Dispelling Minimum Wage Mythology

The Minimum Wage and the Impact on Jobs in Canada, 1983–2012

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Summary

Every time a provincial government debates whether to raise its minimum wage, employer advocates protest loudly that a higher minimum wage will reduce employment. Boosting minimum wages may be well-intentioned, employers and some economists argue, but will end up hurting those it was meant to help. Making some thing more expensive, they argue, means less of it will be purchased. In contrast, other economists and social advocates point to the potential economic benefits of higher minimum wages — including stronger consumer purchasing power, higher productivity, and better employee retention. There is no conclusive outcome to this debate on a theoretical level; whether the positive effects outweigh the negative effects therefore becomes an empirical question.

To that end, this report takes a detailed empirical look at the relationship between minimum wages and employment in all ten Canadian provinces between 1983 and 2012. It finds almost no evidence of any connection whatsoever between higher minimum wages and employment levels in Canada. And where an empirical connection is found, it is almost as likely to be positive as negative: in other words, in many cases higher minimum wages were associated with higher employment (not lower). The report confirms that employment levels are overwhelmingly determined by larger macro-

economic factors (such as the state of aggregate demand and GDP growth), and are not very sensitive at all to wage regulations.

The report's major features and findings include:

- The report casts a wide empirical net in search of any evidence that higher minimum wages reduce employment or increase unemployment.

- Seven regressions were conducted using historical data for each province from 1983 through 2012. These regressions covered several different potential indicators by which minimum wages have been held to cause significant harm to employment outcomes — including total employment, employment and unemployment rates, youth-specific employment and unemployment rates, and sector-specific employment in low-wage sectors (namely, retail and hospitality).

- 90 per cent of the tests indicated no statistically significant relationship whatsoever between a higher minimum wage and labour market outcomes in Canada.

- In seven of the 70 regressions the minimum wage was found to be a statistically significant determinant of employment or unemployment. However, of these cases, the effect was seen to be positive (leading to higher employment or lower unemployment) almost as often (in three cases) as it was seen to be negative (four cases).

- Even when the analysis is focused on those segments of the labour market where low wages are most common (among young workers, and in the retail and hospitality sectors), there was no consistent evidence of significant disemployment effects from higher minimum wages.

- Claims that higher minimum wages will inevitably cause measurable negative consequences (especially for young workers and those in low-wage industries) are not consistent with empirical evidence from the Canadian provinces. Minimum wage regulations do not have important consequences on employment outcomes in either direction. Not surprisingly, employment outcomes depend first and foremost on the overall level of spending and macroeconomic activity.

Introduction

Important policy debates continue to occur in many Canadian provinces regarding proposed increases in statutory minimum wage levels. For example, Ontario appointed a formal advisory panel to review the issue and recommend a future policy framework; its final report (Minimum Wage Advisory Panel, 2014) proposed annual increases in the minimum wage indexed to consumer price inflation. The provincial government has since boosted the statutory minimum to $11 per hour, and accepted the recommendation for annual CPI indexing. Other provinces are also debating increases in their minimum wages. Similar debates are occurring in the U.S., the U.K. and elsewhere.

The economic and social problems arising from the phenomenon of low-wage work and poverty among employed people are increasingly recognized. Stronger minimum wages can be an important and effective tool in boosting earnings for low-waged workers, promoting greater equality across employed persons, stabilizing or improving the total labour income share of GDP, and reducing poverty. It is important to note that the minimum wage is not *solely* an anti-poverty measure; it has a broader effect in strengthening labour incomes. However, the main argument typically lobbed against higher minimum wages is the belief among some economists and policy makers that a higher minimum wage will result in lower employment and higher unemployment — especially among those low-wage workers for whom the policy is intended to help. Debates over whether those negative labour market side effects exist and are significant, and whether they outweigh the positive distributional effects of higher minimum wages, will continue to dominate future debates over minimum wage policy (Yalnizyan, 2014).

This study aims to shed some concrete empirical light, in the Canadian context, on this long and inconclusive debate. We recognize potential chains of causation through which a higher minimum wage could negatively affect labour market outcomes. But other chains of behaviour and adjustment are also possible through which higher minimum wages would have no effect, or even a positive effect, on employment outcomes. The final outcome reflects a balance of forces and hence must be determined empirically: which of these potential and contradictory effects are strongest, and is their effect visible in real-world labour market data?

We start by reviewing the different and contradictory potential employment effects of minimum wage changes in theory. Then the paper describes an econometric exercise in which regressions are conducted (using a range

of different potential labour market variables) to determine whether changes in minimum wages have had a visible impact on labour market performance in each of the Canadian provinces (after adjusting for macroeconomic conditions). We find that in almost all of the 70 cases reviewed (7 different regressions in each of the 10 provinces), no statistically significant relationship is found between minimum wages and labour market outcomes. And in the few cases where a statistical relationship was detectable, the effect of the minimum wage on labour market outcomes was split: in some cases the consequences were negative while, in other cases, they were positive.
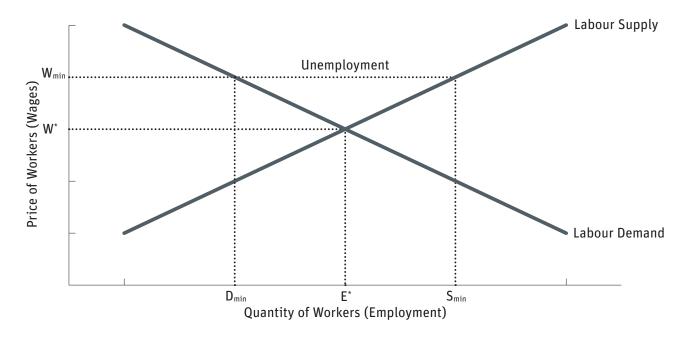
These findings support the continued and expanded use of the minimum wage as an important lever of labour market policy. The goal is to support workers' efforts to wrest a fairer share of their output in the form of labour compensation. The minimum wage assists many workers in this regard further up the income ladder, not just those working for the statutory minimum. Stronger labour compensation, in turn, supports household living standards, a more equal distribution of income, and reduced poverty among employed people. Policy makers do not need to worry about offsetting reductions in employment as a significant side effect of this effort — especially if higher minimum wages are introduced gradually and regularly, and are accompanied by other measures to stimulate employment and purchasing power in the economy.

Theoretical Perspectives

There is a vast and contradictory academic literature regarding the effects of the minimum wage on labour market outcomes, including employment, participation, and unemployment. Recent attempts to survey and synthesize this vast literature include Belman and Wolfson (2014), Bradley (2013), Bunker *et al*. (2012), Hall and Cooper (2012), and Schmitt (2013).

Some researchers have defined very focused experiments attempting to ascertain whether and to what extent changes in the minimum wage affect labour market outcomes — for example, zeroing in on a specific incidence of a minimum wage change in a specific locality and attempting to control for the many other factors which influence employment behaviour. Some studies find a negative impact of a higher minimum wage on employment — though the impact is usually very small, some find no statistically reliable impact, and a few even find positive impacts. Making it more complex to interpret this literature is the fact that academic journals are biased

FIGURE 1 Free-Market Analysis of Minimum Wages

in favour of publishing studies which *do* find significant results, a problem explored by Doucouliagos and Stanley, 2009.

Opponents of a higher minimum wage often make a simple argument: if labour is more expensive, employers will "buy" less of it. Like any other commodity, it is argued, demand for labour (that is, employers' willingness to hire) is inversely related to its price. So it is natural to assume that boosting the minimum wage will naturally spur labour shedding by employers, defeating the goal of boosting workers' incomes. The assumption is that workers with jobs receive higher incomes, but many workers lose their jobs, and society as a whole is worse off.

This story is often depicted graphically, using the standard supply and demand "cross" diagram (*Figure 1*). In theory, a flexible wage will autono-mously fluctuate so as to equalize labour supply and demand, and hence unemployment should not exist—so long as this perfectly self-adjusting labour market is left to its own devices. Well-meaning governments, how-ever, intrude into this self-equilibrating nirvana, circumventing the market-clearing wage with a statutory minimum (or by using similar interventions to boost wages, such as union contracts). The theory holds that employers hire less, perhaps replacing workers with machines, or perhaps downsiz-ing business altogether. More workers may be encouraged to join the labour

market, inspired by higher wages. The result is the creation of unemployment (measured by the difference between D_{min}, what employers are willing to hire at the minimum wage, and S_{min}, the number of workers willing to work at that inflated wage).

The problem with this simple analysis is that labour is not like any other commodity, for many reasons.[1] Most fundamentally, employers never purchase labour as an end its own right. Employers hire workers in order to produce a good or service that is then sold into a product market (in hopes, in the private sector, of generating a profit for the business owner and/or shareholders). The demand for labour is thus a derived demand, which depends entirely on the final demand for the product that labour produces.

Many factors affect product demand and employment, including overall macroeconomic conditions, business profitability (if a business is unusually profitable its owners may choose to expand), export sales, and other factors. One important demand side factor is the level of consumer spending in the economy. After all, consumption expenditure is the largest single component of GDP by expenditure, making up around half of all expenditure in the economy. In this regard, labour demand is not independent from the price that is paid to labour — because higher wages can feed back into stronger consumer spending, stronger product demand conditions, and more hiring. For this reason, even drawing a downward-sloping labour demand curve as in *Figure 1* is not credible: certainly not for the overall economy, and potentially not even for particular industries or large employers (especially those that depend heavily on localized consumer purchases — like retail trade and hospitality).

In the current sluggish macroeconomic environment, many economists have noted the negative effects on labour demand of the long-run squeeze on real wages that has been experienced in the wake of anti-worker policies (including restrictions on collective bargaining, wage freezes, and other wage-suppressing strategies). Given the weak outlook for many other components of aggregate demand (including government austerity, an uncertain outlook for exports, and perpetually disappointing business capital spending), the importance of consumer spending to the overall macroeconomic outlook cannot be exaggerated. Low or stagnant wages also exacerbate the problem of high consumer debt-to-income ratios — after all, incomes are just as important in the denominator of that ratio as indebtedness is in the numerator — which has created public concern, financial uncertainty, and consumer caution. For all these reasons, it is likely that the conditions for wage-led growth, in which the expansionary impact of higher wages on con-

sumer spending outweighs any negative demand side effects on business investment or exports, are relatively strong in the current environment (see Lavoie and Stockhammer, 2012).

There are other reasons why higher minimum wages will not generally translate directly into reduced employment, via the assumed downward-sloping labour demand curve illustrated in *Figure 1*. First off, an increase in the minimum wage will translate only partially into an increase in the average wage, since minimum wage workers, and those better paid workers whose wages are still linked to the minimum,[2] make up only a portion of total employment.

Secondly, the impact of a higher minimum wage on unit labour costs, which is more important to employers than nominal hourly wages, is further muted by additional side effects and adjustments on the part of employers (Hirsch *et al.*, 2011). A higher minimum wage is shown to be associated with higher labour productivity for several potential reasons, including greater loyalty and work effort by better compensated workers, more attention to performance standards by employers, and more investments by employers in innovation and technology instead of relying on cheap labour as their core business strategy. Another benefit of a higher minimum wage is documented reductions in labour turnover, which leads to lower recruitment, training, and retention costs for employers. All of these factors imply that any final increase in nominal unit labour costs facing employers will be much smaller than the initial increase in the statutory minimum.

Many low-wage employers will be able to pass at least some of the additional unit labour costs they may experience after an increase in the minimum wage on to their consumers in the form of higher prices — depending, of course, on the intensity of competition in product markets and the overall vibrancy of consumer spending. This will produce an increase in the relative price of goods and services that depend disproportionately on inputs of low-wage labour. But this does not imply any deterioration in the general demand for labour. And this pass-through effect would protect the profit margins of low-wage employers, despite the higher cost of this important input to their businesses.

Even to the extent that a higher minimum wage does translate into reduced profitability for employers, especially in industries which depend disproportionately on minimum wage labour, the eventual impact on employment levels will be partial and indirect. Many low-wage employers can clearly afford to pay higher unit labour costs and experience modestly lower profitability while still remaining a competitive and viable business. Chan-

ges in profitability in Canada in recent years have been very weakly (if at all) associated with changes in business investment. For example, the large improvement in after-tax profitability recorded in Canada since the turn of the century — reflecting both strong pre-tax profit and the effect of corporate tax cuts — seems to have had no relationship to levels of business capital spending. Instead, it seems to have been reflected in the emergence of large and growing stockpiles of liquid assets on the part of corporations whose cash flow now exceeds their capital investments.

In short, a more complete and balanced theoretical understanding of the workings of the labour market predicts varied and conflicting effects on employment from changes in the minimum wage. To be sure, if a higher minimum wage results in significant increases in nominal unit labour costs, which cannot be passed on in the form of higher nominal product prices and negatively affect the profitability of employers who have no above-normal profit cushion to be able to stay in business, then a higher minimum wage will be associated with reduced employment in some cases. But there are a lot of "ifs" in that chain of causation. In most cases, a higher minimum wage will have no significant impact on realized unit labour costs or profitability.

Only by examining real-world historical experience, can we hope to judge which effects on labour market performance — negative, positive, or neutral — predominate. And for that reason, this study will conduct a broad review of historical labour market data from Canadian provinces in search of any consistent, significant relationship between minimum wages and labour market performance.

Empirical Results

This study examines labour market data for 10 Canadian provinces, using a set of simple benchmark econometric regressions in which aggregate labour market outcomes are compared to a macroeconomic control variable and to changes in the minimum wage (adjusted for inflation). The reasoning is that if minimum wages had any significant impact on broader labour market performance, it should be visible in these province-wide regressions.

In each province, we test whether changes in the minimum wage have any statistically significant impact on province-wide employment and unemployment, measured by absolute employment, the employment rate as a share of the working age population, and the unemployment rate as a share of the labour force[3]. It is often argued that a higher minimum wage will have

TABLE 1 Summary of Regression Results

Total Set of Regressions	Minimum Wage Effect	Direction	Jurisdiction
70 (10 Provinces × 7 Variables)	No Impact = 63		
	Impactful = 7	Negative Impact = 4	Nova Scotia: (1) Employment (2) Employment Rate New Brunswick: (3) Employment Manitoba: (4) Unemployment Rate
		Positive Impact = 3	Ontario: (1) Unemployment Rate 15–24 Saskatchewan: (2) Employment (3) Employment Rate

Province	Statistical Significance		Adjusted R-Squared (Range)
	GDP	Lagged GDP	
Newfoundland & Labrador	6/7	1/7	8–30
Prince Edward Island	6/7	1/7	3–24
Nova Scotia	3/7	0/7	31–45
New Brunswick	3/7	0/7	7–25
Quebec	5/7	0/7	56–68
Ontario	6/7	5/7	72–79
Manitoba	5/7	2/7	16–48
Saskatchewan	2/7	0/7	10–15
Alberta	5/7	5/7	59–65
British Columbia	5/7	5/7	53–75
Totals	**46/70**	**19/70**	–

Source Authors' calculations as described in text; detailed equation-by-equation results are reported in the Appendix.

the most significant negative impact on those sections of the labour market where low-wage labour is most important: including among young workers and in low-wage service occupations such as fast-food restaurants, retail shops, and similar settings. Hence we conduct four additional regressions in each province on disaggregated data: the employment and unemployment rates of young workers (aged 15 to 24) as well as absolute employment levels in the retail trade and hospitality sectors.[4] A full explanation of our methodology is detailed in the Appendix.

A summary of the econometric results is provided in *Table 1*. Detailed results from each set of regressions for each province are reported in Appendix *Table A2*.

In only seven of the 70 regressions was the real minimum wage found to be a statistically significant determinant of employment or unemployment, which means that in 90 per cent of the tests performed, there was no evidence of a statistically significant relationship between changes in the minimum wage and labour market outcomes. This suggests that in the overwhelming majority of cases, gradual increases in the minimum wage were not generative of negative labour market outcomes in Canadian provinces.

Even among the seven tests that did yield a statistically significant result, the labour market impact was nearly evenly split between positive and negative outcomes. In four instances, there were negative labour market outcomes associated with an increase in the minimum wage: in Nova Scotia, absolute employment and the employment rate; in New Brunswick, absolute employment; and in Manitoba, the unemployment rate.

Offsetting these four negative results were three positive labour market outcomes, in which a higher minimum wage was associated with stronger employment conditions: in Ontario, the unemployment rate among youth (aged 15–24); and in Saskatchewan, absolute employment and the employment rate. And among those seven statistically significant results, the general level of significance was relatively weak: zero were significant at the one per cent level, three were significant at 5 per cent, and four were significant at the 10 per cent level. This reaffirms the general finding of our work that the minimum wage, in general, has not been a major determinant of changes in employment or unemployment in Canadian provinces.

If labour market outcomes cannot be attributed to minimum wage legislation, this does not imply that an explanation of the former is shrouded in mystery. The macroeconomic control variable — aggregate demand — measured using both GDP and lagged GDP, plays a crucial role in labour market outcomes. In two-thirds of the tests performed, GDP was found to play a statistically significant role and in roughly one-quarter of the cases, lagged GDP also played a statistically significant role.

This result is stronger in larger provinces and weaker in smaller provinces. For instance, in Ontario, Quebec, Alberta and British Columbia, GDP is a significant determinant of labour market outcomes in five or six of the seven labour market measures. This contrasts with Nova Scotia, New Brunswick and Saskatchewan, which only registered GDP as being a statistically significant variable in three of the seven labour market measures.

The same pattern holds when we shift from GDP to lagged GDP. In Ontario, Alberta, and British Columbia, lagged GDP registered as a statistically significant variable in five of seven labour market variables, whereas in the

Maritimes, lagged GDP did not register as a statistically significant factor at all. Perhaps in the larger provinces, aggregate employment and unemployment outcomes are more predictably related to macroeconomic conditions, rather than being influenced by more particular regional events or shocks.

Shifts in aggregate demand conditions are clearly the dominant source of variation in provincial labour market outcomes. The strength of the fit of the regressions (measured by adjusted R-squared) was also stronger in the larger provinces than in the smaller provinces. In Quebec, for instance, one-half to two-thirds of the variation in employment outcomes was attributable to shifts in aggregate demand. In Ontario, the fit is even stronger, ranging from two-thirds on the low end to three-quarters on the high end. Comparable results are found in Alberta and British Columbia. In smaller provinces, the fit of the equations is weaker, once again perhaps reflecting the relatively stronger impact of location-specific events or other transitory features visible in more disaggregated regional data.

Conclusion

We find almost no evidence of any connection between a higher minimum wage and employment levels. Labour market performance in Canadian provinces appears to be driven overwhelmingly by demand conditions. Even in the few cases where the minimum wage seems to have an impact on labour market aggregates, it is almost as likely to be a positive effect as a negative effect. Fear of disemployment effects are overblown by those with a vested interest in keeping wages down. Canadian policy makers should feel confident to move ahead with boosting the minimum wage, hopefully toward a living wage level,[5] in a gradual and ongoing manner, with no fear that doing so will negatively shock employment levels.

The other implication of our analysis is the importance of managing the demand side of the labour market, with an emphasis on job creation. If employment outcomes are positively associated with demand conditions, then it is logical to suppose that strengthening demand conditions will positively feed back into employment outcomes. Over the long haul, there appear to be two key drivers of demand conditions (captured through GDP growth rates): the proportion of society engaged in labour market activities (i.e., the employment rate) and business spending on industrial capacity. If this is true, then it follows that GDP growth can be accelerated if a higher pro-

portion of the working-age population secures stable, productive, and fairly remunerated work.

There are two broad pathways to achieve this goal: one is through the private sector — the favoured option of most governments in recent decades — and the other is through the public sector. Measures to accelerate business capital spending and job creation through more effective industrial, trade, and tax policies can play a role. But if the private sector is unwilling to put Canadians back to work, or will only do so in highly precarious positions, including part-time or temporary work, then it is left to the public sector to pick up the slack. Ambitious public works programs, including infrastructure improvements, green energy projects, and a renewal of social infrastructure — of the kind launched during and after the Second World War — could spur job creation, including indirectly stimulating the private sector to boost hiring (through stronger macroeconomic conditions).

Combining these efforts to strengthen the quality of jobs, including through higher minimum wages, with an ambitious strategy to expand the quantity of jobs through stronger macroeconomic performance, could help Canadians finally achieve the access to decent, readily available work that has evaded so many for so long.

Appendix

Empirical Methodology

ANNUAL DATA FOR each province for each of seven dependent variables are available from 1983 through 2012. Those dependent variables include total employment, the total employment rate, the total unemployment rate, the employment rate for 15–24 year olds, the unemployment rate for 15–24 year olds, and employment in the retail and hospitality sectors. Province-wide data on employment, employment rates, and unemployment rates, including the latter two for the 15–24 age cohort, were attained from Labour Force Survey sources (CANSIM Table 282-0002). Sector-specific employment levels by province are also available from the Labour Force Survey (CANSIM Table 282-0008).

Recognizing that demand side factors will be important influences on labour market behaviour, current and lagged[6] provincial GDP variables are included as independent variables in each regression. This controls for cyclical macroeconomic impacts on employment and unemployment. For regressions of absolute employment levels and the unemployment rate, the absolute level of provincial real GDP is most appropriate. For the employment rate regressions, which are scaled to population, it is more appropriate to use provincial real GDP per capita, also scaled to population. Annual provincial real expenditure-based GDP series were attained from CANSIM Table 384-0038 and per capita series were calculated on the basis of population data in CANSIM Table 051-0001.

Variable	NFL	PEI	NS	NB	QC	ON	MB	SK	AB	BC
Employment	1	1	1	1	1	5	1	1	1	1
Employment: Hospitality	1	1	1	1	1	1	1	1	1	1
Employment: Retail	1	1	1	1	1	1	1	–	1	1
'Real' GDP	1	1	5	1	1	1	1	1	1	1
'Real' GDP per Capita	1	1	5	1	1	1	1	–	1	1
'Real' Minimum Wage	1	1	1	1	10	1	–	1	1	1
Employment Rate	1	1	1	1	1	1	1	1	1	1
Employment Rate 15–24	5	1	1	1	1	5	1	1	1	1
Unemployment Rate	1	1	1	1	1	1	1	1	1	1
Unemployment Rate 15–24	1	1	1	1	1	1	1	1	1	1

Note The data indicates the percent level of confidence at which the hypothesis of a unit root (that is, a secular trend) can be rejected for each variable (measured in first-differences).
Source Authors' calculations as described in the text.

Data on the other major independent variable considered in the regressions were developed as follows. The Labour Program of the federal Ministry of Labour maintains a convenient database cataloguing all changes in provincial minimum wage rates dating back to 1965. The annual average minimum wage for each province was constructed from that data on a calendar-weighted basis. Those annual averages, in turn, were converted into inflation-adjusted terms using provincial consumer price indices (attained from CANSIM Table 326-0021).

For each province, therefore, the analysis consists of seven different regressions, generating 70 regressions in total, each linking a dependent labour market variable to a measure of real GDP and the real minimum wage. As with most economic time series, the stationarity of variables is a concern, so the regressions were conducted in first-difference terms. All first-differenced variables were tested for the presence of a unit root (ie. a secular trend); the results of these tests are summarized in *Table A1*. With almost no exceptions, all first-differenced variables were stationary at (at least) the 10 percent level of significance, and hence it is legitimate to conduct these regressions without risk of spurious time-series correlation.

Table A2 reports the main output of each of the 70 regressions, including the coefficients and level of significance of the independent variables, and the adjusted R^2 for each regression.

Dependant Variable	Sample	Coefficient on GDP	Coefficient on Lagged GDP	Coefficient on Minimum Wage	Adjusted R-Squared
Newfoundland & Labrador					
Employment	1983–2012	0.306 (3.424)***	0.097 (1.007)	0.034 (0.333)	0.270
Employment: Hospitality	1983–2012	0.776 (2.263)**	0.029 (0.078)	0.305 (0.775)	0.075
Employment: Retail Trade	1988–2012	0.402 (1.504)	-0.197 (-0.663)	-0.203 (-0.593)	-0.002
Employment Rate†	1983–2012	14.634 (3.498)***	5.272 (1.179)	3.451 (0.691)	0.302
Employment Rate: 15–24†	1983–2012	13.888 (2.071)**	14.594 (2.035)*	6.428 (0.803)	0.198
Unemployment Rate	1983–2012	-12.996 (-2.423)**	-1.847 (-0.318)	-0.790 (-0.128)	0.102
Unemployment Rate: 15–24	1983–2012	-17.957 (-2.208)**	-0.504 (-0.057)	1.673 (0.179)	0.074
Prince Edward Island					
Employment	1983–2012	0.288 (2.574)**	0.068 (0.587)	-0.009 (-0.097)	0.115
Employment: Hospitality	1983–2012	0.589 (0.942)	0.710 (-1.108)	-0.079 (-0.150)	-0.020
Employment: Retail Trade	1988–2012	0.952 (1.998)*	0.916 (2.084)**	0.438 (1.390)	0.235
Employment Rate†	1983–2012	12.560 (1.983)*	2.591 (0.392)	-1.415 (-0.264)	0.034
Employment Rate: 15–24†	1983–2012	33.294 (2.290)**	12.932 (0.851)	-8.521 (-0.692)	0.101
Unemployment Rate	1983–2012	-14.433 (-1.937)*	-6.268 (-0.820)	0.884 (0.140)	0.039
Unemployment Rate: 15–24	1983–2012	-32.581 (-2.471)**	-4.054 (-0.300)	10.182 (0.914)	0.109
Nova Scotia					
Employment	1983–2012	0.407 (3.089)***	0.106 (0.770)	-0.154 (-2.593)**	0.453
Employment: Hospitality	1983–2012	1.309 (1.595)	-0.599 (-0.701)	-0.329 (-0.886)	0.010
Employment: Retail Trade	1988–2012	0.946 (1.652)	-0.393 (-0.621)	-0.282 (-1.177)	0.020
Employment Rate†	1983–2012	19.860 (2.599)**	5.312 (0.678)	-7.215 (-2.158)**	0.339
Employment Rate: 15–24†	1983–2012	38.47 (2.4688)**	22.323 (1.398)	-5.331 (-0.782)	0.309
Unemployment Rate	1983–2012	-15.701 (-1.690)	4.679 (0.483)	6.801 (1.618)	0.091
Unemployment Rate: 15–24	1983–2012	-21.757 (-1.055)	-6.145 (-0.286)	9.082 (0.974)	0.015
New Brunswick					
Employment	1983–2012	0.215 (1.869)*	0.115 (0.893)	-0.153 (-1.736)*	0.245
Employment: Hospitality	1983–2012	0.547 (1.113)	0.699 (1.268)	-0.283 (-0.748)	0.096
Employment: Retail Trade	1988–2012	-0.293 (-0.546)	0.587 (1.138)	0.035 (0.120)	-0.072
Employment Rate†	1983–2012	11.219 (1.752)*	6.834 (0.971)	-6.480 (-1.359)	0.195
Employment Rate: 15–24†	1983–2012	20.238 (1.455)	24.187 (1.582)	-8.902 (-0.859)	0.182
Unemployment Rate	1983–2012	-5.585 (-.842)**	-9.690 (-1.302)	3.850 (0.753)	0.077
Unemployment Rate: 15–24	1983–2012	-3.894 (-0.349)	-19.385 (-1.548)	1.673 (1.280)	0.139

Dependant Variable	Sample	Coefficient on GDP	Coefficient on Lagged GDP	Coefficient on Minimum Wage	Adjusted R-Squared
Quebec					
Employment	1983–2012	0.534 (5.081)***	0.102 (1.127)	-0.098 (-1.594)	0.576
Employment: Hospitality	1983–2012	0.063 (0.121)	-0.219 (-0.488)	-0.031 (-0.102)	-0.105
Employment: Retail Trade	1988–2012	-0.091 (-0.237)	0.509 (1.227)	-0.147 (-0.456)	0.005
Employment Rate†	1983–2012	29.887 (5.251)***	5.926 (1.175)	-5.031 (-1.407)	0.606
Employment Rate: 15–24†	1983–2012	74.150 (4.535)***	6.946 (0.480)	-10.443 (-1.017)	0.490
Unemployment Rate	1983–2012	-35.666 (-6.962)***	-4.301 -0.977	0.239 0.080	0.682
Unemployment Rate: 15–24	1983–2012	-70.685 (-5.695)***	0.365 0.034	5.224 (0.718)	0.559
Ontario					
Employment	1983–2012	0.411 (6.479)***	0.225 (3.632)***	-0.065 (-1.317)	0.788
Employment: Hospitality	1983–2012	0.453 (1.816)*	0.221 (0.908)	-0.020 (-0.101)	0.129
Employment: Retail Trade	1988–2012	0.052 (0.264)	0.139 (0.500)	-0.291 (-1.381)	0.211
Employment Rate †	1983–2012	25.245 (6.130)***	13.989 (3.484)***	-3.753 (-1.202)	0.765
Employment Rate: 15–24 †	1983–2012	50.422 (6.426)***	26.996 (3.529)***	-3.560 (-0.599)	0.765
Unemployment Rate	1983–2012	-29.955 (-6.678)***	-12.389 (-2.834)***	-3.945 (-1.121)	0.722
Unemployment Rate: 15–24	1983–2012	-49.687 (-7.109)***	-23.777 (-3.491)***	-9.930 (-1.811)*	0.755
Manitoba					
Employment	1983–2012	0.224 (3.318)***	0.075 (1.183)	-0.007 (-0.115)	0.247
Employment: Hospitality	1983–2012	-0.196 (-0.486)	0.083 (-0.217)	-0.471 (-1.346)	-0.032
Employment: Retail Trade	1988–2012	0.010 (0.027)	-0.076 (-0.214)	0.069 (0.250)	-0.138
Employment Rate†	1983–2012	12.458 (3.152)***	4.509 (1.226)	4.201 (-1.223)	0.275
Employment Rate: 15–24†	1983–2012	19.438 (1.917)*	19.085 (2.023)*	-9.306 (-1.056)	0.169
Unemployment Rate	1983–2012	-15.084 (-4.426)***	-7.357 (-2.289)**	5.799 (1.961)*	0.480
Unemployment Rate: 15–24	1983–2012	-14.839 (-1.972)*	-11.780 (-1.660)	8.710 (1.334)	0.159
Saskatchewan					
Employment	1983–2012	0.111 (1.650)	-0.009 (-0.135)	0.114 (1.822)*	0.107
Employment: Hospitality	1983–2012	0.155 (0.719)	-0.276 (-1.324)	-0.006 (-0.027)	-0.026
Employment: Retail Trade	1988–2012	0.214 (0.960)	0.116 (0.524)	0.051 (0.228)	-0.077
Employment Rate†	1983–2012	5.816 (1.780)*	-0.426 (-0.135)	6.771 (2.165)**	0.154
Employment Rate: 15–24†	1983–2012	9.766 (1.175)	-4.279 (-0.534)	12.728 (1.600)	0.046
Unemployment Rate	1983–2012	-5.510 (-1.879)*	-3.846 (-1.353)	-2.092 (-0.76)	0.096
Unemployment Rate: 15–24	1983–2012	-8.954 (-1.453)	0.212 (0.036)	-5.057 (-0.875)	0.002

Dependant Variable	Sample	Coefficient on GDP	Coefficient on Lagged GDP	Coefficient on Minimum Wage	Adjusted R-Squared
Alberta					
Employment	1983–2012	0.299 (4.390)***	0.298 (4.607)***	0.022 (0.458)	0.586
Employment: Hospitality	1983–2012	-0.165 (-0.546)	0.030 (0.106)	-0.202 (-0.950)	-0.066
Employment: Retail Trade	1988–2012	0.308 (1.278)	0.045 (0.189)	0.133 (0.866)	-0.033
Employment Rate†	1983–2012	18.440 (4.985)***	14.485 (4.287)***	-0.374 (-0.136)	0.605
Employment Rate: 15–24†	1983–2012	31.071 (4.3108)***	22.328 (3.392)***	0.808 (0.151)	0.508
Unemployment Rate	1983–2012	-27.148 (-6.649)***	-12.524 (-3.228)***	0.241 (0.084)	0.650
Unemployment Rate: 15–24	1983–2012	-37.992 (-6.139)***	-14.056 (-2.390)**	2.043 (0.469)	0.590
British Columbia					
Employment	1983–2012	0.471 (4.524)***	0.262 (3.135)***	0.001 (0.027)	0.536
Employment: Hospitality	1983–2012	-0.005 (-0.011)	0.625 (1.688)	-0.076 (-0.353)	-0.002
Employment: Retail Trade	1988–2012	0.456 (0.975)	0.286 (0.641)	-0.088 (-0.467)	-0.047
Employment Rate†	1983–2012	25.450 (4.475)***	12.254 (2.686)**	0.616 (0.218)	0.531
Employment Rate: 15–24†	1983–2012	57.706 (4.728)***	37.082 (3.795)***	-5.161 (-0.854)	0.616
Unemployment Rate	1983–2012	-35.797 (-7.129)***	-18.500 (-4.584)***	-2.065 (-0.880)	0.749
Unemployment Rate: 15–24	1983–2012	-60.924 (-5.557)***	-23.965 (-2.719)**	-0.969 (-0.189)	0.592

Sources Employment and unemployment figures from Statistics Canada CANSIM Tables 282-0002 and 282-0008; provincial GDP data from CANSIM Table 384-0038; provincial population data from CANSIM Table 051-0001; provincial consumer price indices from CANSIM Table 326-0021; minimum wage from the Government of Canada's Minimum Wage Database, http://srv116.services.gc.ca/dimt-wid/sm-mw/menu.aspx?lang=eng.

Note † Employment rate regressions use GDP per capita as the independent aggregate demand variable.

*** indicates coefficient is significant at the 1% level, ** at the 5% level, and * at the 10% level.

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Notes

1 For alternative theoretical perspectives on the functioning of real-world labour markets that critique the standard neoclassical approach and propose alternative explanations of observed behaviour, see Bowles *et al.* (2005), Hein *et al.* (2006), or Stanford (2010).

2 The "trickle-up" effect of minimum wage increases, whereby knock-on wage increases are also enjoyed by workers at higher wages in order to preserve their relative position to the statutory minimum, is well-recognized in empirical studies of minimum wage effects. See, for example, Harris and Kearney (2014), and Neumark *et al.*, (2004).

3 Each of these variables could be affected differently by changes in minimum wages, depending on how the channel of causation is experienced: via changes in absolute employment, relative employment, labour force supply, and other potential transmission mechanisms; hence, consistent with our methodological strategy of "casting a wide net," we test all three measures.

4 Hospitality as defined by Statistics Canada includes all accommodation and food service providers.

5 Various research in the U.S., Canada, and other jurisdictions in recent years has aimed to define and measure a "living wage" benchmark, at which level a family could pay for the basic costs associated with minimal standards of health and social participation; see Pollin *et al.* (2008), Brennan (2012), and Ivanova and Klein (2012) for examples.

6 Employer hiring and firing decisions typically respond to changes in demand conditions with a lag, thus justifying the inclusion of the lagged GDP term in the regression.