15-24 years old men, 15-24 years old women, 25-54 years old men, 25-54 years old women, 55 years old men and over and 55 years old women respectively.