Minimum Wages and Labor Market Ripple Effects

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Abstract

We analyze the impact of the most recent three-step minimum wage increase enacted in 2007 on the distribution of earnings in the United States. Our data is from the Current Population Survey during 2006–2010. The estimation strategy employs unconditional quantile regressions to estimate Mincerian earnings functions with workers' occupation, industry, and location fixed effects. We find that each step of the policy has a different pattern of ripple effects along the entire distribution of wages.

Keywords: minimum wage increase, unconditional quantile regressions, labor markets, macroeconomic policy, macroeconomic effects.

JEL codes: E24, C21

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1 Introduction

Current federal minimum wage in the United States is $7.25 (per hour) and was set in 2009 as the final increment of a three-step increase: from $5.15 to $5.85 (in July 24th, 2007), then to $6.55 (in July 24th, 2008), and finally to $7.25 (in July 24th, 2009). There is no consensus among economists regarding the effects of minimum wage increases. This long simmering debate was revived in 2012 by movements like "Fight for $15" that advocate for a higher minimum wage.[1] Moreover, the interplay between minimum wage policies at the federal, state and city levels continues to generate intense political discussion.[2]

In light of such a controversial topic, a large body of literature examines various aspects of minimum wage changes. For instance, scholars have long been interested in the impacts of minimum wage legislation on employment (Brown et al., 1982; Krueger, 1994; Deere et al., 1995; Burkhauser et al., 2000; Giuliano, 2013; Laporšek, 2013). Alternately, Aaronson (2001) uses data from the restaurant industry to study whether the higher costs of labor associated with minimum wage increases are passed on to consumers through increased prices. Aaronson et al. (2012) investigate the effects of minimum wage hikes on households' spending and debt, while Khamis (2013) examines differentiated effects between informal and formal labor markets.

Some scholars have found differing effects of minimum wage increases on workers depending upon their placement in the wage spectrum; however, the evidence on distributional effects is mixed. For those workers for which the minimum wage is binding, Gramlich et al. (1976) suggest that minimum wage increases raise wages by about twice what would be predicted from the direct impact. That result is

[1] The movement "Fight for $15" began in New York City when 200 fast-food workers left their jobs to demand a hourly wage of $15. Source: `https://fightfor15.org/about-us/`.

[2] Source: `https://www.cnbc.com/2017/10/20/fight-for-15-hits-preemption-roadblock-commentary.html`.

tempered by the more recent findings of Neumark et al. (2006) that minimum wage hikes might have no impact on the income of lower-income families. For these families, minimum wage increases may even have a negative impact resulting from reduced hours.

While an increase in minimum wage is expected to raise earnings (but perhaps not income) of workers at the bottom of the wage distribution, less consensus exists about the impacts on the top of the wage distribution. For example, Neumark et al. (1999) find that minimum wage increases do raise the wages of the lowest wage workers but those initially earning higher wages ultimately suffered wage declines larger in absolute terms than the gains of the lowest. Based on these findings, they conclude that higher minimum wages are an inefficient tax and transfer scheme.

Alternately, an increase in minimum wage may benefit high earnings workers. For instance, Lemos (2008) argues that raising prices is a typical response of firms to higher labor costs. In response to higher prices expectations, it is possible that highly-paid workers (with higher productivity, education, and bargaining power) are able to effectively negotiate salaries increases and obtain real gains. This may be a rationale for the fact that business executives seem to support minimum wage increases.[3] In fact, Maloney and Mendez (2004) find significant positive effects of wage floors on workers above the minimum wage. Moreover, DiNardo et al. (1996) find that the decline in the real value of the minimum wage is an important factor contributing to an increase in wage inequality.

We contribute to the literature by estimating the impact of the three-step minimum wage increase enacted in 2007 on the distribution of earnings. We examine whether the minimum wage increases produced both wage gains for low wage earners

[3] Source: https://www.washingtonpost.com/news/wonk/wp/2016/04/04/leaked-documents-show-strong-business-support-for-raising-the-minimum-wage/?utm_term=.ba6ea6147286.

and a ripple effect for higher wage earners. Specifically, we estimate unconditional quantile regressions (Firpo et al., 2009) of the log hourly earning on minimum wage policy indicators. Our dataset is compiled from the Current Population Survey (CPS). The CPS data are collected monthly from households in the United States. To examine the three-step minimum wage increase of 2007, 2008, and 2009, we pool observations from more than 275 thousand workers for the years 2006–2010. The available worker's information includes hourly earnings, industry, occupation, education, unionization, location (county), and demographics.

We find that each step of the minimum wage increase has a significant impact throughout the wage distribution. The patterns of the distributional effects for each step are quite different from one another. The initial step is generally decreasing along the distribution of earnings, with workers in the 10th quantile experiencing a 2% increase, while those in the 90th quantile have statistically insignificant (and close to zero) effects. The second and third minimum wage increases enhance the earnings of workers in the 10th quantile by approximately 1.5%; however, the benefits to workers between the 20th and 40th quantiles are low. Interestingly, the effect starts to increase for workers around and beyond the 40th quantile. For the second step, these benefits continue to increase until the top of the wage distribution. For the third step, the effect reaches a local maximum around the 70th quantile, and decreases to approximately zero (and is statistically insignificant) at the 90th quantile. This heterogeneity suggests that benefits from minimum wage increases may significantly vary across the distribution of wages, and further research considering this heterogeneity is needed to support the generally accepted idea that the minimum wage is an important policy instrument for the well-being of most vulnerable workers.

The remainder of the paper is organized as follows. The next section describes the data. Section 3 discusses the empirical approach. Section 4 presents the results. Section 5 offers concluding remarks.

2 Data

Data for this paper was collected from a pool of workers sampled by the CPS in the years 2006-2010. We used the Merged Outgoing Rotation Groups (MORG) files downloaded from the NBER website.[4] Our final dataset aggregates information from five files for the years 2006, 2007, 2008, 2009 and 2010, where each file has a little over 300,000 observations from almost 30,000 households surveyed in each month.

There were three increases of the minimum wage between 2006 and 2010. The first was a 13.6% increase from \$5.15 to \$5.85 on July 23, 2007; the second a 12% increase to \$6.55 on July 23, 2008; and finally a 10.7% increase to \$7.25 on July 23, 2009. Our analysis starts a year before the first change and ends a year after the last one. After dropping observations that are missing key information, the sample size is 515,006.

We construct three binary indicators that capture the time of the implementation of the new minimum wage policy. As the CPS information is aggregated monthly, the indicator *Step 1* is equal to zero for observations before August 2007, and equal to 1 at August 2007 onwards. Similarly, the indicator for the second increase, *Step 2*, is equal to zero until August 2008 (and equal to 1 onwards), and *Step 3* "turns on" in August 2009.

[4]Source: `http://www.nber.org/morg/annual/`.

The main variable of interest in this paper is hourly earnings. For each individual sampled in a household, the CPS asks "How much does ... earn per hour?". Table 1 shows summary statistics for hourly wages and other variables. Average minimum wage in our sample is $14.76, with a standard deviation of $8.65. Figure 1 shows kernel density estimates of the distribution of wages in 2006 and 2010. The figure shows that the bottom of the distribution shifts to the right in 2010. While both distributions peak at a similar point, it appears that some ranges of the middle and top quantiles of the 2010 wage distribution are to the right of those of the 2006 distribution.

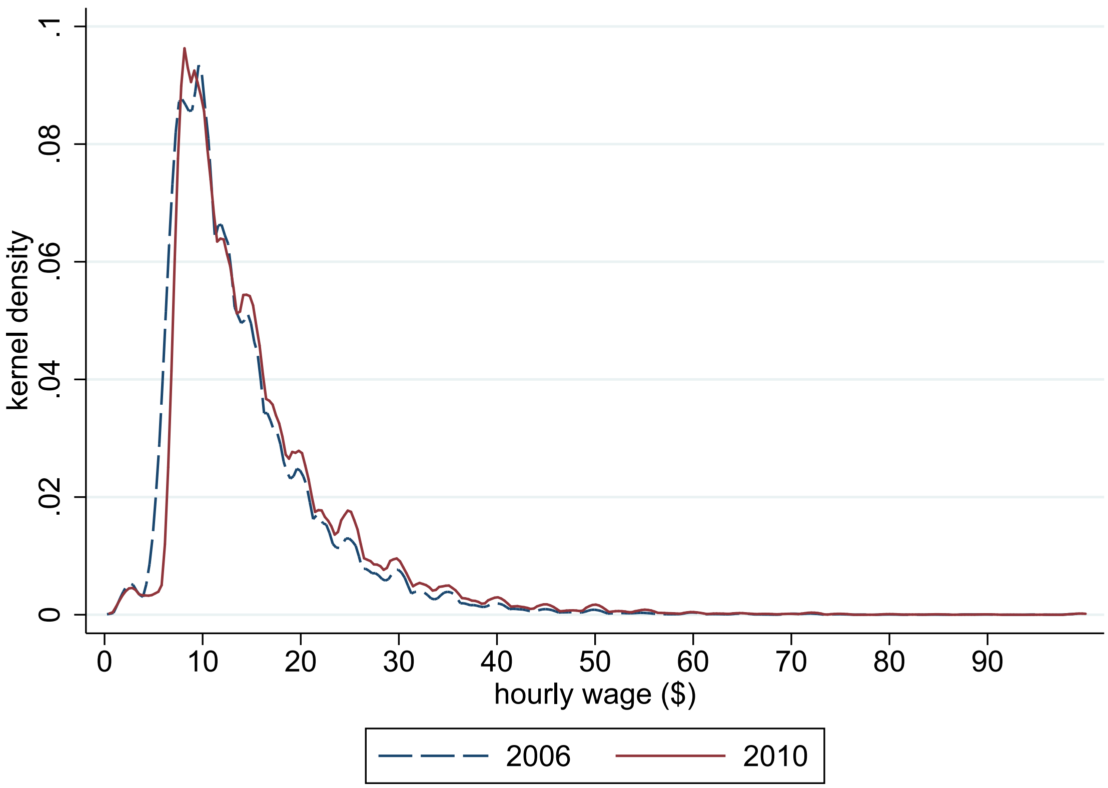
Table 1: Summary Statistics (N=515,006)

	Mean	**Std. Dev.**
HOURLY EARNINGS	14.763	8.652
HUMAN CAPITAL		
Education	12.879	2.535
Age	39.447	14.344
Age squared	1,761.8	1,205.4
DEMOGRAPHICS & UNIONIZATION		
Married	0.503	0.500
White	0.827	0.378
Female	0.522	0.500
Foreign	0.139	0.346
Union	0.124	0.330

Our data allow us to construct proxies for human capital based on education and experience, which is important when estimating earning functions. Our education variable was developed by the National Bureau of Economic Research (NBER) and it consists of an imputation variable for highest grade of school completed (Jaeger, 1997). We follow the literature and measure labor market experience using information about worker's age and age squared (Ito, 2009; Mohapatra et al., 2017).

Table 1 shows that average schooling of workers in our sample is approximately 12.88 years of education, and average age is 39.5 years. Moreover, half of the workers in our sample are married, 83% are white, 52% are female, 14% are foreign born, and 12% are members of a labor union or an employee association similar to a union.

Figure 1: Distribution of earnings in 2006 and 2010



The CPS has information on workers' occupations recorded as two-digit detailed occupation codes based on 2000 Census occupation codes. The CPS also contains a two-digit NAICS-based detailed industry classification code developed by the NBER. Tables 3 and 4 (in the Appendix) present summary statistics of dummy indicators for worker occupation and industry, respectively. The distribution of occupation concentrates 17% of the workers in our sample holding 'office and administrative support' occupations. The second largest category is 'sales and related occupations' (10%), followed by 'production occupations' (9.1%) and 'food preparation and serving related occupations' (8.7%). The distribution of industry in the sample concentrates 14.3% of workers in 'retail trade', 8.1% in 'food services and drinking places', 7.9% in 'health care services , except hospitals', and 7.3% in construction.

3 Empirical Approach

Our approach expands on standard Mincerian wage regressions to estimate the labor market returns to education and experience by including in the regression model indicators for each phase of the three-step minimum wage increase. The log hourly wage (W) of worker j, with occupation o, in industry i, at month t, in county c, is modeled as:

$$W_{joitc} = \beta_0 \; + \; \beta_1 S(\text{Step 1})_t \; + \; \beta_2 S(\text{Step 2})_t \; + \; \beta_3 S(\text{Step 3})_t \; + \sum_j \alpha_j X_{jt} + \mu_o + \lambda_i + \delta_c + \gamma_y + \varepsilon_{joitc}$$

where X collects human capital, demographics, and unionization variables, and μ, λ, δ, γ are occupation, industry, county, and year fixed effects, respectively. The term ε is the model error.

As opposed to estimating a linear regression model, which would offer insights on how the minimum wage policy affects the mean wage, we are interested in estimating the effect of the three-step wage increase at different quantiles of the wage distribution. We therefore use the approach by Firpo et al. (2009) to estimate unconditional quantile regressions (UQRs). Their method defines an *influence function* (IF) that captures the effect of a marginal change in the wage distribution on the τ^{th} unconditional wage quantile, denoted θ^{τ}. Next they derive a re-centered influence function (RIF) as $RIF(\theta_s^{\tau}) = IF(\theta_s^{\tau}) + \theta_s^{\tau}$. Therefore, the RIF($W_{joitc}; \theta^{\tau}$) is used as the dependent variable for the UQR estimation at the τ^{th} quantile, and the RIF-coefficients β_1^{τ} , β_2^{τ}, and β_3^{τ} represent the marginal effects of each step of the minimum wage policy at quantile τ.

4 Results

Table 2 shows the unconditional quantile estimates at the 10th, 50th, and 90th quantiles. All three minimum wage increases significantly affected the earnings of workers in the 10th quantile, with the first step contributing approximately a 2% increase, and each of the following steps contributing approximately a 1.5% increase. While the first and third minimum wage increases do not reach the top of the distribution, percentage wage gains of the second increase at the 90th quantile are as large as gains at the 10th quantile and amount to a 1.3%.

We proceed to a deeper examination of the ripple effects of each minimum wage increase by estimating the RIF-regression for every percentile of the log wage distribution, i.e. from $\tau = 0.01$ to $\tau = 0.99$, in increments of 0.01. To facilitate the interpretation of the results, we construct a smooth function for the estimates using a kernel-weighted local polynomial regression of the estimated quantile effects on the quantile level. Results are shown in figure 2.

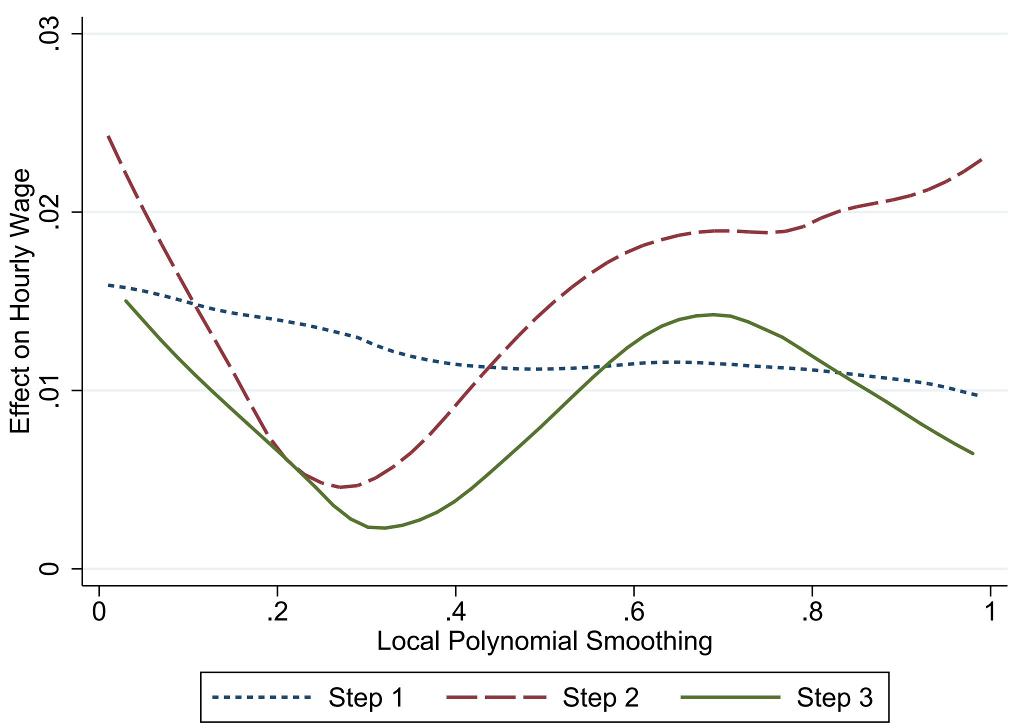
Table 2: Unconditional Quantile Regression Estimates

	Quantile		
	10th	50th	90th
MINIMUM WAGE INCREASE			
Step 1	0.019***	0.010***	0.007
	(0.003)	(0.003)	(0.005)
Step 2	0.013***	0.016***	0.013***
	(0.003)	(0.003)	(0.005)
Step 3	0.014***	0.008***	0.007
	(0.003)	(0.003)	(0.005)
HUMAN CAPITAL			
Education	0.013***	0.029***	0.047***
	(0.000)	(0.000)	(0.000)
Age	0.025***	0.040***	0.022***
	(0.000)	(0.000)	(0.000)
Age squared	-0.0003***	-0.0004***	-0.0002***
	(0.000)	(0.000)	(0.000)
DEMOGRAPHICS & UNIONIZATION			
Married	0.017***	0.053***	0.044***
	(0.001)	(0.001)	(0.002)
White	0.018***	0.045***	0.060***
	(0.002)	(0.002)	(0.003)
Female	-0.060***	-0.109***	-0.103***
	(0.001)	(0.002)	(0.003)
Foreign	0.020***	-0.063***	-0.016***
	(0.002)	(0.002)	(0.003)
Union	0.022***	0.155***	0.312***
	(0.002)	(0.002)	(0.003)
YEAR EFFECTS			
2007	0.036***	0.016***	0.022***
	(0.002)	(0.002)	(0.004)
2008	0.053***	0.035***	0.039***
	(0.003)	(0.004)	(0.006)
2009	0.060***	0.033***	0.042***
	(0.004)	(0.005)	(0.008)
2010	0.071***	0.028***	0.046***
	(0.005)	(0.005)	(0.009)
constant	5.894***	5.640***	6.383***
	(0.072)	(0.078)	(0.130)
N	515,006	515,006	515,006
r2	0.188	0.334	0.216

All regressions include occupation, industry, and county fixed effects. Standard errors are in parenthesis. $^{*}p < 0.10, ^{**}p < 0.05, ^{***}p < 0.01$.

The figure makes it evident that the minimum wage policy has a complex ripple effect along the hourly wage distribution. Further, the pattern of each effect is different. The dotted line shows that the first step of the increase has an effect that decreases along the wage distribution. The effects of the second and third steps are highly nonlinear and non-monotonic. Workers between the 20th and 40th quantiles of earnings benefit very little from the second and the third steps (estimates in this range are generally not statistically significant at the 5% level). The first step of the increase, however, was more effective in increasing wages in this range of the distribution.

Figure 2: Effects of the Three-Step Minimum Wage Increase along the Wage Distribution



According to the smoothing in figure 2, the impact of the second minimum wage change increases (almost monotonically) from 0.5% at the 30th quantile to 2.5% at the very top of the distribution. The effects of the third step are not statistically significant at the 5% level between the 19th and 44th quantiles, and beyond the 85th quantile. We conclude that the final step of the 2007-2009 federal minimum wage policy benefited workers at the bottom of the wage distribution ($\tau < 0.19$) and workers in the quantile range $0.45 \leq \tau \leq 0.84$.

Notice that the estimates of the impacts of the three-step policy are robust to general time trends as we specify year dummies in our models. The estimates in table 2 confirm the existence of a statistically significant and generally increasing time trend. For instance, when compared to wages in the baseline year (2006), wages of the 10th quantile are 3.6% higher in 2007, 5.3% higher in 2008, 6% higher in 2009, and 7.1% higher in 2010. Similar, though attenuated, effects are found in the 90th quantile. Interestingly, our estimates show that the median wage increased from 2006 to 2007 by 1.6%, and in the period 2008-2010 hovered at a level around 3% higher than 2006 wages.

We also find interesting results regarding the effects of the other variables in the model. For instance, we find the effect of education on earnings to increase as we move along the wage distribution. At the bottom, 10th quantile, one additional year of education increases wages by 1.3%. This effect increases to 2.9% at the median, and to 4.7% at the 90th quantile. Using age to proxy for experience, we find significant and concave returns to experience for different regions of the wage the distribution, which matches our expectations.

Our estimates also reveal race and gender wage gaps. After controlling for human capital, occupation, industry, and location effects, we find that white workers earn more than non-whites along the wage distribution. The effect goes from approximately 2% in the bottom to 6% in the top. We find that female workers earn smaller wages than their male peers. We find that women at the bottom of the distribution earn 6% less than men, and 10% less at the top. These results indicate that American non-white and female workers face important *sticky floor* and *glass ceiling* effects.

Married individuals earn 1.7% higher wages at the bottom of the distribution, 5.3% higher at the median, and 4.4% higher at the 90th quantile. Foreign born workers earn 2% more at the bottom of the distribution, and 1.6% less at the top. Finally, we find that unionized workers receive higher hourly wages. The effect of unions is increasing as we move along the wage distribution. The effect ranges from 2.2% in the bottom to 15.5% and 31.2% at the median and 90th quantile, respectively.

5 Conclusions

The paper estimates the effects of the three-step minimum wage increase implemented by the United States federal government between 2007-2009. We hypothesize that increasing minimum wages may affect hourly earnings not only of workers at the bottom of the wage distribution, but perhaps also for workers earning wages at the top. We estimate unconditional quantile regressions of the log hourly wage on policy indicators, human capital and demographic variables, also controlling for occupation, industry, locational and time trend effects.

While each step of the policy has a distinct effect on wages, our results suggest that, in general, potential benefits of this minimum wage policy appear not only in the lowest quantiles, but have a labor market ripple effect extending all the way to the top of the wage distribution. This finding has important policy implications. In the United States, income inequality has increased steadily over the past four decades.[5] Further, the U.S. Department of Labor (DOL) reports the purchasing power of the current $7.25 minimum wage to be 20% less than that of the early 1980's.[6] Faster and larger changes in the minimum wage could be a solution. Following this line, low-paid workers, often organized in groups like "Fight for $15", are the main advocates for higher minimum wages. However, our results suggest that minimum wage policies have highly nonlinear ripple effects across the wage distribution, and it is not clear whether the bulk of benefits accrue to workers at the lower wage levels. Nevertheless, since July 24, 2009, there were various political attempts to implement a higher federal minimum wage. These have failed and the federal minimum wage has been set at $7.25 since 2009. In response, several states and local governments have taken action to raise their minimum wage. Currently, only two states have minimum wages lower than the federal level: Wyoming and Georgia.[7]

The paper also finds that female and non-white workers face important *sticky floors* and *glass ceiling* as barriers to career advancement.[8] Future work should focus on how minimum wage policies interact with these two distributional phenomena.

This work also faces several technical limitations. Endogeneity of the education variable is a classic issue in the estimation of Mincerian earnings functions. While an instrumental variable (IV) strategy is generally used to control for this problem in linear regression models, it is not clear whether the CPS has a valid instrument,

[5]Source: `https://census.gov/hhes/www/income/data/historical/inequality/table_IE-1A2.pdf`.

[6]Source: `https://blog.dol.gov/2016/07/22/7-facts-about-the-minimum-wage`.

[7]Source: `https://blog.dol.gov/2016/07/22/7-facts-about-the-minimum-wage`.

[8]Labor markets with 'sticky floors' display a pattern that keeps a certain group of workers at the bottom of the wage distribution. Similarly, the term 'glass ceiling' refers to invisible barriers faced by certain workers that prevents career advancements at the top.

nor how an IV approach could be implemented in a RIF-regression. Our approach is also potentially affected by selectivity into the labor market, which would bias our results. On a more positive note, Harmon et al. (2003) argue that the endogeneity of education and the issues of self-selection bias estimates in opposite directions and may cancel each other out, making standard estimates a reasonable approximation of true effects. Future work is needed to better understand how these technical issues manifest itself in quantile regressions.

References

Aaronson, D. (2001). Price pass-through and the minimum wage. *Review of Economics and Statistics 83*(1), 158–169.

Aaronson, D., S. Agarwal, and E. French (2012). The spending and debt response to minimum wage hikes. *American Economic Review 102*(7), 3111–3139.

Brown, C., C. Gilroy, and A. Kohen (1982). The effect of the minimum wage on employment and unemployment. *Journal of Economic Literature*, 487–528.

Burkhauser, R. V., K. A. Couch, and D. C. Wittenburg (2000). A reassessment of the new economics of the minimum wage literature with monthly data from the Current Population Survey. *Journal of Labor Economics 18*(4), 653–680.

Deere, D., K. M. Murphy, and F. Welch (1995). Employment and the 1990-1991 minimum-wage hike. *American Economic Review*, 232–237.

DiNardo, J., N. M. Fortin, and T. Lemieux (1996). Labor market institutions and the distribution of wages, 1973-1992: A semiparametric approach. *Econometrica 64*(5), 1001–1044.

Firpo, S., N. M. Fortin, and T. Lemieux (2009). Unconditional quantile regressions. *Econometrica 77*(3), 953–973.

Giuliano, L. (2013). Minimum wage effects on employment, substitution, and the teenage labor supply: evidence from personnel data. *Journal of Labor Economics 31*(1), 155–194.

Gramlich, E. M., R. J. Flanagan, and M. L. Wachter (1976). Impact of minimum wages on other wages, employment, and family incomes. *Brookings Papers on Economic Activity 1976*(2), 409–461.

Harmon, C., V. Hogan, and I. Walker (2003). Dispersion in the economic return to schooling. *Labour economics 10*(2), 205–214.

Ito, T. (2009). Caste discrimination and transaction costs in the labor market: Evidence from rural north india. *Journal of Development Economics 88*(2), 292–300.

Jaeger, D. A. (1997). Reconciling educational attainment questions in the cps and the census. *Monthly Lab. Rev. 120*, 36.

Khamis, M. (2013). Does the minimum wage have a higher impact on the informal than on the formal labour market? evidence from quasi-experiments. *Applied Economics 45*(4), 477–495.

Krueger, D. C. A. B. (1994). Minimum wages and employment: A case study of the fast-food industry in New Jersey and Pennsylvania. *American Economic Review 84*(4).

Laporšek, S. (2013). Minimum wage effects on youth employment in the European Union. *Applied Economics Letters 20*(14), 1288–1292.

Lemos, S. (2008). A survey of the effects of the minimum wage on prices. *Journal of Economic Surveys 22*(1), 187–212.

Maloney, W. and J. Mendez (2004). Measuring the impact of minimum wages. evidence from Latin America. In *Law and Employment: Lessons from Latin America and the Caribbean*, pp. 109–130. University of Chicago Press.

Mohapatra, S., B. Wichmann, and P. Marcoul (2017). Removing the 'veil of ignorance': Nonlinearities in education effects on gender wage inequalities. *Contemporary Economic Policy*.

Neumark, D., W. Cunningham, and L. Siga (2006). The effects of the minimum wage in Brazil on the distribution of family incomes: 1996–2001. *Journal of Development Economics 80*(1), 136–159.

Neumark, D., M. E. Schweitzer, and W. L. Wascher (1999). The effects of minimum wages throughout the wage distribution. Technical report, Federal Reserve Bank of Cleveland.

Appendix

Table 3: Summary Statistics of Occupation Indicators (N=515,006)

Occupation	**Mean**	**Std. Dev.**
Management occupations	0.033	0.177
Business and financial operations occupations	0.023	0.151
Computer and mathematical science occupations	0.011	0.103
Architecture and engineering occupations	0.012	0.109
Life, physical, and social science occupations	0.006	0.076
Community and social service occupations	0.011	0.105
Legal occupations	0.004	0.067
Education, training, and library occupations	0.032	0.175
Arts, design, entertainment, sports, and media occupations	0.011	0.103
Healthcare practitioner and technical occupations	0.061	0.239
Healthcare support occupations	0.035	0.184
Protective service occupations	0.025	0.156
Food preparation and serving related occupations	0.087	0.282
Building and grounds cleaning and maintenance occupations	0.049	0.216
Personal care and service occupations	0.034	0.182
Sales and related occupations	0.102	0.302
Office and administrative support occupations	0.172	0.378
Farming, fishing, and forestry occupations	0.008	0.091
Construction and extraction occupations	0.070	0.254
Installation, maintenance, and repair occupations	0.045	0.208
Production occupations	0.091	0.287
Transportation and material moving occupations	0.078	0.268

Table 4: Summary Statistics of Industry Indicators (N=515,006)

Industry	**Mean**	**Std. Dev.**
Agriculture	0.009	0.093
Forestry, logging, fishing, hunting, and trapping	0.001	0.036
Mining	0.008	0.090
Construction	0.073	0.259
Nonmetallic mineral products	0.004	0.066
Primary metals and fabricated metal products	0.015	0.123
Machinery manufacturing	0.010	0.101
Computer and electronic products	0.008	0.088
Electrical equipment, appliance manufacturing	0.004	0.061
Transportation equipment manufacturing	0.016	0.125
Wood products	0.004	0.067
Furniture and fixtures manufacturing	0.005	0.069
Miscellaneous and not specified manufacturing	0.009	0.095
Food manufacturing	0.017	0.128
Beverage and tobacco products	0.002	0.041
Textile, apparel, and leather manufacturing	0.005	0.072
Paper and printing	0.009	0.094
Petroleum and coal products	0.001	0.035
Chemical manufacturing	0.007	0.083
Plastics and rubber products	0.005	0.073
Wholesale trade	0.024	0.152
Retail trade	0.143	0.350
Transportation and warehousing	0.043	0.203
Utilities	0.010	0.100
Publishing industries (except internet)	0.004	0.063
Motion picture and sound recording industries	0.002	0.047
Broadcasting (except internet)	0.004	0.060
Internet publishing and broadcasting	0.000	0.010
Telecommunications	0.007	0.086
Internet service providers and data processing services	0.001	0.026
Other information services	0.002	0.048
Finance	0.022	0.146
Insurance	0.011	0.105
Real Estate	0.009	0.096
Rental and leasing services	0.004	0.061
Professional and Technical services	0.032	0.177
Management of companies and enterprises	0.000	0.021
Administrative and support services	0.038	0.192
Waste management and remediation services	0.004	0.062
Educational services	0.060	0.238
Hospitals	0.058	0.234
Health care services , except hospitals	0.079	0.270
Social assistance	0.023	0.150
Arts, entertainment, and recreation	0.022	0.147
Accomodation	0.016	0.125
Food services and drinking places	0.081	0.273
Repair and maintenance	0.012	0.110
Personal and laundry services	0.010	0.102
Membership associations and organizations	0.009	0.097
Private households	0.007	0.082
Public Administration	0.048	0.213