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

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Past Shocks

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

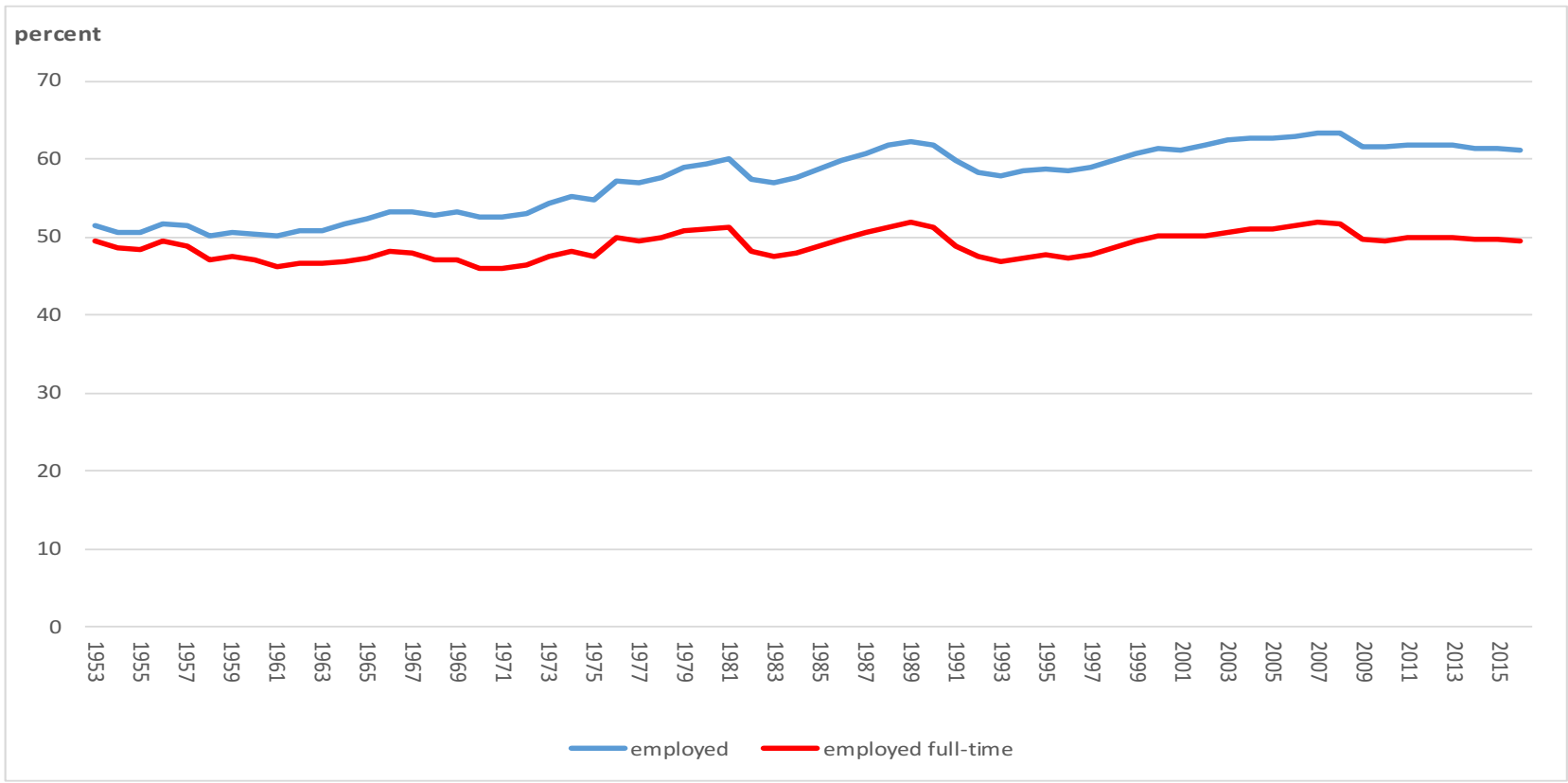
*** the manufacturing decline

*** 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

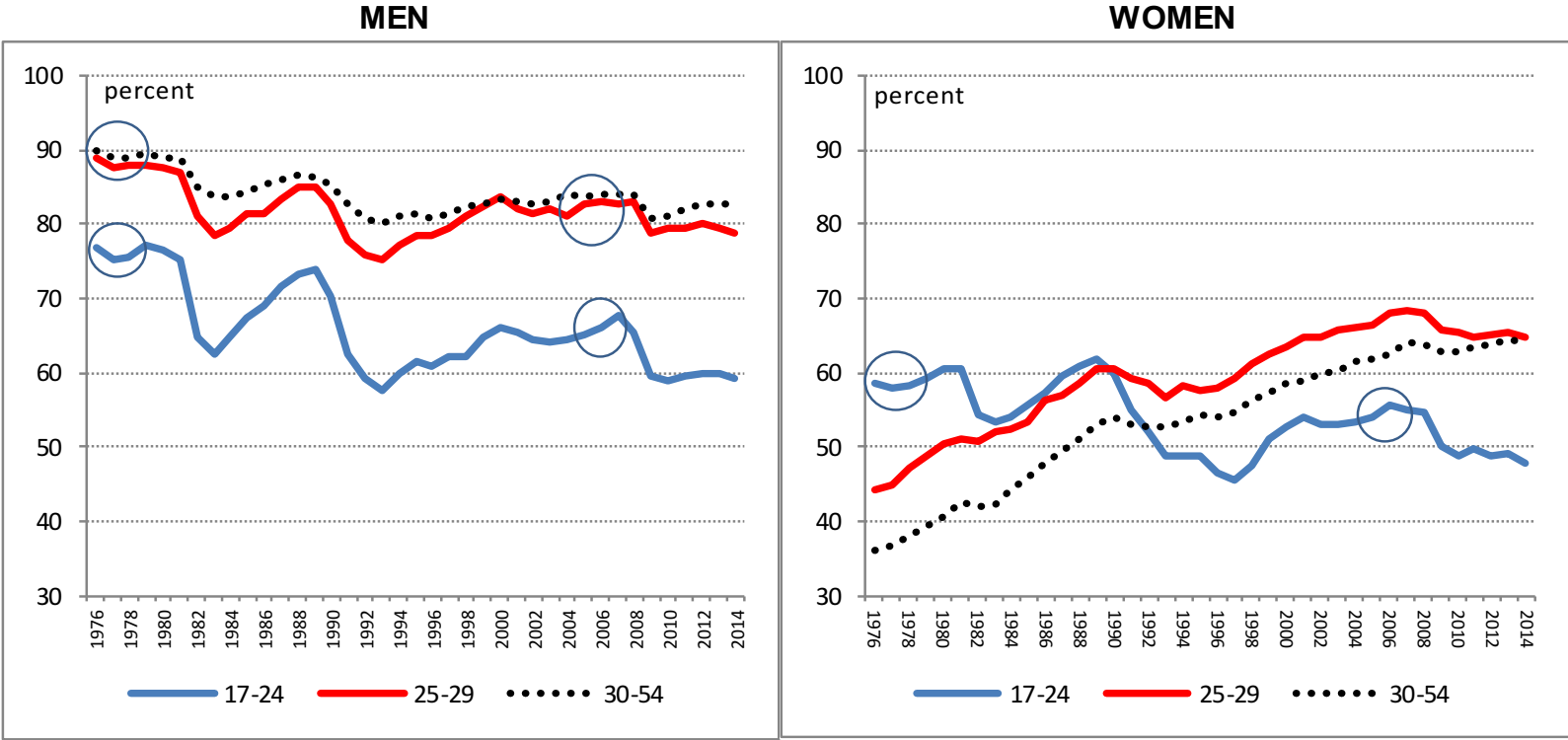


Note: Prior to 1976, the working age population includes individuals aged 14 and over. From 1976 onwards, it includes individuals aged 15 and over.

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+

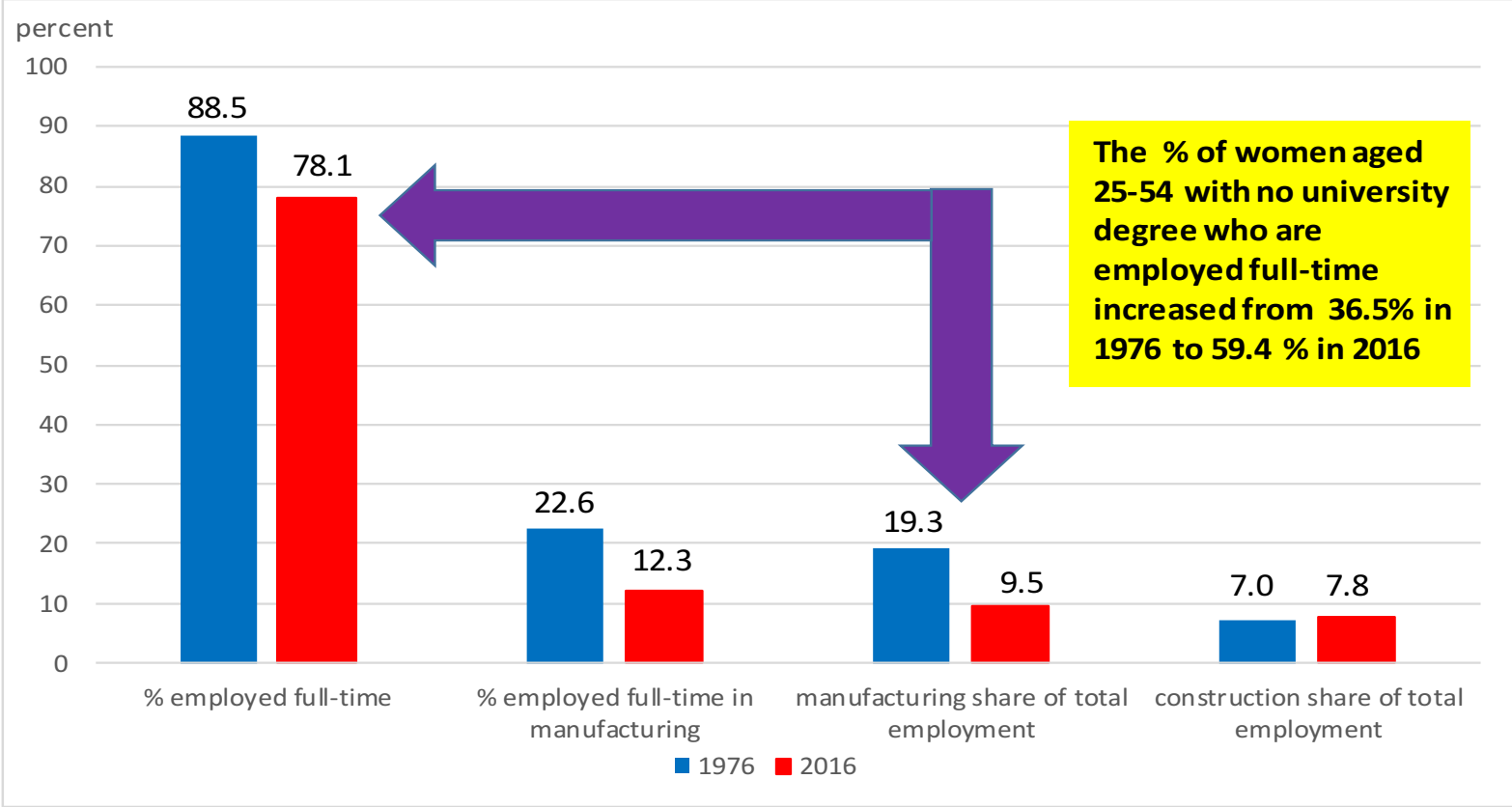
PERCENTAGE OF POPULATION EMPLOYED FULL-TIME IN THEIR MAIN JOB, 1976-2014
(FULL-TIME STUDENTS EXCLUDED)



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



Source: Statistics Canada, Labour Force Survey.

But as manufacturing employment became less prevalent, other confounding trends emerged

Year	1976	2016
	percent	
<i>I. Full-time employment rate --- 25-54 with no university degree</i>		
Men	88.5	78.1
Women	36.5	59.4
<i>II. Percentage of workers aged 15 to 64 employed in:</i>		
Manufacturing	19.3	9.5
Construction	7.0	7.8
Mining, quarrying, oil and gas extraction	1.6	1.5
Public administration	6.7	5.2
<i>III. Percentage of labour force participants aged 15 to 64 who:</i>		
Are women	37.8	47.6
Hold a university degree	9.7	29.3
<i>IV. Percentage of manufacturing workers aged 15 to 64 who:</i>		
Hold a university degree	4.8	20.3

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

Dependent Variable is:

Region-level changes in full-time employment rates of persons aged 25-54 between 2001-2002 and 2015-2016

	(1) Men with no university degree	(2) Women with no university degree
Region-level changes in manufacturing share of total employment between 2001-2002 and 2015-2016	0.76**	0.92***
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
R ²	0.42	0.65

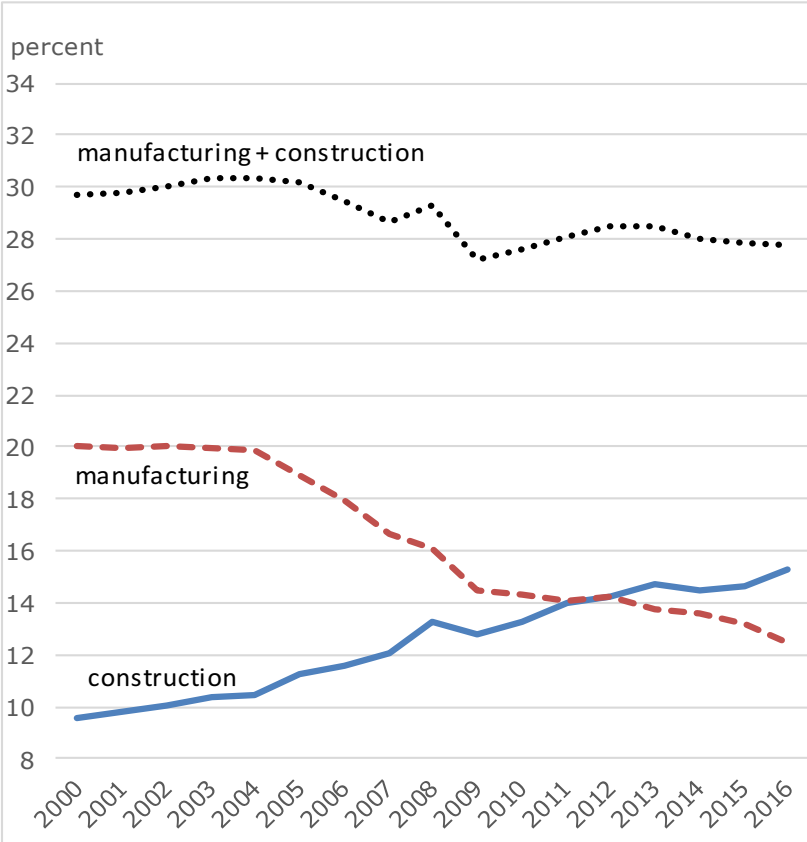
**** p<0.001; ** p< 0.01; * p< 0.5. Regions with at least 100,000 individuals aged 15 to 64.

Source: Statistics Canada, Labour Force Survey.

The impact of the manufacturing decline among less educated Canadian men has been partly masked by the growing importance of construction for this group

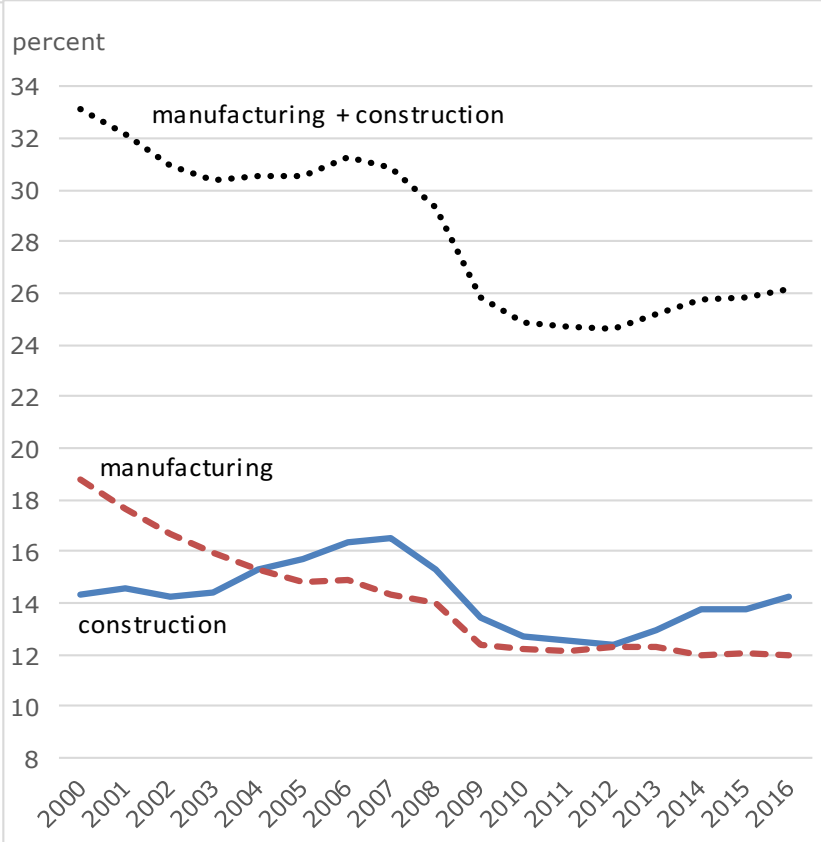
PERCENTAGE OF MEN 25-54 WITH NO UNIVERSITY DEGREE EMPLOYED IN MANUFACTURING OR CONSTRUCTION

CANADA



Source: Statistique Canada, Labour Force Survey.

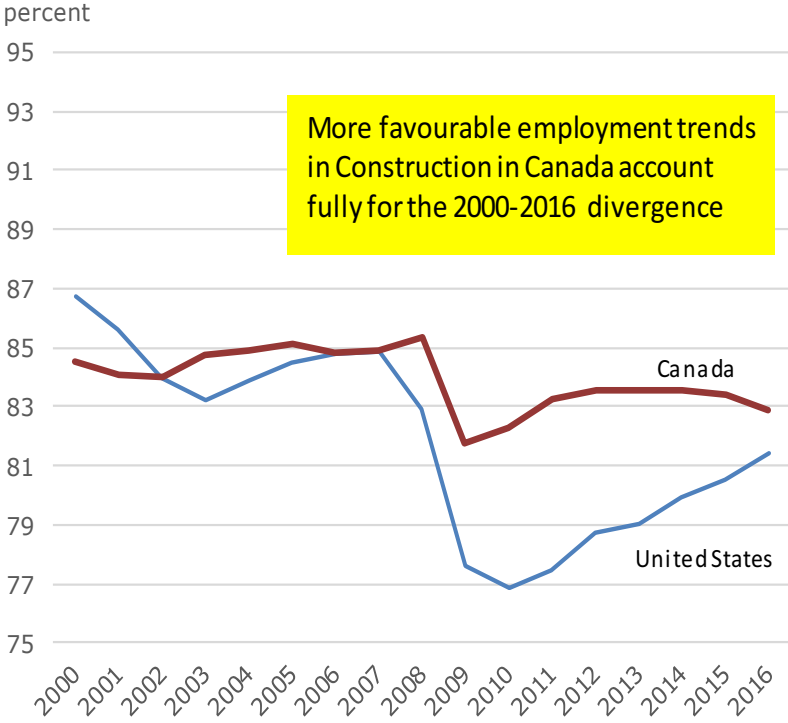
UNITED STATES



Source: Bureau of Labor Statistics, Current Population Survey

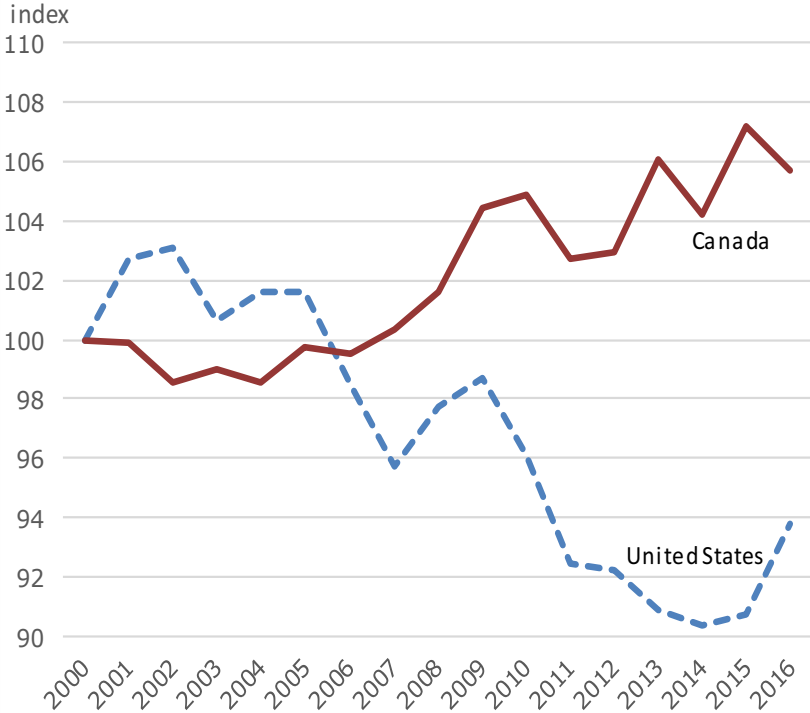
Since 2000, employment rates and real wages have evolved more favourably among less educated Canadian men than they did among their US counterparts

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



Sources: Statistics Canada, Labour Force Survey and Bureau of Labor Statistics, Current Population Survey.

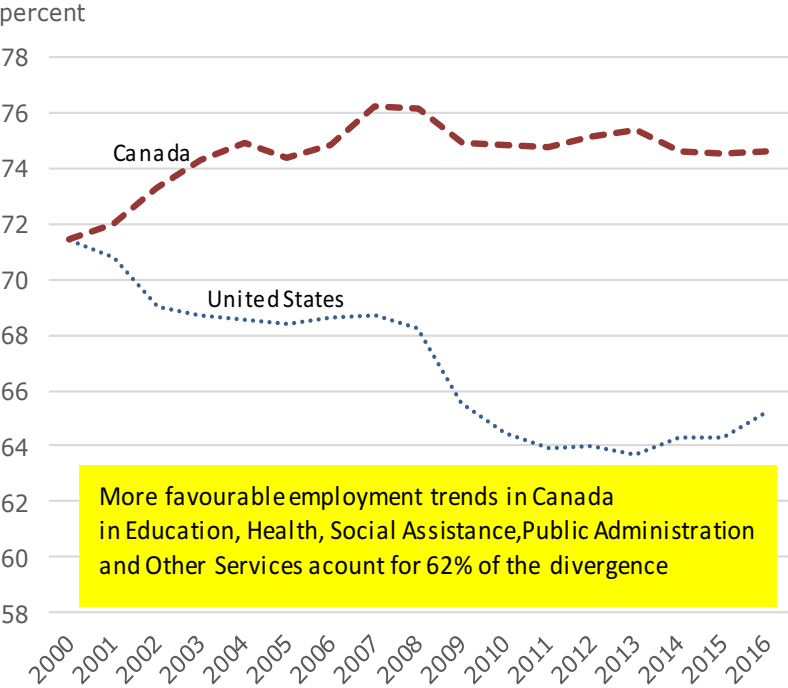
Median real hourly wages of men aged 25-54 with no university degree, 2000 to 2016



Sources: Statistics Canada, Labour Force Survey and Bureau of Labor Statistics, Current Population Survey.

The same pattern was observed among less educated women

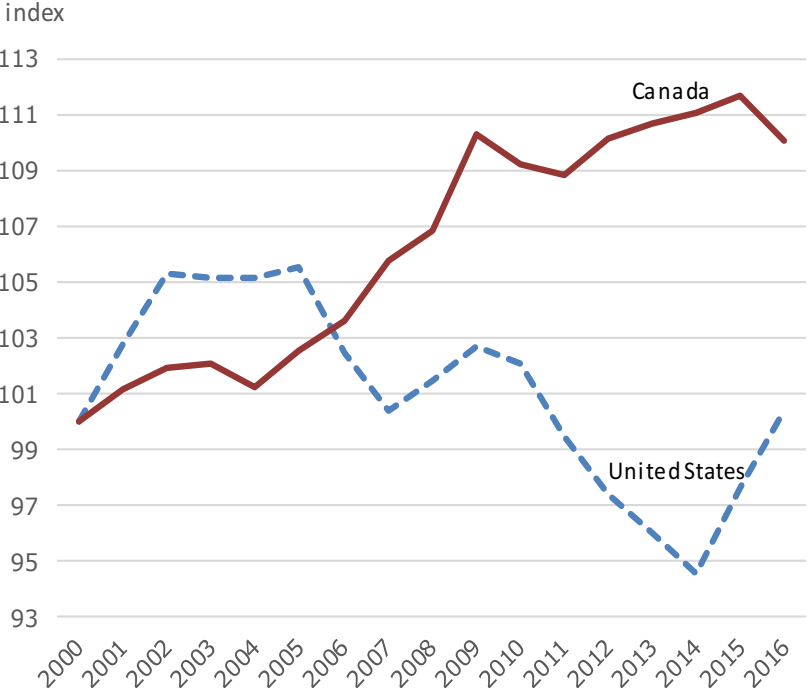
Employment rate of women aged 25-54 with no university degree, 2000 to 2016



More favourable employment trends in Canada in Education, Health, Social Assistance, Public Administration and Other Services account for 62% of the divergence

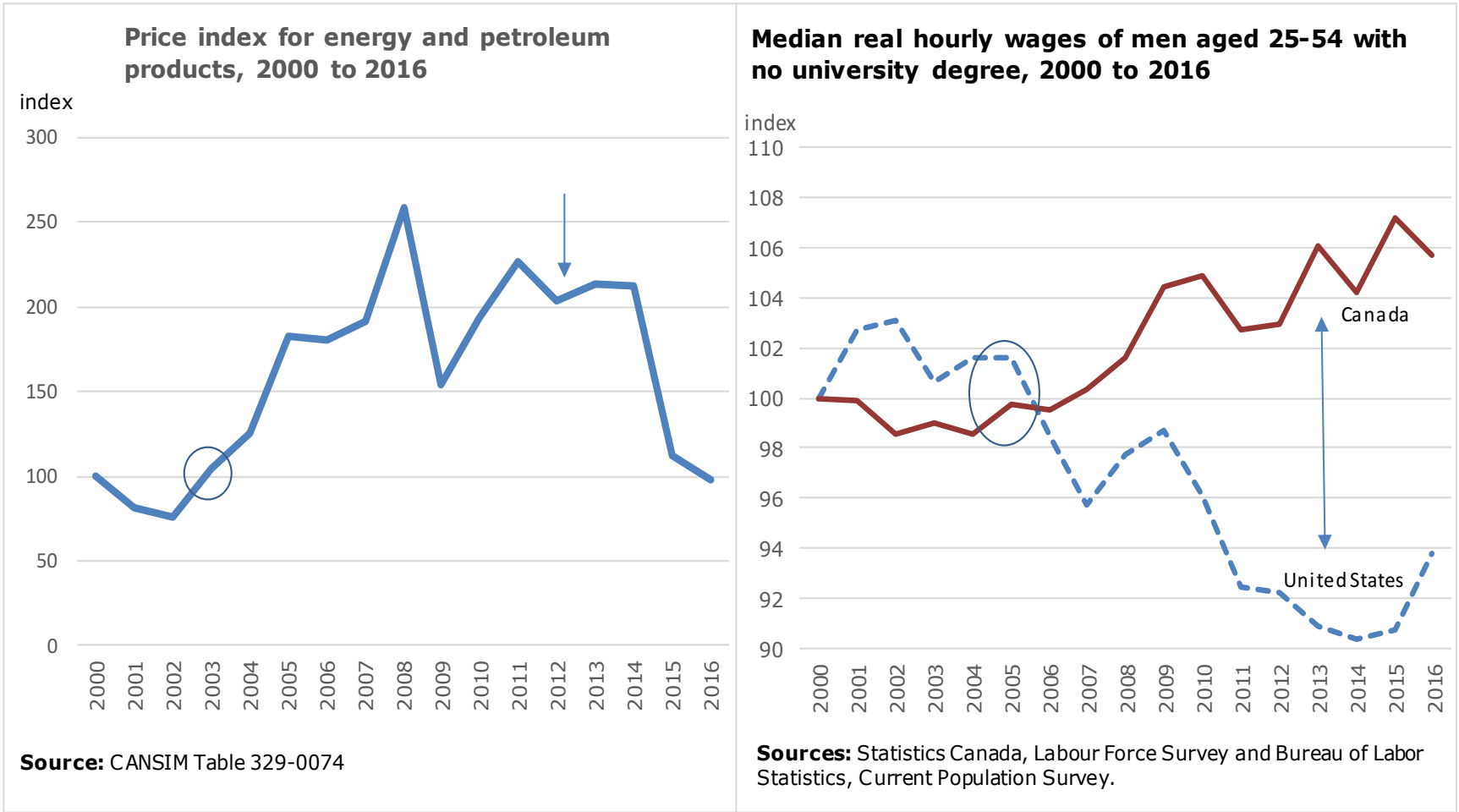
Sources: Statistics Canada, Labour Force Survey and Bureau of Labor Statistics, Current Population Survey.

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



Sources: Statistics Canada, Labour Force Survey and Bureau of Labor Statistics, Current Population Survey.

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

	percent
ACTUAL PERCENTAGE CHANGE IN REAL WAGES:	7.60
<hr/>	
DIRECT EFFECT OF OIL BOOM WITHIN OIL-PRODUCING PROVINCES	0.24
SPILLOVER EFFECTS OF OIL BOOM WITHIN OIL-PRODUCING PROVINCES	2.36
SPILLOVER EFFECTS IN OTHER PROVINCES DUE TO LONG-DISTANCE COMMUTING	0.80
INDUCED DEMAND IN OTHER PROVINCES	0.30
TOTAL EXPLAINED	3.70

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**

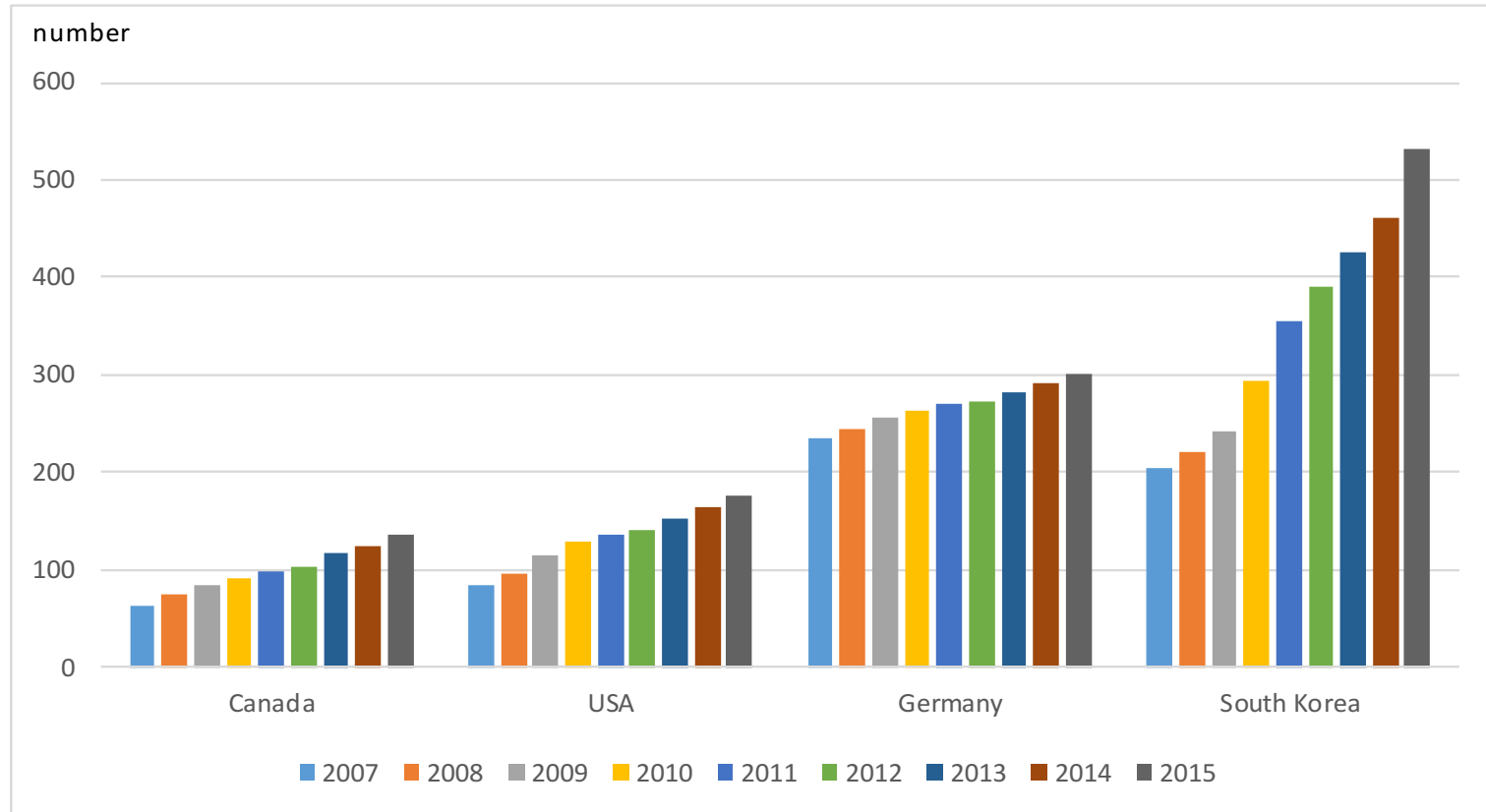
Future Shocks

***** Automation / robots \implies $\Delta+$ Job losses?**

- **Slowdown/reversal of globalization?**
- **Climate change \implies Δ Food prices? \implies ...**

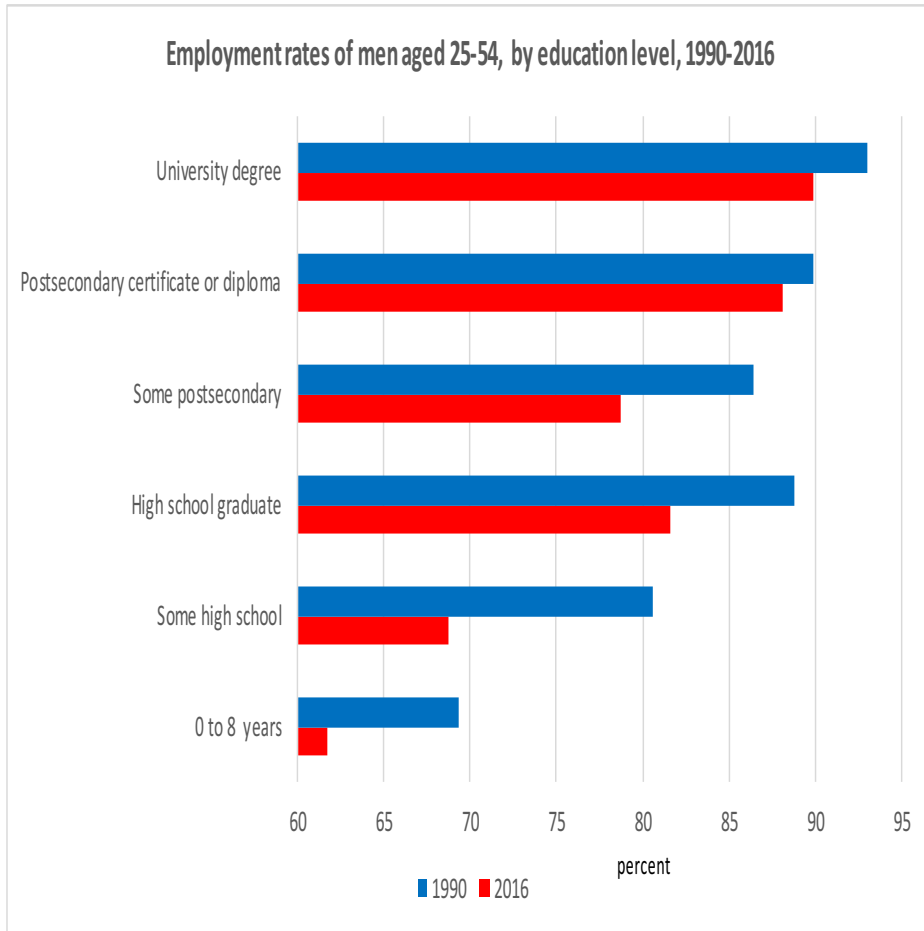
Meanwhile, robot density has increased in many countries

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



Source: International Federation of Robotics, World Robotics Industrial Robots 2016.

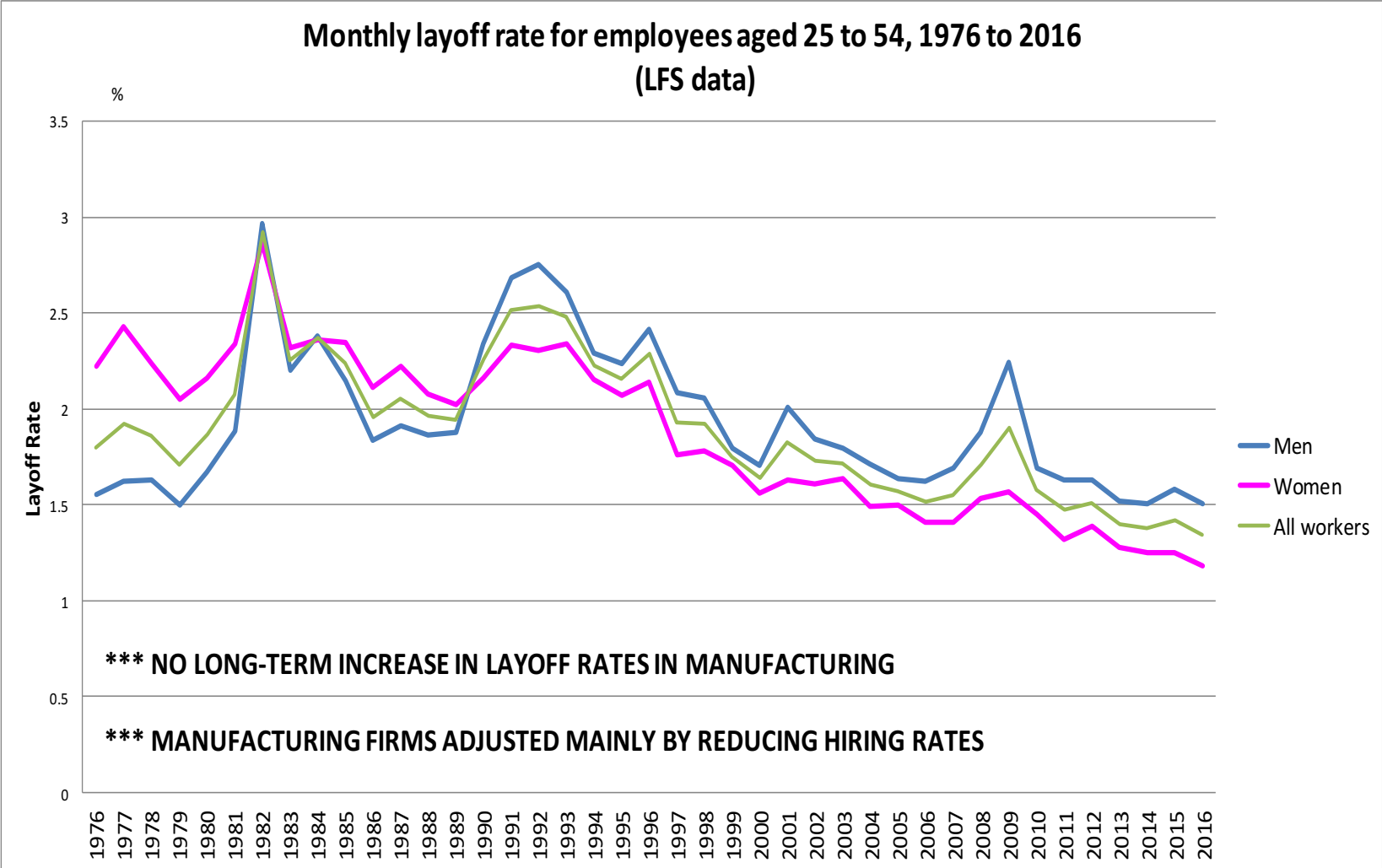
This raises concerns about job prospects overall as well as for less educated workers, given their deteriorating employment rates



Source: Statistics Canada, Labour Force Survey.

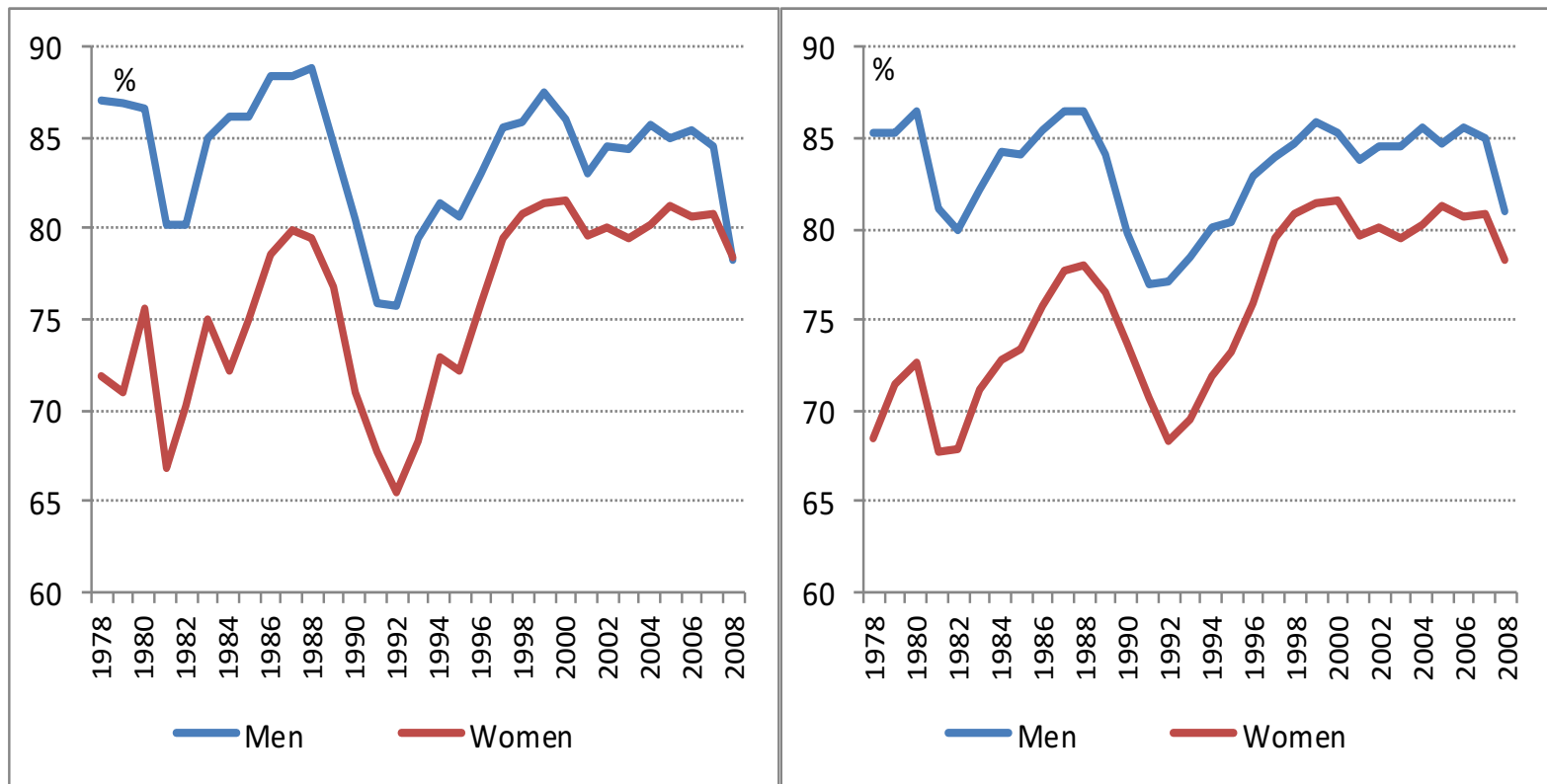
- **79%** of men aged 25-34 with a high school diploma were employed in **2016**, down from **92%** in **1971**.
- In 2016, young men with a high school diploma represented 481,000 individuals, i.e. 19.7% of young men aged 25 to 34.
- ***** Increased robot use raised productivity but had no effect on 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



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

	Earnings losses %	Average number of workers displaced (000's)
<i>I. Displaced workers aged 25 to 54 with stable labour market attachment*</i>		
Men	-23	145
Women	-32	46
<i>II. High-tenure displaced workers aged 25 to 54**</i>		
Men	-30	21
Women	-38	12

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

*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.

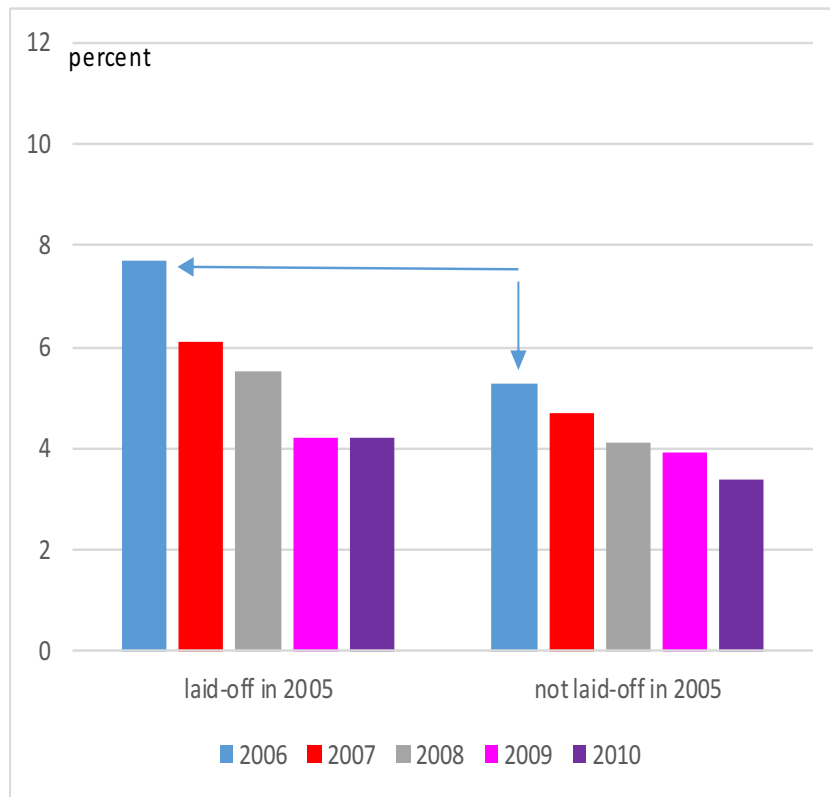
**Were with the same firm for at least 6 years prior to job loss and earned at least \$10,000 (in 2002 \$) from t-6 to t-4.

Source: Morissette, Qiu and Chan (CJE, 2013)

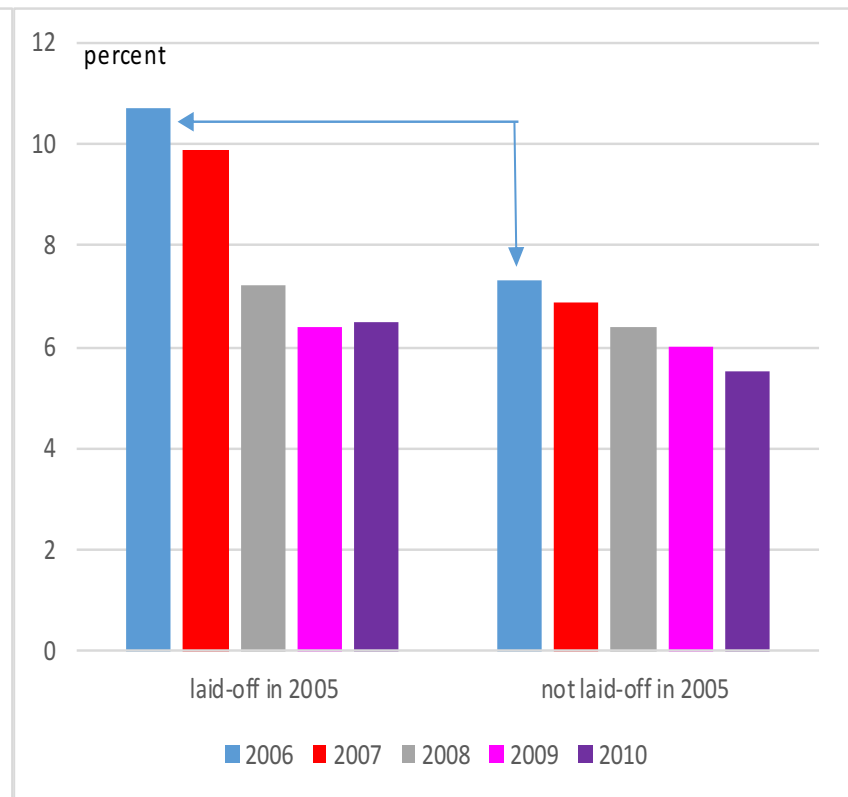
Few displaced workers take post-secondary education following job loss

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

MEN



WOMEN

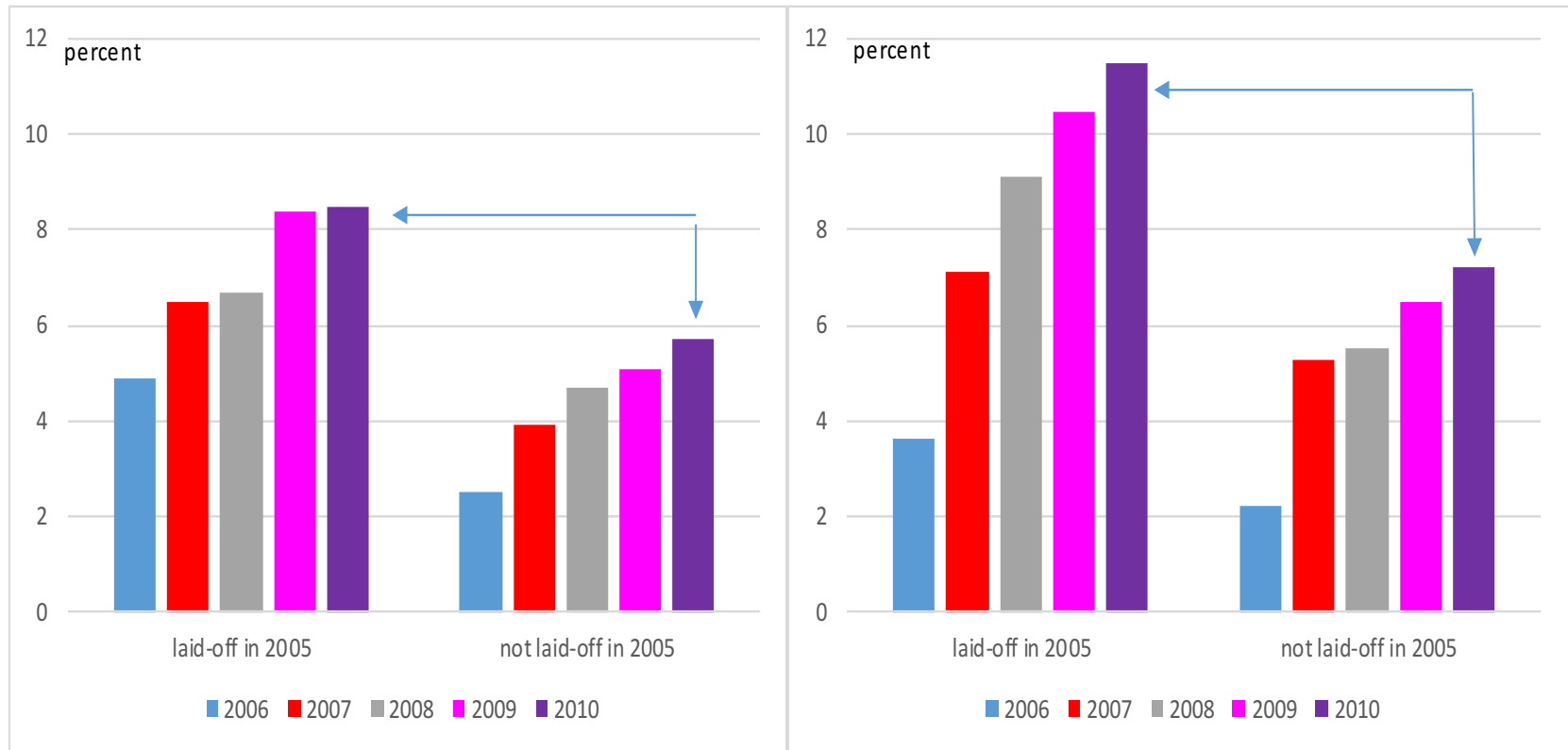


Note: Panel data. Employees with no self-employment income in 2005.

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?



Note: Panel data. Female employees with no self-employment income in 2005. Becoming self-employed means having some income from self-employment.

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
- Brynjolffson 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?
- Wage Insurance for high-tenure displaced workers? (Lalonde, 2007; Riddell, 2011)

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 measures be needed?

- Universal basic income?

THANK YOU !