Population Aging, Immigration and Future Labor Shortage: Myths and Virtual Reality

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Speakers Series of the Social Statistics Program
McGill University, Montreal, January 23, 2013
Context

- Fertility below replacement for the last 40 years.
- Because of demographic inertia, demographers can foresee with reasonable accuracy changes in future population size and structure.
- The first Baby Boomers are reaching age 65 in 2011.
- Population aging and possible labour force shortages.
- Importance of Canadian immigration in the demographic balance.
- An immigration that is increasingly diversified.
- Significantly lower activity rates among recent immigrants and particularly among some visible minority groups (Arabs, Blacks).
High immigration is almost a religion in Canada

- The Immigrant answer - Canada ready to open its door to more immigrants
  May 14 2012 The Globe and Mail

- A recent study by Canadian professor Tony Fang recommends that Canada should increase its immigration levels to bolster investment in housing and boost the nation's gross domestic product. Canada already has the highest immigration rate per capita out of all major countries. Fang says that Canada needs an additional one million immigrants. This would be an extra 100,000 immigrants a year during the period 2012 to 2021. This would also help the Canadian economy which is yet to recover fully from the Global Financial Crisis of 2008.

- According to the Economic Council of Canada (1991) periods of high immigration were not directly linked to periods of high growth. In the 19th and early 20th centuries, the fastest growth in per capita real incomes occurred at times when net immigration was nil or negative. More recently, there is no significant correlation. However, the same report found that a high rate of immigration was good for Canada's future, and recommended expanding immigration rates to bring Canada's population to 100 million.

Economic Council of Canada (1991), Economic and Social Impacts of Immigration (Ottawa: Supply and Services Canada)
Replacement Migrations

UN 2000 Replacement Migrations: Is it a solution to declining and aging population?

- Study 8 countries and regions, but not Canada
- Conclusion is that immigration cannot be a solution to population aging
- How is it for Canada?

Annual Net Migration (,000) according to different scenarios (2005-2056)

Statistics Canada Main Scenario 211.0
Maintain total population 75.0
Maintain working age pop. 161.5
Maintain the support ratio (15-64/65+) 3,386.4
The cause of population aging

**Total Fertility rate**

**Annual Number of Births, Canada 1926-2006**
Was it a good idea to increase immigration rates starting in 1989?

Too Many, Too Soon
Percent of Baby-Boomers among annual immigrants

Number of Baby-Boomer immigrants admitted between 1989 and 2011

1 608 000
Was it a good idea to increase immigration rates starting in 1989?

After 1989, immigration is not labor force driven

Source: StatCan LFS (Cansim 28-0086) and CIC Facts and Figures
And then…

• High immigration is almost a religion in Canada, yet the Canadian immigration policy of the last 25 years has not been demographically nor economically sound.
  – It has supported unnecessary high population growth rate, and exacerbated the coming population aging challenge by increasing the number of Baby-boomers ready to retire from the labor market.
  – It has drained developing countries from their most skilled workers, but failed in the full economic integration of large cohorts of immigrants.

• Can we better use population forecast to improve future policy’s decisions?
Objectives

- Project the Canadian labour force population until 2031 using DemosSim, a continuous time, case based and event based microsimulation model, and look at its ethnocultural and educational composition.

1. How demographic components of population growth and changes in participation rates affect the size and the composition of the future labour force?
2. What will be the composition of the future Canadian labour force?
3. What would be the effect on the LFP of better economic integration of immigrants?
4. Should Canada increase its immigration levels or not if the objective is to alleviate the anticipated decline in support ratio?
Objectives

- Compare the results of the LF projections by education (supply) with the HRSDC projection of LF demand by level of competence.

1. Is Canada really facing a labour shortage?
2. If so, will it be for more qualified jobs or for less qualified?
3. What are the possible consequences of these trends for future native and immigrant workers?
4. Should Canada revise its immigration policy?
Demosim Demographic Modules

- **Fertility** is a function of age, parity, place of residence, visible minority group, duration of residence for first generation immigrant and generational status for others, religion, place of births, education level and marital status.

- **Intergenerational transfers** of mother tongue, religion and minority group

- **Mortality** depends on age, sex and place of residence like in traditional projections, but relative risks of dying are also included to take into account the differentials in mortality by education level, immigration status and visible minority group

- **Immigrants** characteristics are allocated through imputation by donors taken from the Census data base.

- **Emigration** depends on age, sex, place of residence, country of birth and duration of residence in Canada for immigrants

- **Highest level of schooling** depends on birth cohorts, age, sex, place of birth and visible minority group.
University degree
Census data showed that young adults had a higher level of educational attainment than their older counterparts. About 29% of young adults aged 25 to 34 had a university degree in 2006, well above the proportion of 18% among adults aged 55 to 64, the group approaching retirement age.

Trade Certificate
Census data suggested that fewer young adults may be following their parents into the trades. The census enumerated 416,000 young adults aged 25 to 34 who had received a trade certification. They accounted for only 10% of the total population in this age group. In contrast, 478,800 adults aged between 55 and 64 had a trades certificate, 13% of the population in this age group which is approaching or entering retirement.
LF Participation Module: Data sources and method

- In addition to age and sex, the projection of labour force participation accounts for variations in:
  - Education levels (4)
  - Immigration status and period of immigration (4)
  - Visible minority groups (14)

- Estimation of participation rates in two steps:
  1. Extrapolation of age, sex and education trends in activity rates by province (LFS)
  2. Calculation of activity differentials between immigration status, period of immigration and visible minority groups (Census 2006)
Extrapolation of activity rates

Males

• Assumption: Canadian trends for age/education groups applied to each provinces

• Linear extrapolation of the observed Canadian trends over the period 1990-2008 until 2018 by
  – Each age groups (11), and
  – Education levels (4)
    1. Less than high school
    2. High school graduates
    3. Post secondary non university level
    4. University graduates

• The annual rate of change in activity rates by age and education are applied to the 2008 provincial rates
Labour force activity rates by age and education levels for males, Canada 2008 and 2018
Extrapolation of activity rates

Females

• Assumptions :
  – Gender differentials in labour force participation: female participation rates by age and education are generally lower than male’s, but the increasing trends by age and education are similar.
  – Generation effect: Female labour force participation rates of younger generations are getting closer to male’s rates. As they replace older generations as time moves forward, they will keep their behaviour. Therefore, from one year to the next, female age-specific participation rates will increase beyond age 45.
  – Human capital: As education level increases, female participation rates are getting closer to males rates

• Method:
  – Compute F/M ratios (2008) and applied to males forecasted rates
  – For cohorts aged 45-49 or less in 2008, successively applied the F/M ratios of preceding cohorts
Labour force activity rates by age and education levels for females, Canada 2008 and 2018
Differentials in labour force participation rates by immigration period and visible minority groups

• Assumptions:
  – In each age/sex/education groups participation rates vary by immigration period and visible minority groups.
  – Differences observed at the Canadian level applied to each provinces.

• Method:
  – Computation of ratios in the participation rate of each immigrant groups by period (4) and visible minority groups (14) to the total participation rate by sex (2), age groups (11) and education level (4) for Canada (Census 2006).
  – Apply these ratios to the forecasted participation rates by age/sex/education level groups and province
Visible minority groups and immigration period effects (summary)

- Non-Immigrants > Old immigrants > Recent Immigrants
- Non visible (White) show higher than average participation rates and visible population usually lower than average
- Differences between visible minority groups, lowest participation rates observed among West Asians, Chinese, Arabs (recent and graduated).
## Assumptions and scenarios

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Immigration</th>
<th>Fertility</th>
<th>Participation rate</th>
<th>Differentials Immigrants / vis. min</th>
<th>M/W activity ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Growth</td>
<td>6.0/1000</td>
<td>1.5</td>
<td>Increasing trend</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Reference</td>
<td>7.5/1000</td>
<td>1.7</td>
<td>Increasing trend</td>
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<tr>
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<td>1.9</td>
<td>Increasing trend</td>
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<td>Yes</td>
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<tr>
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<td>7.5/1000</td>
<td>1.7</td>
<td>Increasing trend</td>
<td>No</td>
<td>Yes</td>
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</tbody>
</table>
Results
Canada’s labor force population will continue to increase but at a slower rate
A better economic integration of immigrants could increase labour force population in similar proportion than an increase of immigration

Canada's labour force under 4 different scenarios, 1986-2031
Demographic assumptions have no effect on the evolution of the overall participation rate

Overall participation rate under 3 demographic scenarios, 1986-2031

Historical data
Low growth
Reference
High growth
However, a better economic integration of immigrants first increases overall participation and then postpones the decreasing trend.

Overall participation rate under 4 scenarios, 1986-2031
Aging of the labour force

Percentage of the labour force population by age group, 1981-2031
Even if baby-boomers are retiring in large numbers, the number of natives in the labor force increases over the projection period.
The future increase of the LF population is much more due to large number of immigrants entering the LF.
If Canadian born LF population would still increase, this is not necessary the case of the non-visible population.

Non visible minority in the labor force 2006-2031

- Low growth
- Reference
- High growth
- No differentials (imm/vis min)
Visible minority work force can almost triple between 2006-2031

Visible minority in the labor force 2006-2031

- **Low growth**
- **Reference**
- **High growth**
- **No differentials (imm/vis min)**
Regions with few immigrants see their participation rate decreases more

Overall participation rate by province 2006-2031

Percentage of immigrants in the labor force by province 2006-2031
Possible labour force shortage for lower skilled jobs and surplus of highly skilled employees

Labour force population growth rate by education and immigrant status

- Total
- non immigrants
- immigrants
Possible labour force shortage for lower skilled jobs and surplus of highly skilled employees

Labour force population growth rate by education and immigrant status
Possible labour force shortage for lower skilled jobs and surplus of highly skilled employees

Labour force population growth rate by education and immigrant status
Towards a knowledge society …

…or an overqualified labour force?

- In 2008, 28% of Canadian waged employees were overqualified.
- Over qualification rates reached 42% for immigrants
- and 60% for immigrants with a university degree

(Gilmore, 2008)

<table>
<thead>
<tr>
<th>Education Level</th>
<th>2006</th>
<th>2031</th>
<th>Variation 2006-2031</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than high school diploma</td>
<td>2663</td>
<td>2425</td>
<td>-9%</td>
</tr>
<tr>
<td>High school diploma only</td>
<td>4601</td>
<td>3023</td>
<td>-34%</td>
</tr>
<tr>
<td>Post-secondary below bachelor level</td>
<td>6507</td>
<td>6874</td>
<td>6%</td>
</tr>
<tr>
<td>Bachelor level or above</td>
<td>3875</td>
<td>9426</td>
<td>143%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>17646</strong></td>
<td><strong>21749</strong></td>
<td><strong>23%</strong></td>
</tr>
</tbody>
</table>
Projection of LF Demand by Broad Skill Levels

HRSDC (2008) Looking Ahead: 10-Year Outlook for the Canadian Labour Market
Five broad skill levels are defined by HRSDC from the National Occupational Classification (NOC 2006):

- **Level 0**: Management
- **Level A**: Professionals (occupations usually requiring university)
- **Level B**: Skilled and Technical (occupations usually requiring college education or apprenticeship training)
- **Level C**: Intermediate and Clerical (occupations generally requiring completion of high secondary school)
- **Level D**: Elemental and Labourers (occupations usually requiring on-the-job training)

**Definition of Overqualification**

Level of education of employee > skill level of the occupied job
Overqualification likely to increase

Over the next 20 years,

- The total growth in LF supply matches the projected demand.
- For technical jobs (Level B) projected supply will be slightly lower than demand.
- For lower skill jobs, the projected mismatch can be important and labor shortages are likely to occur.
- For professional jobs (Level A) growth rate in supply will double the demand.
Towards an older, more educated and more diversified labour force

Percentage of the labour force by selected characteristics, 2006 and 2031

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2031</th>
</tr>
</thead>
<tbody>
<tr>
<td>University graduates</td>
<td>22%</td>
<td>43%</td>
</tr>
<tr>
<td>Immigrants</td>
<td>21%</td>
<td>31%</td>
</tr>
<tr>
<td>Visibles minorities</td>
<td>16%</td>
<td>32%</td>
</tr>
<tr>
<td>55+</td>
<td>14%</td>
<td>23%</td>
</tr>
</tbody>
</table>
Discussion

• Aging Labour force
  – Productivity?

• More Diverse Labour Force
  – Economic Integration
  – Future Literacy Level
  – Fractionalization (ethnic, linguistic and religion)
  – Productivity?

• Skill Level
  – Overqualification
  – Returns of higher education
Conclusion

• Under all scenarios, Canada labour force population will continue to increase in the next 25 years, but its age structure, ethnocultural and educational composition and regional distribution will change rapidly.

• Demographic components of population change have an effect on the size of the future labour force, but cannot modify the future evolution of the overall participation rate, but better economic integration of immigrants can.

• The overall participation rate will decline under all scenarios after 2011-2016, but not dramatically at the Canada level.

• However, some regions are likely to face labour shortage unless the distribution of immigrants change and their concentration in a few large metropolitan areas decreases.
Conclusion

• We are also likely to observe an important change in the educational composition of the labour force, with very rapid increase among most educated and sizable decline among less educated.

• In general, the supply of professionals (University graduates) workers will likely be larger than the demand, while labour shortages can be apprehended for lower skill jobs.

• This can translate into increasing overqualification of the labour force and reducing returns to education.
Thank you

Questions? Comments?

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