The Impact of Minimum Wage on Female Labor Participation Rate in the United States

Nguyen Tran-Nguyen[1]

Abstract

This study looks at the relationship between minimum wage and female labor participation rate in the recent years from 1990 to 2014. The study incorporates results from a multivariate regression model as well as other similar studies in the field to see whether or not an increase in minimum wage would benefit female labor participation. It is expecting to see a positive correlation between those two variables, as minimum wage increase would benefit teenage female workers and adult female workers.

Key Words: Female Labor, Labor Force Participation, Minimum Wage, United States

JEL Classification: J12, J13, J31, J64

[1] Economics student, department of Economics, Bryant University, 1150 Douglas Pike, Smithfield, RI 02917. Phone: (401) 688-0485. Email: ntrannguyen@bryant.edu
The author gratefully acknowledges the help and guidance of Professor Ramesh Mohan, PhD. and Professor Jongsung Kim, PhD.

1.0 Introduction

Female is a prominent group of workers who has been positively contributing to the labor market in recent years. Previously when women were not allowed to work, the economy was lacking a huge amount of talented work force. After World War I, women started joining the work force, bringing more productivity and efficiency to the economy domestically and globally. Even though there is still controversy regarding employment opportunity and gender equality in the work force, it is undeniable that female is an important group of labors that needs more attention and protection.

This study examines the minimum wage system and female labor market characteristics to identify the relationship between female labor market supply and fluctuation in minimum wages in the United States. Minimum wages differ state by state as different state governments have various ideas on how minimum wage system can affect the labor market. From a microeconomics perspective, it is important to look at whether an increase in minimum wage would increase female labor force participation. Policymakers would be interested to see whether their policies would benefit or harm this target group.

Overall, there are limited research studies on this topic in the United States, but there are similar studies on this topic for OECD countries. This paper contributes to the literature on the subject to shed some light about the situation in the United States. First, this study focuses on recent development by using data from 1978 to 2010. In addition, this study is going to test the correlation between female labor participation rate and minimum wage, as well as incorporating different theories and ideas to explain why the female labor force behaves a certain way.

The main goal of the study is to analyze the sensitivity of female labor market supply and work characteristics in response to the fluctuations of minimum wage. In addition, it aims to achieve the following objectives. First, it wants to look at relationship between minimum wage and female labor force participation rate, and whether those two variables share a positive or negative correlation. Second, this study wants to see if different age groups would react differently in response to minimum wage fluctuation. There are three main age groups that this study is focusing on: female teenage workers, minimum-wage-earning female workers, and wage-and-salary female workers. Lastly, this study attempts to analyze possible reasons that would explain different responses to minimum wage increase.

The structure of the paper is organized as follows: Section 2 looks at the current trend in the labor market in recent years. Section 3 gives a brief literature review. Then, section 4 explains the data and empirical model use in this study. The empirical results will be presented and discussed in Section 5. Finally, the study is concluded in section 6, followed by appendices and bibliography.

2.0 Current Trends

2.1 Current Trends in Minimum Wage

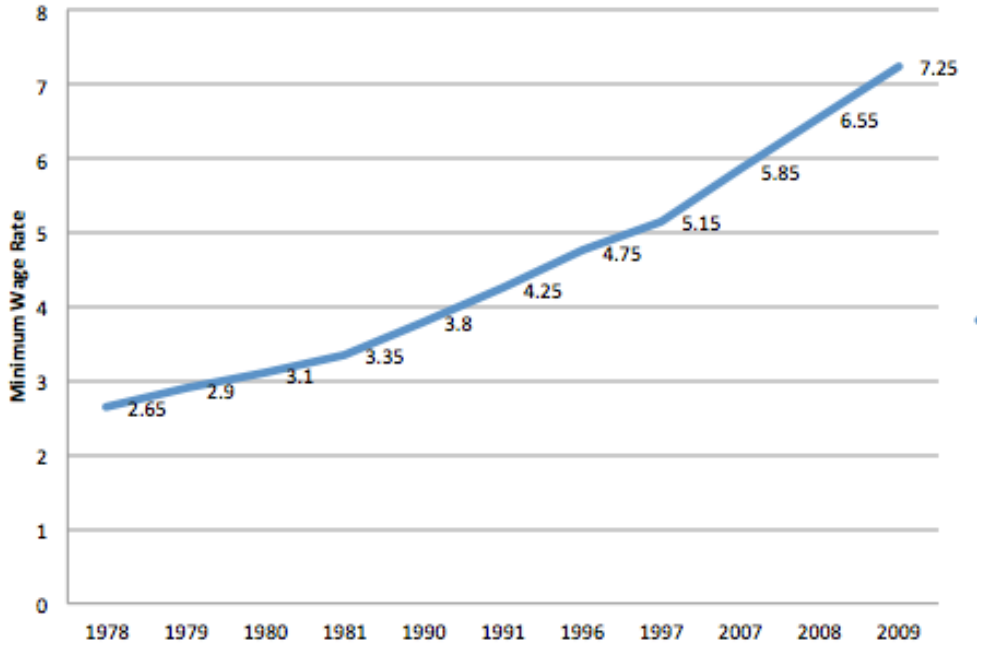
Minimum wage has been changing incrementally over the year. According to the Bureau of Labor Statistics, from 1978 to 2009, minimum hourly wage of workers has been changed eleven times. Table 1 and Figure 1 describe the patterns over the years.

Table 1: Federal Minimum Wage Rates under the Fair Labor Standards Act

EFFECTIVE DATE	MINIMUM HOURLY WAGE OF WORKERS
Jan. 1, 1978	$2.65 for all covered, nonexempt workers
Jan. 1, 1979	$2.90 for all covered, nonexempt workers
Jan. 1, 1980	$3.10 for all covered, nonexempt workers
Jan. 1, 1981	$3.35 for all covered, nonexempt workers
Apr .1, 1990	$3.80 for all covered, nonexempt workers
Apr. 1, 1991	$4.25 for all covered, nonexempt workers
Oct. 1, 1996	$4.75 for all covered, nonexempt workers
Sept. 1, 1997	$5.15 for all covered, nonexempt workers
Jul. 24, 2007	$5.85 for all covered, nonexempt workers
Jul. 24, 2008	$6.55 for all covered, nonexempt workers
Jul. 24, 2009	$7.25 for all covered, nonexempt workers

Source: United States Department of Labor

Figure 1: Federal Minimum Wage Rates from 1978 to 2009



Source: United States Department of Labor

2.2 Current Trends in Female Labor Participation

According to the Bureau of Labor Statistics Report in May 2014 "Women in the Labor Force", women's participation in the work force had been greatly expanding since World War II. Immediately after the war, less than one third of the female population was involved in working. The participation rate rose rapidly from the 1960s to the 1980s before slowing down in the 1990s. In 1999, female labor participation rate was peaked at 60% of female population.

In 2012, women accounted for more than half of all workers within several industries. According to the report, in 2012, 57.7% of women were in the labor force, which is only 0.4% down from 2011. This also happened to male labor force participation, which fell from 70.5% in 2011 to 70.2% in 2012. The overall unemployment rate for women was 7.9%, which is lower than that of 2011.

Female are represented in several industries, mostly in industries that does not require heavy physical work. Female workers' appearances in financial activities industry were 53%, education and health services were 75%, and other services were 51%. However, they were also underrepresented in some other industries, such as agriculture (26%), mining (13%), construction (9%) and manufacturing (29%).

In addition, female unemployment rate varies by race and ethnicity. Of different races, Asian women had the lowest unemployment rate (6.1%) while Black women has the highest unemployment rate (12.8%), followed by Hispanic women (10.9%). In addition, labor force participation rate varies by marital status. Divorced women have the highest participation rate, 66%, while for married women was only 59.5%. However, divorced women' participation rate is less than that of divorced men, which is 68.4%.

Having children is also a huge factor in influencing labor force participation rate. Labor force participation rate is higher for those with children from 6 to 17 years old than for those with younger children. In 2012, the participation rate for women with kids from 6 to 17 years old was 76%, as compared to the 64.7% participation rate of women with kids under 6 years old. The rate for women with children under 3 years old was even lower, at 60.7%. This suggests a positive correlation between the child's age and labor force participation, meaning that the older the child becomes, the easier for the women to participate in the labor force.

Education attainment also plays a key role in influencing female labor force participation rate. Education attainment level for women ages 25 to 64 has been increasing in the past 40 years. In 2012, according to the report, 38% of this group had college degrees, a significant increase from 11% in 1970. Only less than 7% have less than high school diploma.

Even though women's education levels are increasing, they are still exposed to unfair payment and opportunities. In 2012, women who held a full time wage and salary job had median weekly earnings of $691, which only accounts for 81% of men's median weekly earnings. Median weekly earnings for full-time wage and salary female workers were the highest for female pharmacists ($1,871), chief executives ($1,730), and lawyers ($1,636). However, in general, employed women work fewer hours per week than men. 26% employed women worked part-time, which are less than 35 hours per week, while only 13% of employed men worked part-time. On average, women worked 5 hours less than men per week. In addition, women are still experiencing unfair payment at work place. In 2012, 6% of all women were paid at an hourly rate that is less than the federal

minimum wage. Among workers who were in the labor force for at least 27 weeks in 2011, more women (approximately 5.5 million) than men (approximately 4.9 million) lived below the official poverty level. The working-poor rate[2] was 8% for women while only 6.2% for men.

3.0 Literature Review

There are many studies on labor market fluctuations on whether the relationship between minimum wage and employment participation level is negatively or positively correlated (Neumark and Wascher, 2007), but there is no consensus on the sign or direction of the impact of changes in minimum wages. Theoretically, an increase in minimum wage will lead to a decrease in employment as labor cost increase. Hence, the higher the minimum wage, the higher unemployment rate will be. Other economic theories predict undetermined effects coming from changes of minimum wages. For instance, in a monopsonistic labor market, the employers are allowed to set wages below marginal product of labor, and therefore, do not have to pay at minimum wages. Enforcing minimum wage requirements will increase employment and earnings for workers.

On the other hand, there are studies that prove that changes in minimum wages create no effect on employment. The main reason for increasing minimum wage is to match with worker's reservation wages. However, there are ways and which companies can create changes in their office operations to offset the increase in minimum wage requirements. According to Card and Krueger (1995), firms can adjust wage requirement by reducing other operation-related cost, such as employment benefits, trainings, etc.

[2] Working-poor rate: the ratio of the working poor to all individuals who were in the labor force for at least 27 weeks (2012 Annual Social and Economic Supplement, U.S. Bureau of Labor Statistics)

Other studies that support this view include those by Dickens et al (1990). Dickens et al. (1990) found strong evidence that minimum wages have "compressed the distribution of earnings and no evidence that they have reduced employment".

Even though there are not a lot of studies that look at the impact of minimum wage on female labor participation rate in the United States, there are studies on this topic in Europe. Addison and Ozturk (2010) studied the minimum wage effects in 16 OECD countries. They found that an increase in minimum wages leads to lower female employment and participation wage. A year later, they conducted a similar study. This time, the results confirmed their previous study, and showed that the lower female participation rate is partially caused by an increasing competition in the minimum wage job market. They claimed that as there are "more bites to the minimum wage", making labor force participation and minimum wage negatively correlated due to competition between women and teenagers, who earn minimum wages (Addison and Ozturk, 2011). If there is a sub minimum wage for youth, female employment is highly inhibiting (Ozturk, 2006).

Ozturk (2006) showed that there is a negative correlation between the female labor force participation and the minimum wage to median wage ratio. Ozturk's study is relatively important for this research as it provides strong background for research and comparison. His findings include, but are not limited to, the following points, which are important when looking at the correlation between minimum wage and female participation rate in the U.S. He found that when everything else remains constant, negative effects are stronger in countries with lower female tertiary educational enrollment, higher fertility rate, more stringent employment protection laws as well as

less active labor market policies. Active labor market policies serve as a mean to mitigate dis-employment and discouraging effects from minimum wages. In addition, strong unionization and high unemployment benefits (insiders versus outsider theory on the effects of minimum wage) also play an important role together with minimum wages to decrease employment and participation rate.

4.0 Definition of Variables

4.1 Data

The study uses data collected from longitudinal survey from 1990 to 2014 of all fifty states of the United States. Data are obtained from the Integrated Public Use Microdata Series (iPUMS) by the University of Minnesota website. Summary statistics for the data are provided in Table 2.

Table 2. Summary of Statistics

Variable	Observation	Mean	Standard Deviation	Minimum	Maximum
YEAR	18522286	2001.494	6.992057	1990	2014
EMPSTAT	18522286	10.1021	1.00527	10	20
HOURWAGE	15190790	87.69121	30.60997	-0.01	99.99
HRSWORK	1994015	38.60401	13.94541	0	99
EDUC99	16839651	11.72767	2.971623	1	18
SCHLCOLL	18522286	0.7009693	1.661935	0	5
NCHILD	15481738	0.8560841	1.135801	0	9
NCHLDT5	15481738	0.1662939	0.4635716	0	8
PAIDHOUR	15481738	0.1997652	0.6154741	0	7
UNION	18522286	0.2477316	0.5051261	0	3

4.2 Empirical Model

Following the model provided by multivariate regression model created by Addison and Ozturk (2010) on the sensitivity of female and unemployment to minimum wages, this study adapts the model by using some of the variables in the original regression model for the targeted group. In addition, this study incorporates additional variables that better explain the characteristics of this group, including fertility rate, female tertiary education enrollment and whether or not minimum wage is negotiated.

The model could be written as follow:

$$EMSTAT_t = \beta_0 + \beta_1 HOURWAGE + \beta_2 X + \beta_3 HOURWAGE * X + \mu$$

In the regression above, the dependent variable $EMSTAT_t$ represents the female labor participation rate at year *t*. Independent variables consist of three different variables obtained from various data source. One independent variable is created by combining the variable *HOURWAGE* and *X* together in order to see the impact of hourly wage and labor market characteristics together. Appendix A will provide more detail about the data source, acronyms, description, expected signs and justification for usage.

Firstly, *HOURWAGE* represents minimum wage, indicating how much each worker gets paid per hour. Second, variable *X* captures labor market characteristics, gender related social measures, and dummy variables regarding differences in minimum wage regulations. Sub-variables that act as proxy for *X* are: education, fertility rate and whether or not minimum wage is negotiated or not.

For education, variable *EDU99* reports the highest level of educational attainment from the respondents. Likewise, *SCHLCOLL* indicates whether the respondents, aged 16 to 24, enroll in high school or college full- and part-time. For fertility rate, this study uses *NCHILD*, which counts the number of children in each household. To look at the impact of children responsibilities on female labor participation further, this study incorporates the variable *NCHLT5*, which counts the number of children under age 5 in each household. This could be useful to see if women are restrained from work due to household duties.

In order to differentiate if the worker is full-time or part-time, this study uses *HRSWORK* to look at the usual hours worked per week for each respondent. Any worker

who works less than 20 hours per week are defined as part-time worker. Moreover, this variable is designed to see whether females would decide to work more if they are allowed to work more hour per week. Lastly, in order to see if the minimum wage is negotiated, this study uses the *UNION* variable as a proxy, assuming that union members have the power to negotiate their payment.

5.0 Empirical Results

Since this study uses time series data, we run the regressions in Ordinary Least Square model. However, in order to see the responsiveness of different groups of female workers to changes in minimum wage, this study ran three different models. The first model wants to look at the impact of changes in minimum wage to female labor workers as a whole. This model incorporates all *X* variables in order to take into account different factors that would influence female labor participation rate, such as the minimum wage paid (*HOURWAGE*), the number of children in household (*NCHILD*), the number of children less than five years old in household (*NCLT5*), the level of education (*EDUC99*), number of hours work per week (*HRSWORK*), and union membership (*UNION*). Regression results for this model are shown in Table 3.

The second model wants to look at the influences of minimum wage on teenage female workers. Hence, *X* variables used in this model includes: *HOURWAGE, PAIDHOUR*, *EDUC99, SCHLCOLL,* and *HRSWORK*, whereas the model specifies variable *PAIDHOUR* to be paid by the hour and total hours worked per week (*HRSWORK*) is less 20 hours due to legal restrictions. Regression results for this model are shown in Table 5.

Likewise, this study also wants to see the impact of minimum wage on minimum-wage female workers, and regression results for this change are shown in Table 5. For this model, minimum-wage female workers are specified to be working less than 20 hours a week as well. This model uses the following variables: *HOURWAGE, NCHILD, NCHLT5, EDUC99, HRSWORK* and *UNION*. This takes into account the household responsibilities that women have to carry.

Likewise, this study also wants to see the impact of change in minimum wage on full-time female workers. This model also is the same as the one for minimum-wage female workers, but it specifies that the workers are not paid by hour, and their hours worked per week (*HRSWORK*) is more than 20 hours. The regression results are shown in Table 6.

5.1 Findings

According to the regression results for all female workers, there is a positive correlation between minimum wage increase and female labor participation rate. If the variable *HOURWAGE* is increase by one unit (one dollar), then the variable *EMPSTAT* for female participation rate will increase by 0.034 percent. In addition, female labor participation rate increases to an increase in education level, but not as significant.

However, the labor participation rate has a negative correlation with the number of children in household (*NCHILD* and *NCLT5*), the number of hours worked per week (*HRSWORK*), as well as union membership (*UNION*). The negative correlation is the most significant for the *HRSWORK* and *UNION* variables. One possible explanation for such negative correlation is due to domestic responsibilities that women have. Apart from work, women are expected to fulfill household chores as well. This imbalance in work-

life balance would makes women make a choice if they are required to work more. They are more compelled to choose less work so they can take care of the family. In addition, having children is also a factor that stops women from participating in the labor force. It is shown in the regression results that women with children under five years old are less likely to participate in labor force than women with children above five years old.

When looking into different subgroups, namely teenage female workers, minimum-wage female workers and full-time female workers, the results are slightly different. For female teenage workers, there is a strong positive correlation between hourly wage and participation rate. A dollar increase in minimum wage would lead to a 0.175 percent increase in participation rate. In addition, the education variable has a positive correlation as well. However, the variable of number of hours worked per week (*HRSWORK*) is negatively correlated to participation rate. This could be because teenage workers have hour constraint, as they are limited to only twenty hours of work per week. In addition, they also have to take care of schoolwork and therefore cannot work as many hours as they desire.

Regression results for minimum-wage female workers show similar patterns. Minimum wage is positively correlated to female labor participation rate. The results show that for a dollar increase in minimum wage, female participation rate in the labor force increase by about 2 percent, and is significant at 1 percent level. On the other hand, children responsibilities and education level have negative correlation on the participation rate. For children responsibility, this means that having children will hamper the women's chances of working. Likewise, education obtainment is reducing labor participation rate. This might cause from female's individual rate of discount. Women

who earn minimum wage are more likely to choose to work at low wage instead of to obtain school to get higher wage in the future. This means that they place higher value in the present values of their earnings, and less in their future earnings. Because of high rate of discount, minimum-wage female workers would choose not to invest in education and continue to pursue current work. Hence, an additional level of education attainment would reduce their participation rate.

On the other hand, for full-time female workers, the regression results are slightly different from that of minimum-wage female workers. Similar to other groups, an increase to minimum wage would increase full-time female workers participation rate. Also, children responsibility also hampers women labor participation, and the variables *NCHILD* and *NCHLT5* all have negative correlation with participation rate. However, the biggest difference between full-time female workers group and minimum wage female workers group is that education is positively correlated to participation rate. Female workers who value education are more likely to get compensated for their investment in education. An increase in a level of education attainment would encourage women to participate in labor force with a full-time position.

6.0 Conclusions

In conclusion, this study is one of a handful of studies to have investigated the sensitivity of female employment to minimum wage change in the United States, as compared with other studies for OECD countries or the United Kingdom. Overall, the results point to a conclusion that an increase in minimum wage would increase female labor participation rate. This is further enhanced by the level of education attainment by

female as well. However, household responsibilities and children responsibilities are restraining women from participating in the work force.

The results presented from the regressions raise no difficulties of interpretation; and the understanding of the effects of minimum wage is enhanced by including the gender wage gap factor. However, the findings in this study are opposite from the classical economic theories on the effect of minimum wages on labor participation. One explanation for the differences is that they may result from gender differences. The study does not take into account the impact of minimum wage increase on male labor participation rate. The negative minimum wage impact in male labor market may be greater and offset the positive change in female labor participation. The results, however, are consistent with the current trends in minimum wage increase and female labor participation rate increase.

Even though the results of this study are the opposite of the classical economic theories on minimum wage effect, the regression results are understandable under a socioeconomics viewpoint. Women who are given a better opportunity to make more money than before are more likely to participate in the workforce when the time is right. In addition, women nowadays place high values on job opportunities, and would appreciate an improvement in working conditions, namely payment.

Another explanation why the effects of minimum wage changes on female labor participation in the United States are different is the government structure. According to Ozturk (2006), the negative minimum wage effect on unemployment is strongest in countries with lower female tertiary educational enrollment, higher fertility rate, more stringent employment protection laws as well as less active labor market policies.

However, the current conditions in the United States are the opposite. The United States has have high female educational attainment, low fertility rate as well as active and flexible employment protection laws. These socioeconomics conditions may enhance the positive minimum wage effects on female labor participation.

In order to improve this study, it is recommended that the study should use medium to median wage ratio like other studies instead of just minimum wage. This may cause the results to differ. In addition, taking into consideration institutional control variables, such as control of labor market regulations and minimum wage or minimum wage setting rules, would detect more sensitivity of labor participation rate to minimum wage change in this gender group.

Table 3. OLS Test Regression Equations For All Female Workers

Dependent Variable	EMPSTAT						
Regression	**1**	**2**	**3**	**4**	**5**	**6**	**7**
HOURWAGE	0.0006***	0.0069***	0.0069***	0.0011*	0.0033***	0.0007***	0.0034***
	(3.69)	(3.48)	(3.56)	(1.95)	(8.15)	(3.13)	(5.10)
NCHILD	0.0001	0.0073***	0.0001	0.0001	-0.0017	0.0001	-0.0033
	(0.28)	(6.74)	(0.27)	(0.24)	(-0.46)	(0.37)	(-0.28)
NCHLT5	0.0037***	0.0037***	0.0070***	0.0037***	0.0036***	0.0037***	-0.0005
	(4.13)	(4.13)	(2.67)	(4.17)	(3.98)	(4.15)	(-0.17)
EDUC99	-0.0014***	-0.0014***	-0.0014***	0.0027***	-0.0011***	-0.0013***	-0.0003
	(-10.13)	(-10.13)	(-10.12)	(5.75)	(-7.98)	(-9.58)	(-0.64)
HRSWORK	-0.0061*	-0.0061***	-0.0061***	-0.0061***	0.0066***	-0.0061***	0.0006***
	(-2.099)	(-20.93)	(-20.63)	(-20.90)	(6.78)	(-20.92)	(6.48)
UNION	-0.0049***	-0.0046***	-0.0048***	-0.0048***	-0.0078***	0.0086***	-0.0026
	(-4.69)	(-4.47)	(-4.66)	(-4.64)	(-7.59)	(4.08)	(-1.23)
NCHILD x HOURWAGE		-0.0001***					0.0000
		(-7.08)					(0.15)
NCHLT5 x HOURWAGE			-0.0004				0.0001
			(-1.35)				(1.49)
EDUC99 x HOURWAGE				0.0000***			0.0000*
				(-9.02)			(-1.64)
HRSWORK x HOURWAGE					-0.0008***		-0.0007***
					(-7.27)		(-7.15)
UNION x HOURWAGE						-0.0002***	-0.0007***
						(-7.28)	(-2.82)
Cons	10.2295	10.2228	10.2289	10.1855	9.9906	10.2171	9.9795
Obs	1853785	1853785	1853785	1853785	1853785	1853785	1853785
R2	0.0248	0.0248	0.0248	0.0248	0.0275	0.0248	0.0276

t-statistics are displayed in parentheses under the coefficient estimates.

, **, * Denote an estimate significantly different from zero at the 10%, 5% or 1% level, respectively.*

(Omitted) variable is omitted for collinearity.

Table 4. OLS Test Regression Equations For Teenage Female Workers

Dependent Variable	EMPSTAT						
Regression	**1**	**2**	**3**	**4**	**5**	**6**	**7**
HOURWAGE	0.0001***	-0.0024***	0.0022**	-0.0026***	-0.0025***	0.0119***	0.0175***
	(3.83)	(-7.71)	(2.57)	(-8.48)	(-7.95)	(3.19)	(7.74)
PAIDHOUR		-0.2320***	(Omitted)	-0.2416***	-0.2351***	-0.2263***	(Omitted)
		(-16.31)	(-)	(-17.03)	(-16.55)	(-16.06)	(-)
EDUC99		-0.0109	-0.0109	-0.0861***	-0.0105	-0.0117	-0.0917***
		(-1.13)	(-1.13)	(-3.99)	(-1.09)	(-1.22)	(-4.27)
SCHLCOLL		0.0345***	0.0345***	0.0348***	0.1538***	0.0339***	0.1541***
		(19.38)	(-19.38)	(19.61)	(35.48)	(19.20)	(35.84)
HRSWORK		-0.0829*	-0.0829*	-0.1471***	-0.0746***	0.0077***	-0.0461*
		(-1.74)	(-1.74)	(-8.59)	(-13.53)	(5.05)	(-2.16)
PAIDHOUR x HOURWAGE			-0.0232				-0.0024*
			(-1.63)				(-1.70)
EDUC99 x HOURWAGE				0.0059***			0.0063***
				(3.90)			(4.18)
SCHLLCOLL x HOURWAGE					-0.0081***		-0.0865***
					(-3.02)		(-3.05)
HRSWORK x HOURWAGE						-0.0010***	-0.0011***
						(-6.78)	(-7.32)
Cons	9.9991	11.7087	11.2446	12.5466	11.6011	10.4452	10.6569
Obs	15190790	239267	239267	239267	239267	239267	239267
R^2	0.0001	0.1191	0.1191	0.1247	0.1224	0.1357	0.1463

t-statistics are displayed in parentheses under the coefficient estimates.

, **, * Denote an estimate significantly different from zero at the 10%, 5% or 1% level, respectively.*

(Omitted) variable is omitted for collinearity.

Table 5. OLS Test Regression Equations For Minimum-Wage Female Workers

Dependent Variable	EMPSTAT						
Regression	**1**	**2**	**3**	**4**	**5**	**6**	**7**
HOURWAGE	0.0176***	0.0364***	0.0178***	0.0339***	0.1472***	0.0496**	0.2191***
	(11.96)	(15.21)	(11.96)	(7.44)	(6.77)	(2.51)	(4.17)
NCHILD	-0.3604**	0.4550***	-0.3604**	-0.3610**	-0.3513***	-0.3575**	0.0222
	(-2.58)	(5.48)	(-2.58)	(-2.591)	(-2.60)	(-2.57)	(0.26)
NCHLT5	0.1552*	0.1554*	0.4944	0.1555*	0.1466*	0.1610*	0.0629
	(2.01)	(2.01)	(1.12)	(2.01)	(1.96)	(2.09)	(0.14)
EDUC99	-0.2591***	-0.2596***	-0.2591***	-0.1123***	-0.2444***	-0.2542***	0.0331
	(-5.30)	(-5.31)	(-5.30)	(-2.87)	(-5.15)	(-5.21)	(0.87)
HRSWORK	-1.0182***	-1.0183***	-1.0182***	-1.0179***	0.0137	-1.0137***	0.0178
	(-33.86)	(-33.84)	(-33.86)	(-33.85)	(1.03)	(-33.72)	(1.33)
UNION	-3.8915***	-3.8536***	-3.8891***	-3.8835***	-3.4671***	-0.1402	0.4714***
	(-3.76)	(-3.72)	(-3.76)	(-3.75)	(-3.45)	(-0.75)	(2.61)
NCHILD x HOURWAGE		-0.0084***					-0.0038***
		(-9.95)					(-4.36)
NCHLT5 x HOURWAGE			-0.0035				0.0009
			(-0.78)				(0.20)
EDUC99 x HOURWAGE				-0.0015***			-0.0028***
				(-3.78)			(-7.25)
HRSWORK x HOURWAGE					-0.0109***		-0.0109***
					(-7.89)		(-7.88)
UNION x HOURWAGE						-0.0581**	-0.0605***
						(-2.43)	(-2.60)
Cons	29.5989	27.7653	29.5836	27.9911	16.5976	26.3635	9.4256
Obs	94835	94835	94835	94835	94835	94835	94835
R^2	0.6291	0.6295	0.6291	0.6292	0.652	0.6314	0.6546

t-statistics are displayed in parentheses under the coefficient estimates.

, **, * Denote an estimate significantly different from zero at the 10%, 5% or 1% level, respectively.*

Table 6. OLS Test Regression Equations For Full-Time Female Workers

Dependent Variable	EMPSTAT						
Regression	**1**	**2**	**3**	**4**	**5**	**6**	**7**
HOURWAGE	0.2813***	0.0340***	0.0281***	0.5405***	0.1650	0.0332***	0.2047***
	(5.32)	(3.47)	(5.27)	(3.04)	(1.35)	(4.52)	(8.97)
NCHILD	-0.4190***	-0.1623***	-0.4190***	-0.4194***	-0.3913***	-0.4186***	0.0376
	(-4.18)	(-4.34)	(-4.17)	(-4.18)	(-4.03)	(-4.17)	(1.00)
NCHLT5	0.2797***	0.2769***	0.1810	0.2733***	0.2213***	0.2716***	0.0087
	(4.71)	(4.81)	(0.85)	(4.75)	(3.98)	(4.72)	(0.04)
EDUC99	-0.2370***	-0.2372***	-0.2370***	-0.0105	-0.2135***	-0.2348***	0.0138
	(-6.62)	(-6.67)	(-6.63)	(-0.68)	(-6.20)	(-6.58)	(0.94)
HRSWORK	-0.3650***	-0.3650***	-0.3650***	-0.3644***	0.2324***	-0.3647***	0.0246***
	(-6.44)	(-6.44)	(-6.44)	(-6.42)	(7.33)	(-6.42)	(7.77)
UNION	-0.5537*	-0.0028	-0.5503*	-0.5499*	-0.5338	0.0175	-0.0728
	(-1.67)	(-1.64)	(-1.67)	(-1.65)	(-1.26)	(0.26)	(-1.14)
NCHILD x HOURWAGE		-0.0028***					-0.0046***
		(-7.11)					(-11.86)
NCHLT5 x HOURWAGE			0.0010				0.0024
			(0.44)				(1.10)
EDUC99 x HOURWAGE				-0.0024***			-0.0025***
				(-15.25)			(-15.74)
HRSWORK x HOURWAGE					-0.0040***		-0.0040***
					(-12.43)		(-12.46)
UNION x HOURWAGE						-0.0080***	-0.0063***
						(-9.94)	(8.05)
Cons	26.3420	25.7957	26.3449	23.8892	12.6445	25.8155	8.8663
Obs	213782	213782	213782	213782	213782	213782	213782
R2	0.7147	0.7147	0.7147	0.715	0.7339	0.7148	

t-statistics are displayed in parentheses under the coefficient estimates.

, **, * Denote an estimate significantly different from zero at the 10%, 5% or 1% level, respectively.*

APPENDIX A. VARIABLE DESCRIPTION AND DATA SOURCE

ACRONYM	DESCRIPTION	DATA SOURCE
EMSTAT	Employment Status	Integrated Public Use Microdata Series (iPUMS) by the University of Minnesota
HOURWAGE	Hourly Wage	Integrated Public Use Microdata Series (iPUMS) by the University of Minnesota
PAIDHOUR	Paid by the Hour	Integrated Public Use Microdata Series (iPUMS) by the University of Minnesota
EDU99	Educational Attainment	Integrated Public Use Microdata Series (iPUMS) by the University of Minnesota
SCHLCOLL	School and College Attended	Integrated Public Use Microdata Series (iPUMS) by the University of Minnesota
NCHILD	Number of Own Children in Household	Integrated Public Use Microdata Series (iPUMS) by the University of Minnesota
NCHLT5	Number of Own Children Under Age 5 in Household	Integrated Public Use Microdata Series (iPUMS) by the University of Minnesota
HRSWORK	Hours Worked Last Week	Integrated Public Use Microdata Series (iPUMS) by the University of Minnesota
UNION	Union Membership	Integrated Public Use Microdata Series (iPUMS) by the University of Minnesota

APPENDIX B. VARIABLES AND EXPECTED SIGNS

ACRONYM	VARIABLE DESCRIPTION	WHAT IT CAPTURES	EXPECTED SIGN
HOURWAGE	**Hourly Wage**	HOURWAGE reports how much the respondent earned per hour in the current job.	+
PAIDHOUR	**Paid by the Hour**	PAIDHOUR is a variable indicating whether the respondent was paid by the hour for their current job or not.	-
EDU99	**Educational Attainment, 1990**	EDUC99 reports the respondent's highest level of educational attainment. Respondents without high school diplomas were to indicate the highest school grade they had completed, while those with high school diplomas were to indicate the highest diploma or degree they had obtained.	+
SCHLCOLL	**School and College Attended**	SCHLCOLL indicates whether respondents age 16 to 24 were enrolled in high school or college during the previous week, and, if so, whether they were enrolled full- or part-time.	+
NCHILD	**Number of Own Children in Household**	NCHILD counts the number of own children (of any age or marital status) residing with each individual. NCHILD includes step-children and adopted children as well as biological children.	-
NCHLT5	**Number of Own Children Under Age 5 in HH**	NCHLT5 counts the number of own children age 4 and under residing with each individual. NCHLT5 includes step-children and adopted children as well as biological children.	-

HRSWORK	**Hours Worked Last Week**	HRSWORK reports the total number of hours the respondent was at work during the previous week. For employers and the self-employed, this includes all hours spent attending to their operations or enterprises. For employees, it is the number of hours they spent at work. For unpaid family workers, it is the number of hours spent doing work directly related to the family business or farm (not including housework).	+
UNION	**Union Membership**	UNION indicates whether, for the current job, the respondent was: 1) a member of a labor union or employee association similar to a union; 2) not a union member but covered by a union or employee association contract; or 3) neither a union member nor covered by a union contract.	+

BIBLIOGRAPHY

Addison, J. and Ozturk, O. (2010), "Minimum Wages, Labor Market Institutions, and Female Employment and Unemployment: A Cross-Country Analysis", *Institute for the Study of Labor,* IZA Discussion Paper No. 5162.

Addison, J. and Ozturk, O. (2011), "Minimum Wages, Labor Market Institutions, and Female Employment: A Cross-Country Analysis", *Institute for Advanced Studies Vienna,* Economics Series 278.

Card, D. and Krueger, A. (1995), "Myth and Measurement: The New Economics of the Minimum Wage", Princeton: Princeton University Press.

Dickens, R., Machin, S. and Manning, A. (1999). "The Effects of Minimum Wages on Employment: Theory and Evidence from Britain," *Journal of Labor Economics*, University of Chicago Press, vol. 17(1), pages 1-22.

Ozturk, O. (2006), "Minimum Wages, market Inflexibilities, and Female Employment in Select OECD Countries", *Munich Personal RePEc Archive*, MPRA Paper No. 10222.

Steven Ruggles, J. Trent Alexander, Katie Genadek, Ronald Goeken, Matthew B. Schroeder, and Matthew Sobek (2010). Integrated Public Use Microdata Series: Version 5.0 [Machine-readable database]. *Minneapolis: University of Minnesota*.

United States Department of Labor (2014). *Federal Minimum Wage Rates Under The Fair Labor Standards Act* (Bureau of Labor Statistics Publication). Washington, D.C: U.S. Government.