Past and Future Shocks: Their Effect on Canada’s Less Educated Workers and Displaced Workers

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Several changes in the socio-economic environment since the early 1950s

- massive entry of women in the labour force
- falling fertility rates
- substantial increases in the educational attainment of the workforce

*** the manufacturing decline
*** huge labour-saving technological changes (e.g. from ICT)

- changes in international trade patterns
- declines in unionization rates
- movements in real minimum wages
- Oil booms and busts
Despite numerous changes in the economic environment, aggregate employment rates did not trend downwards since the early 1950s.

**PERCENTAGE OF WORKING AGE POPULATION EMPLOYED OR EMPLOYED FULL-TIME, CANADA, 1953 TO 2016**

Note: Prior to 1976, the working age population includes individuals aged 14 and over. From 1976 onwards, it includes individuals aged 15 and over.

Source: Statistics Canada, Labour Force Survey
The relative stability of the aggregate full-time employment rate masks falling rates for men and rising rates for women 25+

PERCENTAGE OF POPULATION EMPLOYED FULL-TIME IN THEIR MAIN JOB, 1976-2014
(FULL-TIME STUDENTS EXCLUDED)

Source: Economic Insights, 1 1-626-X — No. 049, July 2015
Data source: Labour Force Survey
As manufacturing employment became less prevalent, the full-time employment rate of less educated men fell

Selected statistics, men aged 25 to 54 with no university degree, 1976 and 2016


The % of women aged 25-54 with no university degree who are employed full-time increased from 36.5% in 1976 to 59.4% in 2016
But as manufacturing employment became less prevalent, other confounding trends emerged

<table>
<thead>
<tr>
<th>Year</th>
<th>1976</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Full-time employment rate --- 25-54 with no university degree</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>88.5%</td>
<td>78.1%</td>
</tr>
<tr>
<td>Women</td>
<td>36.5%</td>
<td>59.4%</td>
</tr>
<tr>
<td><strong>II. Percentage of workers aged 15 to 64 employed in:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturing</td>
<td>19.3%</td>
<td>9.5%</td>
</tr>
<tr>
<td>Construction</td>
<td>7.0%</td>
<td>7.8%</td>
</tr>
<tr>
<td>Mining, quarrying, oil and gas extraction</td>
<td>1.6%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Public administration</td>
<td>6.7%</td>
<td>5.2%</td>
</tr>
<tr>
<td><strong>III. Percentage of labour force participants aged 15 to 64 who:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are women</td>
<td>37.8%</td>
<td>47.6%</td>
</tr>
<tr>
<td>Hold a university degree</td>
<td>9.7%</td>
<td>29.3%</td>
</tr>
<tr>
<td><strong>IV. Percentage of manufacturing workers aged 15 to 64 who:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hold a university degree</td>
<td>4.8%</td>
<td>20.3%</td>
</tr>
</tbody>
</table>
Even after controlling for these confounders, the manufacturing decline remains associated with a decline in the full-time employment rate of less educated men and women.

<table>
<thead>
<tr>
<th>Dependent Variable is:</th>
<th>Region-level changes in full-time employment rates of persons aged 25-54 between 2001-2002 and 2015-2016</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Region-level changes in manufacturing share of total employment between 2001-2002 and 2015-2016</td>
</tr>
<tr>
<td></td>
<td><strong>(1)</strong> Men with no university degree <strong>(2)</strong> Women with no university degree</td>
</tr>
<tr>
<td></td>
<td>0.76** 0.92***</td>
</tr>
</tbody>
</table>

Region-level controls:
- Δ in women's share of the labour force: yes yes
- Δ in the share of the labour force with a university degree: yes yes
- Δ in construction share of total employment: yes yes
- Δ in resource sector share of total employment: yes yes
- Δ in public sector share of total employment: yes yes

N 46 46
R² 0.42 0.65

**** p<0.001; ** p< 0.01; * p< 0.5. Regions with at least 100,000 individuals aged 15 to 64.
The impact of the manufacturing decline among less educated Canadian men has been partly masked by the growing importance of construction for this group.

**PERCENTAGE OF MEN 25-54 WITH NO UNIVERSITY DEGREE EMPLOYED IN MANUFACTURING OR CONSTRUCTION**

**CANADA**

**UNITED STATES**


Since 2000, employment rates and real wages have evolved more favourably among less educated Canadian men than they did among their US counterparts.

### Employment rate of men aged 25-54 with no university degree, 2000 to 2016

- **Canada**
- **United States**


### Median real hourly wages of men aged 25-54 with no university degree, 2000 to 2016

- **Canada**
- **United States**

The same pattern was observed among less educated women

**Employment rate of women aged 25-54 with no university degree, 2000 to 2016**


**Median real hourly wages of women 25-54 with no university degree, 2000 to 2016**


More favourable employment trends in Canada in Education, Health, Social Assistance, Public Administration and Other Services account for 62% of the divergence.
Canadian and US wages started to diverge after world oil prices increased.
Half of the wage growth in Canada from 2000 to 2012 was driven by the oil boom.

**ACCOUNTING FOR CANADA’S REAL HOURLY WAGE GROWTH, 2000-2012**

<table>
<thead>
<tr>
<th>Description</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTUAL PERCENTAGE CHANGE IN REAL WAGES:</td>
<td>7.60 percent</td>
</tr>
<tr>
<td>DIRECT EFFECT OF OIL BOOM WITHIN OIL-PRODUCING PROVINCES</td>
<td>0.24</td>
</tr>
<tr>
<td><strong>SPILLOVER EFFECTS OF OIL BOOM WITHIN OIL-PRODUCING PROVINCES</strong></td>
<td>2.36</td>
</tr>
<tr>
<td><strong>SPILLOVER EFFECTS IN OTHER PROVINCES DUE TO LONG-DISTANCE COMMUTING</strong></td>
<td>0.80</td>
</tr>
<tr>
<td><strong>INDUCED DEMAND IN OTHER PROVINCES</strong></td>
<td>0.30</td>
</tr>
<tr>
<td>TOTAL EXPLAINED</td>
<td>3.70</td>
</tr>
</tbody>
</table>

Source: Green, Morissette, and Sand (2017)
Summary #1

- Aggregate employment rates fairly stable over last 60 years
- Full-time employment rates fell for men and increased for women 25+
- The manufacturing decline (among other factors) reduced the full-time employment rate of less educated men and women
- Less educated Canadian men and women fared better than their US counterparts since the early 2000s
- The oil boom and the better performance of construction in Canada played an important role
Future Shocks

*** Automation / robots ==⇒ Δ+ Job losses?

• Slowdown/reversal of globalization?

• Climate change ==⇒ ΔFood prices? ==⇒ ...
Meanwhile, robot density has increased in many countries

Number of multipurpose industrial robots per 10,000 persons employed in manufacturing, 2007 to 2015

This raises concerns about job prospects overall as well as for less educated workers, given their deteriorating employment rates.

- **79%** of men aged 25-34 with a high school diploma were employed in **2016**, down from **92%** in **1971**.

- In 2016, young men with a high school diploma represented 481,000 individuals, i.e. 19.7% of young men aged 25 to 34.

- *** Increased robot use raised productivity but had no effect on aggregate hours worked (Graetz and Michaels, 2015, cross-country data)

- *** One more robot per thousand workers reduced the employment rate by 0.18-0.34 percentage point and wages by 0.25-0.50 percent (Acemoglu and Restrupeo, 2017, US data)

Layoff rates have not trended upwards in Canada

**Monthly layoff rate for employees aged 25 to 54, 1976 to 2016**
*(LFS data)*

***NO LONG-TERM INCREASE IN LAYOFF RATES IN MANUFACTURING***

***MANUFACTURING FIRMS ADJUSTED MAINLY BY REDUCING HIRING RATES***
Post-displacement paid employment rates hovered around 80%-85% in the 2000s

POST-DISPLACEMENT PAID EMPLOYMENT RATES IN T+1
EMPLOYEES AGED 25-54, 1978-2008

MANUFACTURING
OTHER INDUSTRIES

Source: Morissette, Qiu, and Chan (2013), CJE
But displaced workers with high tenure or a strong attachment to the labour market experienced persistent earnings losses.

### Earnings losses 5 years after displacement --- Averages over 1989-2004

<table>
<thead>
<tr>
<th>Earnings losses</th>
<th>Average number of workers displaced</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>(000's)</td>
</tr>
</tbody>
</table>

#### I. Displaced workers aged 25 to 54 with stable labour market attachment*

<table>
<thead>
<tr>
<th>Men</th>
<th>-23</th>
<th>145</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>-32</td>
<td>46</td>
</tr>
</tbody>
</table>

#### II. High-tenure displaced workers aged 25 to 54**

<table>
<thead>
<tr>
<th>Men</th>
<th>-30</th>
<th>21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>-38</td>
<td>12</td>
</tr>
</tbody>
</table>

Half a million workers 25-54 lose their job every year.

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*Had earnings for at least 6 years prior to job loss and earned at least $10,000 (in 2002 $) from t-6 to t-4.

**Were with the same firm for at least 6 years prior to job loss and earned at least $10,000 (in 2002 $) from t-6 to t-4.

Source: Morissette, Qiu and Chan (CJE, 2013)
Few displaced workers take post-secondary education following job loss

OF ALL EMPLOYEES AGED 30-50 IN 2005, WHAT PERCENTAGE SUBSEQUENTLY TOOK PSE?

MEN

WOMEN

Note: Panel data. Employees with no self-employment income in 2005.

Source: Statistics Canada, Longitudinal Worker File.
Few displaced workers become self-employed or move to other regions following job loss

OF ALL FEMALE EMPLOYEES AGED 30-50 IN 2005, WHAT PERCENTAGE SUBSEQUENTLY:

BECAME SELF-EMPLOYED?

MOVED TO ANOTHER REGION?


Source: Statistics Canada, Longitudinal Worker File.
Summary #2

• Layoff rates did not trend upwards but ...

• ... a small group of high-tenure workers has consistently experienced substantial long-term earnings losses

• Formal self-financed lifelong learning (PSE) not very frequent for displaced workers

• Displaced workers are not that malleable: transition rates to self-employment are low

• Displaced workers move slightly more than non-displaced workers
Future Shocks: Policy-Related Questions

Q1: Is it the “End of Work” (Once Again)?
- CD Howe (2017): No
- Brynjolfsson and MacFee (2014): Maybe

• Humility required, given the difficulty to predict the future

• Given:
  a) the uncertainty about future technological unemployment
  b) what we currently know about worker displacement in Canada

Q2: to what extent, if any, (and if so, how?) should Canada’s safety net be modified/enhanced to assist future displaced workers?
- Enhanced EI benefits?

Q3: to what extent, if any, should the education system and assistance measures for training be modified to increase individuals’ adaptability to shocks?
- Teaching general skills / learning how to learn?

Q4: Will more broad-based measured be needed?
- Universal basic income?
THANK YOU !