TOWARDS A RENEWED PERSPECTIVE ON TEACHING MINIMUM WAGE

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Abstract

The objective in this paper is to show how the textbook treatment of minimum wage can be enhanced. This is done by contrasting textbook material with that from the popular press and think tank analyses and by including a review of the empirical evidence. Three extensions of the standard model on minimum wage are delineated – the use of an inelastic demand curve for labor, incorporation of the boom and bust cycle, and the monopsony model. The debate around the profile of the minimum wage worker is introduced to show students how data can be marshalled by opposing sides of the debate. A simple exercise on the disemployment effect is also introduced in a bid to motivate students with real life data. These enhancements to the textbook material offer a more comprehensive understanding than the simplistic standard model.

Key words: minimum wage, disemployment effect, profile of minimum wage worker, monopsony

JEL Classification: A22, J380

Introduction

About two decades ago, Krueger (2001) argued for a renewed perspective on teaching minimum wage at the first-year level when students are introduced to the principles of economics. He asserted that it was hard to think of any other economic policy that affects first year students. Additionally, he opined that the treatment of minimum wage at the principles ECON 101 level is quite superficial compared to its coverage in an undergraduate labor economics textbook. Therefore, he argued for the incorporation of alternative economic models including the monopsony model, which is usually taught at the intermediate microeconomics level, along with empirical evidence on minimum wages at the ECON 101 level.

The presentation of minimum wage at the ECON 101 level based on popular principles textbooks continues to revolve predominately around the basic demand supply model approach that was initially propounded by Stigler (1946). The basic lesson hammered into students is that of the disemployment effect that arises as a consequence of a binding price floor. But as first year economics students face alternative arguments in wake of the move towards $15 minimum wage, increasing inequality, concerns on low paying jobs and student debt, and the debate on social media, it is a disservice to economics students to simply cover the basic model and rush through this topic without adequately addressing the full breadth of arguments, both in favor and in opposition to the increase in minimum wage, as they appear in media articles.

The objective in this paper, therefore, is to determine how the ECON 101 textbook treatment of minimum wage can be complemented not only by Krueger's aforementioned suggestions but also by drawing from how the discussion is shaped by academics, think tank

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experts and journalists in media articles. This paper is divided into seven sections. The next section draws out main themes from the discussion on minimum wage in Canadian textbooks and media articles (mostly in the context of Alberta). The idea is to tabulate how Canadian textbooks fail to comprehensively touch upon these themes and therefore to support the case for complementing the textbook exposition with discussion from media articles. The third section follows up on Krueger's suggestion to delineate how the empirical evidence on minimum wage offers a nuanced picture in contrast to the simplistic standard demand and supply model.

The fourth section focuses on extending the standard model with the case of inelastic demand curve for labor, the relevance of the boom and bust cycle, and by building on Krueger's suggestion to present the monopsony model. The idea is to show that with these extensions, students at the principles level can better understand how the disemployment effect in the standard model is mitigated. The fifth section delineates the representation of the minimum wage worker in the media, which is a focal point in the debate on raising the minimum wage. The idea is to show how the same data can be presented differently to bolster the case of both opponents and advocates of the minimum wage. The sixth section shows how the disemployment effect is differently reported in media analyses. It also shows the use of simple calculations, based on Sonn and Lathrop (2016), that first year students can perform to gauge the disemployment effect. The seventh section provides concluding remarks.

Media articles versus Canadian ECON 101 textbooks

The differential treatment of minimum wage in Canadian textbooks

Many textbooks used in the Canadian context predominately focus on the standard theoretical model. However, while some are skewed towards arguments from the opponents of minimum wage, others highlight arguments from the advocates of minimum wage.

Mankiw, Kneebone, and McKenzie (2020) predominately emphasize the negative impact of minimum wage by presenting arguments that high minimum wage causes unemployment, encourages teenagers to drop out of school and prevents some workers from obtaining on the job training. They emphasize the empirical result that a 10% increase in minimum wage reduces teenage employment between 1% and 3%. Parkin and Bade (2015), Hubbard, O'Brien, Serletis and Childs (2017), and Ragan (2020) substantiate that the impact of minimum wage in a Canadian context is more adverse than in the U.S, that is, between 3% and 5%. As an alternative to minimum wage, Hubbard et al. (2017) mention that the Earned Income Tax Credit (EITC) reduces the tax liability of low-wage workers and places a lesser burden on small businesses.

Karlan, Morduch, Alam and Wong (2017), Sexton, Fortura and Kovacs (2010), and Cohen (2015) adopt a relatively more balanced approach and provide arguments in support of the advocates of minimum wage. Karlan et al. (2017) connect minimum wage with efficiency wage to argue that higher minimum wage would incentivize firms to hold on to experienced workers and that workers would work harder to avoid being fired. Sexton, Fortura and Kovacs (2010) mention the beliefs held by some that the unemployment cost would be a reasonable price for ensuring a decent wage. Cohen (2015) mentions that hundreds of economists including five Nobel Prize winners believe that the benefits of minimum wage outweigh the costs. He asserts that evidence suggests that minimum wage has little to zero effect on employment and that most beneficiaries are adult, female, and the working poor.

Yet, none of these texts provide a comprehensive treatment on minimum wage in one place and therefore do not capture the multi-faceted discussions in media articles. This necessitates

complementing the terse textbook exposition with the rich discussion based on media and some think tank articles as follows.

The opponents and proponents of minimum wage in the media
Disemployment effects

Businesses and conservative politicians often exaggerate the adverse impact of minimum wage by alluding to job losses, business shutdowns and reduction in labor hours that affect young, low skilled and people of color workers (Sonn and Lathrop 2016). Often such opponents of minimum wage do not make the nuanced argument that the minimum wage could be raised too high, phased in quickly, or instituted when the economy is too weak to absorb the change (Hanaeur May 6, 2016).

Reduced benefits for youth

Advocates argue that increasing minimum wage contributes to less debt accumulation among students. However, opponents argue that raising minimum wage would lead to fewer opportunities for new entrants in the labor force, reduced school enrollment among teenagers and higher school dropout rate (CBC News, June 5, 2017). Moreover, reduction in training due to minimum wage would prevent low wage workers from developing skills, which could lead to long term reduction in family income (Congressional Budget Office 2019).

Automation

Opponents allude to Lordan and Neumark (2018) indicating that based on thirty years of data, increases in minimum wage resulted in increased automation. However, automation is driven more by the falling price of capital partly due to computerization irrespective of any minimum wage increase (Corak Jan 7, 2018). Additionally, minimum wage jobs including food preparation, childcare and eldercare do not facilitate replacing labor with technology (Reich, Allegretto and Godoey 2017).

The costs to small businesses

Opponents argue that minimum wage workers are typically employed in competitive, low margin industries and that raising minimum wage exacerbates costs for small businesses. However, Yalnizyan (June 2, 2017) questions why businesses and many economists decry the rise in minimum wage when they remain quiet about rising compensation of senior management and CEOs.

Benefits of minimum wage – purchasing power

Advocates of minimum wage allude to the benefits of increased purchasing power in big cities with stagnant wages and rising housing costs. They argue that lower income households contribute all of their higher income to local spending in contrast to higher income households who save or spend any additional income on vacations and imported goods. However, opponents indicate that any increase in consumption could be offset by a decrease in investment by employers (Gunderson 2008), that prices and interest rates would rise to dampen consumption (Dunstan 2018) and that the share of total consumers at the lower end of income distribution is small (Brouillette, Cheung, Gao and Gervais 2017).

Benefits of minimum wage – Productivity and cost efficiencies

Advocates allege that even if some jobs are lost, the benefits of raising the minimum wage include less turnover and employee absenteeism, fewer sick days, longer staff retention, improved staff morale, lower financial stress, lower recruitment and training costs. However, the argument that increasing minimum wage induces labor to become more productive or incentivizes firms to introduce cost saving efficiencies assumes that firms were not maximizing profits in the first place.

Alternatives to minimum wage – EITC/WITB

Opponents support alternatives to minimum wage including Earned Income Tax Credit (EITC) in the U.S. or the Working Income Tax Credit (WITB) in Canada, as they do not distort incentives to work. They argue that increasing the minimum wage would push the working poor to a higher tax bracket, which may lead to the claw back of income support. However, advocates argue that a higher minimum wage would lessen the burden on social support programs and that workers need a stable income throughout the year and not just a break at tax time (Fargasso-Marquis May 1, 2017).

Other alternatives to minimum wage

Opponents support a training tax credit that would be given when small firms hire and train new workers (Braun-Pollon, DeMarco and Wong 2011). However, advocates believe that job creation and skill training are secondary and focus on low wage jobs as drivers of poverty. They mention that higher paid, unionized, manufacturing jobs have been replaced by lower paid, non-unionized retail and customer service jobs (Tencer May 31, 2016). Therefore, they argue for a shift from easy to access low wage jobs with high turnover to stable jobs with higher wages and low turnover that are harder to get.

In summary, media analyses highlight the effects of minimum wage including disemployment effects, reduced benefits for youth, automation, costs to small businesses, benefits of purchasing power and productivity apart from alternatives to minimum wage. However, the treatment of minimum wage in a single textbook is quite narrow in scope and does not prepare students along all facets of the discussion on minimum wage. Appendix I, which also includes the issues of pegging minimum wage and poverty alleviation, shows the themes that each Canadian textbook fails to consider. Generally, the textbook treatment of the discussion is often cursory, which necessitates the use of discussions in media articles to complement the textbook material.

Empirical evidence

The empirical evidence provides a more nuanced view than is usually depicted in ECON 101 textbooks. It does not necessarily support the consensus view that a 10% increase in minimum wage reduces teenage employment between 1% and 3%. Challenging this view, Krueger (2001) argued for the incorporation of empirical evidence on minimum wages at the ECON 101 level. He argued that this view is based on theoretical reasoning and early time series studies that did not have the benefit of natural experiments and better econometric techniques including panel data estimation and difference in differences methods.

Like Krueger, Edagbami (2006) indicates that time series studies dominated the literature until the early 1980s when they were challenged by panel data studies that found little to no disemployment effects. He suggests that there are three phases of research on minimum wage. The first phase, until the early 1980s, based on time series data, supported the traditional consensus. In the second phase, Card and Krueger (2000) in the U.S. challenged that viewpoint. However, in the

third phase, the consensus viewpoint was re-validated. Some allude to Neumark and Wascher (2007), which substantiated the consensus view on the basis of 100 minimum wage studies. However, Doucouliagos and Stanley (2009) offered a meta-study of 64 studies between 1972 and 2007 to highlight that most precise estimates show zero employment effects of minimum wage. Likewise, Schmitt (2013) reviewed 21st century studies on minimum wage to show that reduction in labor turnover, reduction in high skilled worker pay and small price increases sufficiently counter disemployment effects. More recently, Wolfson and Belman (2019) indicate that there has been a shift in the consensus range to 1.3% to 0.7% in response to a 10% increase in minimum wage.

The empirical evidence in Canada, based on both cross province and time series variation, shows that a 10% increase in minimum wage would lead to a 3% to 6% reduction in teen employment (Gordon Feb 19, 2013). According to Marchand (2017), a 10% minimum wage increase would lead to 1.7% to 7.5% reduction in affected employment. However, Fortin (2010) argued that negative effects arise when the minimum wage to average wage ratio exceeds 50% but not when this ratio is less than 45%. More strongly, Brennan and Stanford (2014), who studied minimum wage increases in 10 provinces over 30 years, found no connection between minimum wage and employment levels in Canada.

Krueger (2001) mentions that, based on a 1996 survey of labor economists in the top Economics departments in the U.S., a majority expect a 1% reduction in teenage employment in response to a 10% increase in minimum wage. Many listed 0% as their best estimate. Generally, the support for minimum wage is higher amongst labor economists than American Economics Association (AEA) members (Klein and Dompe 2007). In the U.S., around 600 Economics professors signed a letter concluding that increases in minimum wage have little to no negative effect on employment even during a weak labor market (EPI, Jan 14, 2014). This includes seven Nobel Prize winning economists who endorsed raising minimum wages by 40%. Likewise, in Canada, about 53 economists endorsed a $15 minimum wage for Ontario in 2017 (Rozworski June 29, 2017).

To reiterate, the empirical evidence provides a more nuanced view than is usually depicted in ECON 101 textbooks. This supports the case for following Krueger (2001) to include empirical evidence at the first-year level.

Applications - Inelastic Demand for Labor, Monopsony model and the boom and bust cycles

ECON 101 textbooks predominately focus on the labor demand and supply model as propounded by Stigler to delineate the disemployment effect of raising the minimum wage. However, apart from the empirical evidence, the basic model can be extended in three ways to provide a more nuanced exposition of the impact of raising the minimum wage. The three extensions include considering an inelastic demand for labor, the monopsony market model and incorporating the boom and bust cycle in the context of a minimum wage increase.

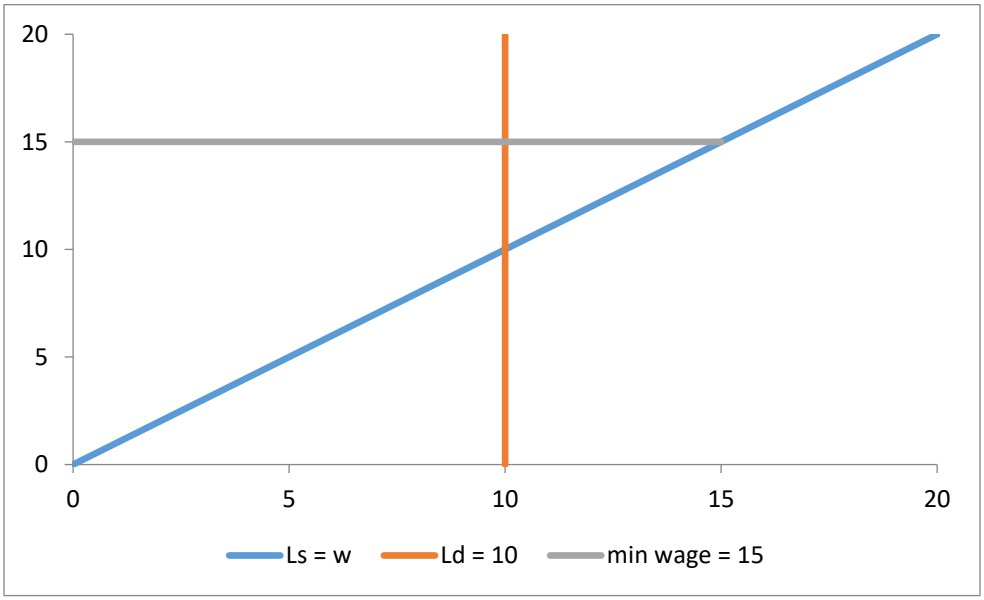
Inelastic demand curve for labor

The traditional model focuses on a single competitive market with homogeneous workers where the impact of minimum wage on employment depends on the degree of substitutability between labor and other inputs (Edagbami 2006). This degree of substitutability between labor and capital determines the elasticity of the demand for labor and therefore the extent of disemployment effect. The elasticity of labor demand also depends on labor share of production costs and consumer demand for products (Belser and Rani 2015). Specifically, the disemployment

effect is limited when labor costs only comprise 30% of operating costs in the affected industries (Reich, Allegretto and Godoey 2017), when unemployed workers can find jobs in the sector uncovered by minimum wage (Edagbami 2006), or when they drop out of the labor force (Benjamin, Gunderson and Lemieux 2017). This necessitates using the labor demand and supply model to show students how the disemployment effect is reduced when the labor demand curve is relatively inelastic.

Figure I shows the case of a perfectly inelastic demand curve and therefore zero disemployment effect. The equation of the demand curve is $L^d = 10$ and that of the supply curve is $L^s = w$, where w is the wage and labor can be measured as number of workers. When a $15 minimum wage is introduced, while the number of workers seeking jobs goes up to 15, there is zero disemployment effect. This means that there is no impact on the existing workers in terms of their jobs.

Figure I: The case of a perfectly inelastic demand curve



However, the long run effects are more adverse in low wage industries like sales, service, and tourism because labor demand is elastic, labor costs are a substantial portion of total costs, and, since the industries are competitive, they are unlikely to absorb the higher costs by reduction in profits. Moreover, while for older workers, reduction in layoffs offsets the reduction in hiring that results in an insignificant effect on employment, for teenagers the reduction in hiring and the number of layoffs significantly and negatively affect employment (Brochu and Green 2013).

Yet, even in the long run, the disemployment effect can be small. This is true when the incidence of payroll taxes falls mostly on workers and in an oligopolistic industry, where firms try to absorb wage increases to avoid losing market share (Benjamin, Gunderson and Lemieux 2017). Specifically, Komlos (2019) argued that McDonald's makes profits based on location, brand name and a unique menu, all of which confer market power despite competition from other fast food chains and which means that such corporations can absorb small minimum wage increases without raising prices or decreasing their labor force.

In summary, the disemployment effect of raising the minimum wage can be minimized when the labor demand is inelastic, yet this depends on the distinction between the long run and the short run, the fraction of total costs due to labor, older versus teenage workers, and the market power of the firm in the output market.

Monopsony power

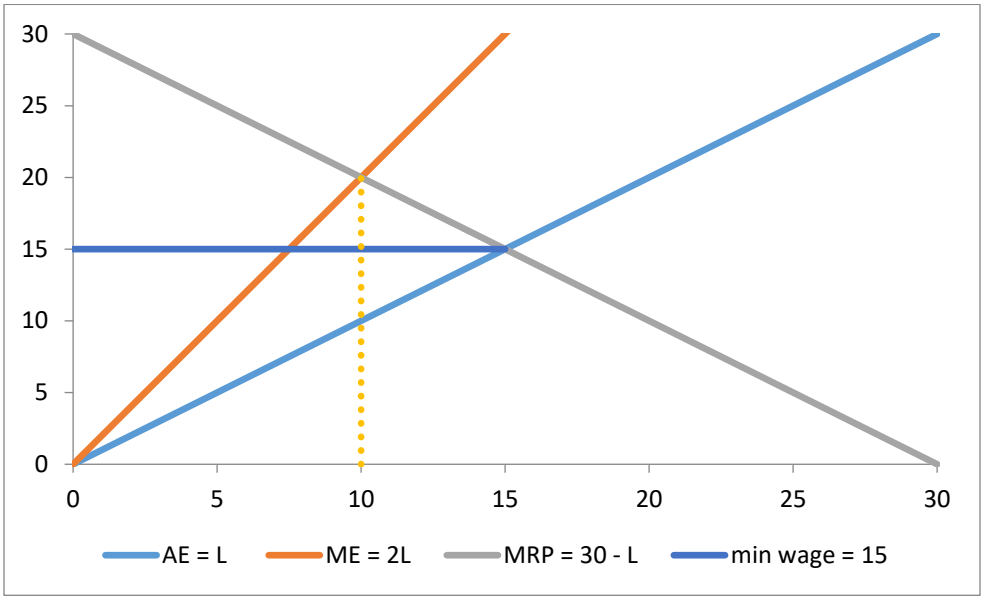
Another extension to the standard demand and supply model would be to follow up on Kruger's suggestion to expound the monopsony model at the first-year level. Most ECON 101 textbooks shy away from introducing this model. However, Ragan (2020) provides one example that students do not have to wait until the intermediate economics level to be introduced to this model.

Krueger (2001) argued that the standard view on minimum wage comes from Stigler (1946) who assumed perfect mobility and full information. However, to the extent these assumptions are violated due to imperfect information, search frictions, commuting costs, and inertia, firms have monopsony power and therefore will not lose workers even if they reduce their wages. Komlos (2019) notes that many teenagers and poor people without transportation are unable to commute outside their neighborhood, which means that local businesses exert monopsony power in setting wages. Likewise, Benjamin, Gunderson and Lemieux (2017) mention that even with fast food restaurants like McDonalds, imperfect information about job opportunities indicates that the firm faces an upward sloping labor supply curve, which is true for the case of a pure monopsony.

In essence, due to imperfect information, labor market frictions, and monopsony power, the firm can pay workers below the marginal product of labor (Belser and Rani 2015) and hire fewer workers than a competitive market. This means that increasing the minimum wage would increase both labor hours and the wage paid. This necessitates using the monopsony model to show students how an increase in minimum wage can increase employment. In the monopsony model, achieving maximum positive wage effect is different from achieving maximum positive employment effect. The former occurs at the intersection of the marginal expenditure (ME) and the marginal revenue product (MRP), whereas, the latter occurs at the intersection of the average expenditure (AE) and the MRP. The distance along the MRP between these two points shows the trade-off between the two effects. Additionally, the elasticity of labor supply determines the ability of minimum wage to increase jobs under monopsony (Edagbami 2006).

Figure II shows how an increase in minimum wage increases employment in the monopsony model. The demand curve for labor, also referred to as the marginal revenue product (MRP) is given by MRP = 30 – L, where L is the number of workers. The average expenditure (AE) curve for the firm is given by AE = L and the marginal expenditure (ME) is given by ME = 2L. In this model, a competitive market would equate MRP with AE, employ 15 workers and offer a $15 wage, whereas a monopsonist would equate MRP with ME, hire only 10 workers and offer a $10 wage. In this regard, raising the minimum wage up to $15 would increase the wage and the number of workers hired. Far from creating any disemployment effect, within the range from $10 to $15, raising the wage increases the number of workers hired. Depending upon the mathematics preparation of students, they can solve for the intersection points in the graph, as the equations have been kept quite simple.

Figure II: The Monopsony Market Model



Boom and Bust cycles

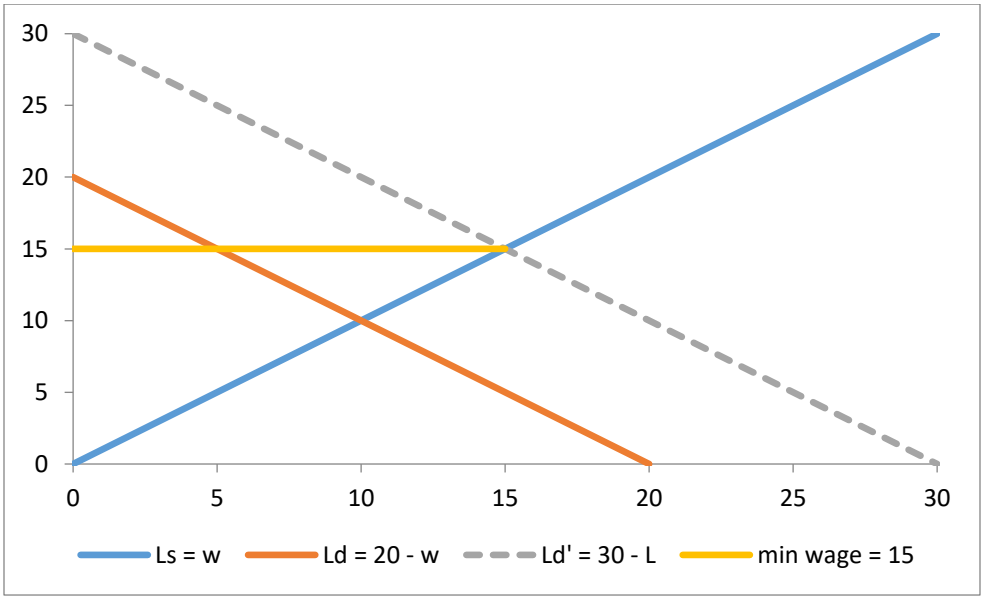
ECON 101 textbooks do not touch upon the relevance of boom and bust cycles in the labor market. This is relevant because other than minimum wage, labor demand is determined by the state of the economy that is shaped by the housing market, consumer purchasing power, and oil prices. Therefore, Krueger (2001) cautioned about accounting for other economic trends. According to Brennan and Stanford (2014), employment levels are predominately determined by larger macroeconomic factors like aggregate demand and GDP growth instead of wage regulations. Likewise, Murray and Mackenzie (2007) state that minimum wage impacts are mostly invisible as they are swamped by more significant economic changes and that large-scale changes in the economy drive the employment rate including recession, economic growth, and growth of female labor participation. In a similar vein, Benjamin, Gunderson and Lemieux (2017) mentioned factors that tend to offset the impact of minimum wage, which include increase in output demand or increase in price of substitutes, both of which increase the demand for labor and therefore employment.

While older studies on minimum wage often failed to isolate the impact of minimum wage increase from the boom and bust of the economy (Rank and File Feb 1, 2017), it is important to account for the boom and bust cycles or larger economic trends. Sonn and Lathrop (2016) indicate that in the few cases where employment levels declined after minimum wage increases in the U.S., all of them coincide with periods of recessions, suggesting that employment declines are better explained by business cycles rather than minimum wage. Additionally, at least five different academic studies in the U.S. show that increase in minimum wage during periods of high unemployment (7% to 12.3%) has no significant impact on employment levels, which can be explained through reduction in turnover and boost in demand (Lester, Madland and Bunker June 20, 2012).

In the context of Alberta, Marchand (2017) asserted that the boom and bust nature of Alberta's energy resource economy could mitigate or exacerbate the employment effect of a large minimum wage hike, as energy prices influence labor demand. Therefore, he argued that Alberta should have timed its minimum wage increase with rising energy prices and coupled it with the job creation tax credits. Likewise, the TD Bank analysis mentioned that the best time to raise the minimum wage is when the economy is strong (Rozworski Sep 29, 2017). In a similar vein, Gunderson (2014) argued that minimum wage increase should be dependent on the state of the economy and should be continuous with small adjustments instead of being large and infrequent.

Marchand (2017) showed how the standard model could be extended to indicate that the disemployment effect of minimum wage are mitigated when the raise is instituted in boom time periods. This extension of the standard model can also be used to show how minimum wage may increase productivity, shifting the demand curve to the right, thereby mitigating the disemployment effect. Following Marchand (2017), Figure III shows how a rightward shift in the labor demand curve under a boom time period with job tax credits or with increased labor productivity nullifies the disemployment effect. The labor demand curve is given by $L^d = 20 – w$, and the labor supply curve is $L^s = w$. An increase in minimum wage to $15 causes a disemployment effect of 5 workers. However, when the labor demand experiences a shock due to a boom, increase in productivity or through a job creation credit, the demand curve shifts to the right, yielding the equation $L^{d'} = 30 – w$, which nullifies the disemployment effect and also absorbs the additional workers looking for jobs. The new equilibrium is able to support the hiring of 15 workers at the wage of $15.

Figure III: A labor demand shock during a boom



In summary, extending the standard model by considering an inelastic demand for labor, the monopsony market model and incorporating the boom and bust cycle in the context of a minimum wage increase, can all help students at the principles level to understand how the disemployment effect of the policy are mitigated.

The profile of minimum wage workers

The profile of minimum wage workers is often brought up in the debate on raising the minimum wage. Opponents and advocates paint very different pictures of the minimum wage worker. Amongst ECON 101 textbooks, Mankiw et al. (2020) mention that raising minimum wage is a blunt tool against poverty since minimum wage workers are often teenagers from middle class homes earning extra income. Similarly, amongst labor economics textbooks, Benjamin et al. (2017) mention that many poor people do not work and therefore raising the minimum wage cannot help them and that many low-wage workers (teenagers) live in high-income families.

In media analyses, opponents of minimum wage argue that only 11% of minimum wage workers in Canada are from low-income families, that 89% live in a household above the Low Income Cut Off (LICO) level, that 58% are between 15 and 24 years old, and that only 2% are single parents (Lammam and MacIntyre 2018: 12). However, advocates argue that not all teenagers have family support for education and that they have to pay tuition and move out of their parents' home. They indicate that 64% of minimum wage workers across Canada in 2016 were not teenagers (Yalnizyan June 2, 2017), 37% already have education beyond high school (Murray and Mackenzie 2007) and that 59% of the workers who would benefit from a minimum wage increase to $15 work for large companies with more than 500 employees while only 17% work for small companies with less than 20 employees (Macdonald 2017).

This difference in the profile of minimum wage workers between opponents and advocates of minimum wage is also manifest provincially in Canada. Opponents argue that only 1.8% of Albertans in 2013 worked at minimum wage and that almost 50% of them were teenagers (Mintz Oct 2018). However, advocates argue that 36% of workers making $15 or less are post-secondary graduates, that more than 70% of Albertans earn less than $15 per hour, that 74% of Alberta's low wage workers are not teenagers, 62% do not live home with their parents, and 58% work for big businesses with more than 100 employees (Hussey 2018a).

The above clearly shows that there exists difference in how the profile of the minimum wage worker is reported. Therefore, a useful exercise for ECON 101 students would be to look at the profile of the minimum wage worker and then critically evaluate the differential presentation of this information in media analyses. Table I provides the profile of Alberta minimum wage workers from the government of Alberta documents. The latest numbers from 2017-2018 show that roughly 70% of minimum wage workers are not teenagers, close to 50% work full time at minimum wage jobs, about 73% have such jobs as a permanent one, about 16% have been working at such jobs over 5 years, 72% are not students, and that about 46% have had at least some post-secondary education. Additionally, the proportion of minimum wage workers has increased over the years in Alberta by 5% points. Overall, Table I shows that the profile of the minimum wage worker in Alberta has remained consistent and does not fit with the picture portrayed by ECON 101 textbooks.

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Table I: The profile of minimum wage workers in Alberta

Years	AB	CA	Teenagers 15-19 years	Full time	Permanent	Job tenure > 5 years	Some post-secondary to university education	Non-student
	% of employees earning minimum wage		% of minimum wage workers					
2009-2010	1.4%	5.9%	36.4%	46.2%	75.2%	19.7%	33.7%	
2010-2011	1.2%	7.5%	30.9%	55.3%	71.5%	16.3%	44.2%	
2011-2012	1.6%	7.0%	36.1%	46.3%	76.4%	19.6%	41.1%	
2012-2013	1.8%	7.0%	41.8%	46.0%	72.6%	13.9%	40.1%	
2013-2014	1.6%	7.0%	35.1%	50.3%	68.6%	13.8%	33.7%	
2014-2015	2.2%	7.4%	33.5%	48.9%	72.3%	16.8%	38.5%	
2015-2016	3.9%	7.0%	32.4%	40.4%	75.7%	12.7%	42.4%	78.9%
2016-2017	5.0%	6.6%	32.6%	41.5%	74.3%	11.6%	42.8%	75.3%
2017-2018	6.4%	6.9%	28.8%	48.2%	73.4%	15.9%	45.8%	71.7%

Source: Alberta Government. "Alberta Minimum Wage Profile."

Case study of disemployment in Alberta

ECON 101 textbooks usually present the consensus view that a 10% increase in minimum wage reduces teenage employment by 1% to 3%. However, the empirical evidence and media analyses both provide a very different and nuanced view. This motivates introducing ECON 101 students to simple calculations to gauge the disemployment effect. In this regard, a case study of disemployment in Alberta is illustrated as follows.

It may be argued that the disemployment effect in Alberta would be less than elsewhere, as the province has the lowest percentage of workers earning the minimum wage, the highest median wage and the lowest poverty rate from 2005 to 2015 (Breakenridge Oct 3, 2017). However, from 2015 to 2019 Alberta experienced a 47% increase in minimum wage (Younglai Oct 1, 2017). In 2015, the Canadian Federation of Independent Businesses (CFIB) claimed that the minimum

wage increase in Alberta would result in between 53,000 and 195,000 fewer jobs. Marchand, however, found that from April 2015 to April 2017, the number of employed Albertans aged 15 to 24 dropped from 326,000 to 298,600, a reduction of 27,700 jobs, and that this was most likely due to the recession (Marchand 2017). In opposition, Hussey argued that the Alberta service sector added 26,500 jobs in 2016 even as the economy was in a recession and 27,100 jobs in 2017 when the economy was recovering and that the food and accommodation industries added 6,200 jobs in 2016 and 1,500 jobs in 2017 despite the fact that minimum wage increased 33% from 2015 to 2017 (Hussey 2018a,b,c). Others argued that $15 minimum wage is neither extreme nor unreasonable for Alberta and that a $15 minimum wage would boost the Alberta economy by about $1 billion (McGowan October 3, 2016).

The above cautions first year students to be careful about how opponents and advocates differently report the disemployment effect. It also motivates the use of a simple exercise for students at the first-year level to gauge the disemployment effect. Based on seven decades of historical U.S. data, Sonn and Lathrop (2016) found no correlation between minimum wage increases and employment levels. Instead of using regression analysis, they simply looked at trends in total employment, total hours worked, and employment in sectors like retail and restaurants, before minimum wage increase and for twelve months after each minimum wage increase. They conclude that their results confirm the evidence obtained from most rigorous studies that find zero effects on jobs.

Table II shows a simple exercise to gauge any disemployment effect in Alberta when the minimum wage was increased overall by 47% over a four-year period (2014-2018). A contrast is made with the neighboring province Saskatchewan where the minimum wage was increased at the average rate of the percentage change CPI and the average hourly wage from the previous year. The percentage changes for Alberta for average weekly hours, employment for hourly workers, the number of employees aged 15 – 24 in the food and accommodation industry are positive for all years except 2015. The percentage changes for the number of employees aged 25 and above in the food and accommodation industry are all positive. Since the Western Canadian Select oil prices, which are relevant for Alberta, sharply dropped from 73.6$/bbl to 35.28$/bbl, it seems the negative percentage changes are capturing more of the oil price shock than the change in minimum wage for 2015. The average of all these percentage changes from 2015 to 2018 are all positive and less than 1% with the exception of the percentage change in the average weekly hours that are slightly negative at -0.18%. The numbers for Saskatchewan follow a similar pattern but are relatively higher. Generally, this indicates that the disemployment impact is exaggerated in ECON 101 textbooks, as for both Alberta and Saskatchewan that rely on oil prices, despite low oil prices and rising minimum wage, the overall effect on employment had been slightly positive for Alberta and relatively higher for Saskatchewan.

Finally, Table II indicates that inequality as measured by the ratio of the total median wage of the Top 1% to the bottom 50% has decreased for both provinces when the time period 2001-2018 is considered. Specifically, the average of this ratio declines from 24.55 for 2001-2018 to 21.8 for 2015-2018 in Alberta and from 14.84 to 13.91 in Saskatchewan for those respective time periods. These numbers show the much higher inequality in Alberta and therefore the justification for higher minimum wage increase in this province to adjust for historical inequality. Indeed, the last column of Table II shows that minimum wage as a fraction of the average hourly earnings increased from 37.13% for 2001-2018 to 44.81% for 2015-2018 in Alberta and from 41.16% to 41.42% in Saskatchewan respectively. To the extent the negative disemployment effect is pronounced when the minimum wage is more than 50% of the average wage, based on Dube

(2014) in the U.S. and Battle (2011) in Canada, it is not surprising to see that the increase in minimum wage in Alberta is bereft of a drastically negative disemployment effect. In short, these simple percentage change calculations can help students to be engaged with real world data and obtain a more nuanced understanding of the issue than that offered by the simplistic standard model.

Table II: Disemployment effect for Alberta and Saskatchewan

Years	AB min wage	Min wage (% change)	Average weekly hours	Employment for hourly workers	Food and business (15-24 years)	Food and business (>25 years)	Top 1% / Bottom 50% (total median income)	Min wage/ Average hourly earnings
Oct-15	11.2	9.80%	-2.50%	-5.39%	-8.19%	1.37%	26.19	38.70%
Oct-16	12.2	8.93%	1.95%	2.79%	1.08%	1.82%	19.18	43.19%
Oct-17	13.6	11.48%	0.00%	3.72%	3.30%	0.12%	20.03	46.91%
Oct-18	15	10.29%			5.63%	0.50%		50.46%
Average (2015 - 2018)			-0.18%	0.38%	0.45%	0.95%	21.80	44.81%
Average (2001-2018)							24.55	37.13%
Years	SK min wage	Min wage (% change)	Average weekly hours	Employment for hourly workers	Food and business (15-24 years)	Food and business (>25 years)	Top 1% / Bottom 50% (total median income)	Min wage/ Average hourly earnings
Oct-15	10.5	2.94%	-2.95%	-1.79%	-12.33%	11.06%	14.91	40.69%
Oct-16	10.72	2.10%	1.70%	-0.03%	-24.29%	3.40%	13.45	41.25%
Oct-17	10.96	2.24%	0.33%	3.58%	35.85%	-10.70%	13.36	41.53%
Oct-18	11.06	0.91%			9.56%	12.69%		42.19%
Average (2015 - 2018)			-0.31%	0.59%	2.20%	4.11%	13.91	41.42%
Average (2001-2018)							14.84	41.16%

Source: Government of Canada. "Hourly Minimum Wages in CANADA for Adult Workers."
Statistics Canada:
CANSIM Table 14100067: v3550644, v3550739: Food and accommodation business (Total employees, all establishment sizes), workers aged 15 – 24 years and over 25 for AB [v3548079, v3548174: the same for SK]
CANSIM Table 14-10-0222-01: v54027409, v54027398: Average weekly hours; v54027410, v54027399: Employment for hourly workers; v54027407, v54027396: Average hourly earnings [for AB and SK respectively]
CANSIM Table 11100056: v62871760, v62871935: Top 1% and Bottom 50% (total median income) for AB; [v62871535, v62871710: the same for SK]

Concluding summary

The objective in this paper was to follow up on Krueger (2001) to enhance the exposition of the minimum wage in ECON 101 Canadian textbooks, specifically in the wake of the move towards a $15 minimum wage. It was shown that the treatment of minimum wage in a single textbook is quite narrow and does not prepare students along all facets of the discussion in the media. Specifically, media analyses highlight the effects of minimum wage including disemployment effects, reduced benefits for youth, automation, costs to small businesses, benefits of purchasing power and productivity apart from alternatives to minimum wage. Since Canadian textbooks fail to comprehensively touch upon these themes, it is argued to complement textbook exposition with them.

It was confirmed that the empirical evidence does not necessarily support the consensus view and provides a more nuanced view than is usually depicted in ECON 101 textbooks. Therefore, the case by Krueger (2001) to include empirical evidence at the first-year level is effectively bolstered. The standard labor demand and supply model as propounded by Stigler is extended by considering an inelastic demand for labor, the monopsony market model and by incorporating the boom and bust cycle in the context of a minimum wage increase. These three extensions help students at the principles level to understand how the disemployment effect is mitigated.

ECON 101 textbooks usually depict minimum wage workers as teenagers living with their parents. The profile of minimum wage workers is often brought up in the debate on raising the minimum wage. It was shown how opponents and advocates of the minimum wage increase present this profile differently. It was also shown how the disemployment effect is differently reported in media analyses. This provides motivation to facilitate first year students to critically evaluate the profile of the minimum wage worker and to gauge any disemployment effect, using Alberta as a case study, with simple calculations and without the use of advanced econometric techniques.

In conclusion, by complementing the textbook material with discussion themes, extensions of the standard model, critically evaluating the profile of the minimum wage worker and performing basic data calculations and analysis, first year students can have a better and comprehensive understanding of the issue.

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Appendix I: Discussion themes in media and textbooks

Media articles (2013 - 2018)	Mankiw, Kneebone and McKenzie (2020)	Hubbard, O'Brien, Serletis and Childs (2020)	Ragan (2020)	Karlan, Morduch, Alam and Wong (2017)	Parkin and Bade (2015)	Cohen (2015)	Sexton, Fortura and Kovacs (2010)
Disemployment effects							
job losses vs lower hiring rate			✔				
labor hours decline							
min wage too high, instituted too quickly or when economy is weak	✔						
long run effects more adverse/ better detection of impact in long run			✔				
work under the table at lower than min wage			✔				
increased job search costs					✔	✔	
Reduced benefits for youth							
raising min wage → less inequality, lower debt							
raising min wage → helps with tuition costs							
fewer job opportunities for youth		✔					
high school dropouts	✔						
lower on the job training	✔						
non-wage benefits decline							✔
lower skill development → lower long run income		✔					
Automation							
min wage leads to automation						✔	
automation chiefly due to decline in price of capital (computerization)							
jobs like childcare, elderly care, baristas unlikely to be automated							
firms adjust first by increasing price, lowering turnover before automation				✔			
Costs to small businesses				✔			
those earning slightly higher than min wage would need a raise							
small businesses have mortgages, families, thin profit margins							
compare min wage increase with CEO compensation increases							
larger companies support min wage to reduce competition, small can't automate like them		✔					
some small businesses also support min or living wage							

Alternatives to minimum wage – EITC							
EITC targets low income workers							
EITC does not distort incentive to work							
EITC does not lead to job losses/ less burden on small businesses		✔					
increasing min wage pushes to higher tax bracket, clawback of benefits							
EITC reduces the taxes paid		✔					
lower taxes paid → lower benefits							
higher min wage → less burden on social services							
workers need income year long not just at tax time							
raising min wages means not raising taxes							
EITC can be financed by sales tax							
sales tax will dampen consumption							
wage subsidy is partly captured by employers							
Other alternatives to minimum wage							
low income housing tax credits, scholarships and loans, childcare benefits							
training, wage subsidies						✔	
training tax credits for small firms							
there has been a shift from higher paid to low paying jobs							
replace low wage jobs by stable ones							
Benefits of minimum wage - purchasing power							
stagnant wages and rising housing costs							
consumption is 57% of GDP							
low income households spend in the economy		✔					
purchasing power most important way to support job creation							
interest rates go up and investment declines							
high food prices						✔	✔
share of consumers at lower end of income distribution is small							
prices are driven by oil sands and larger economic forces than min wage							
Benefits of minimum wage - productivity and cost efficiencies							
less turnover, reduced absenteeism, less sick days					✔		
improved morale, lower stress, higher productivity					✔		

lower recruitment and training costs				✔			
Pegging minimum wage	✔						
stronger disemployment when min wage 45 - 50% of average wage							
min wage could be increased to 50% of median wage without significantly impacting output							
peg min wage to LICO							
pegging min wage → high youth unemployment							
have differential min wage based on cities, occupations, firm size							
Poverty alleviation							✔
teenagers living in well off households would benefit							
wage decrease in the uncovered sector could be greater							
families living under LICO increase							
even living wage is insufficient							
small % of earnings gain goes to the poor							
Profile of minimum wage worker							
min wage workers are teenagers from middle class homes earning extra income	✔						✔
many poor do not work							
min wage workers are adults, some with high education							
work in large companies							
Monopsony market model			✔				
imperfect information, job search costs, high transportation costs --> monopsony							
inelastic demand curve						✔	
boom and bust cycles							
Empirical literature							
effect insignificant for older workers	✔			✔			
other economists/meta study → zero employment effects		✔	✔			✔	
Canadian studies show larger disemployment effects		✔			✔		
Nobel prize winning and other economists endorse $15 min wage						✔	
10% increase leads to 1-3% decline in teenage employment/ standard result	✔		✔		✔		
Opinions of Economists	✔						