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Minimum Wage as a Poverty Reducing Measure

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Abstract

With the recent increase in the Federal minimum wage, it is important to consider the impact of minimum wage in order to assess its effectiveness as a poverty reducing measure. While an increase in the minimum wage will increase income, the increased labor cost may cause an increase in unemployment. Greater unemployment may negate any benefit derived from the change in the minimum wage. Also, the minimum wage could put upward pressure on all wages. By using data from the Census and Bureau of Labor and Statistic's 2006 March Supplement, it is possible to develop a model that empirically tests the impact of the minimum wage on income. The minimum wage increases the income for most households; one must consider the intent of Fair Labor Standards Act. By examining households close to the poverty line, one can conclude that an increase in minimum wage does not benefit the poor. Ultimately, an increase in minimum wage falls short as an effective measure in reducing poverty.

Minimum Wage as a Poverty Reducing Measure

I. Introduction

During the recent mid-term elections, a debate has raged between policy makers about the need for an increase in the minimum wage. Passed as part of the Fair Labor Standards Act in 1938, the minimum wage is the lowest wage employers, in certain industries, can pay workers. Intended to support impoverished Americans, the minimum wage has been increased over time to account for inflation. The support for an increase in the minimum wage grew over the last decade. Aside from the political gains from supporting an increase, there are a number of facts pointing to the need for a change in the minimum wage laws. First, the minimum wage has not changed since 1997 despite increasing inflation. Also, some policy makers point to the increasing income inequality (Gini Coefficient) since 1993 as an indicator supporting an increase in minimum wage.

However, there is debate among policy makers about the effectiveness of the minimum wage as an anti-poverty measure. There is evidence refuting the benefits of the minimum wage. In fact, the majority of workers earning the minimum wage are teenagers or women living in households with income three times the poverty level (Mincy, 1990). Since the effects of a change would be limited to a small percentage of poor families, an increase in the minimum wage may have little or no impact on the level of poverty in the United States. Data analysis of the impact of the minimum wage has direct policy implications. If the minimum wage is shown to dramatically increase family income, then future increases should have greater political support. However, if an increase in the minimum wage has little impact or a negative impact on family

income, then policymakers should consider other anti-poverty measures. There are a variety of theories on the impact of the minimum wage on poverty and unemployment.

II. Literature Review

The textbook model of the labor market illustrates the most basic view of minimum wage on the market. In the classical model, firms demand a quantity of labor for a given wage and households supply labor. As with any supply and demand model, the quantity supplied increases with price and the quantity demanded decreases. As the minimum wage increases, the price of labor increases above the current equilibrium rate. As the wage rate increases, households will supply more labor than firms demand. In the classical short-term model, the unemployment rate would rise above the natural rate. By using the classical model, the increase in unemployment may offset any benefits from the increase in income. Therefore, a minimum wage would be ineffective as a measure to combat poverty. In order to measure the effect of the minimum wage on poverty, one would need to consider the effects on different industries and different groups of individuals in the labor force. An increase in the minimum wage does not necessarily result in higher unemployment (Brown et al, 1982). The number of available jobs may grow as a result of other factors. While the number of jobless people may remain stationary or decline, the growth in employment may be hampered by the increase in the minimum wage.

There are a number of criticisms of the basic supply and demand model of the labor market. Card and Krueger (1995) point out a number of unrealistic assumptions about the standard model of the labor market. First, one can not assume that higher

wages will not have an impact on the level of productivity. It is more likely that productivity will increase as wages increase because workers are less likely to shirk. Second, the standard model assumes that employers operate at peak efficiency. In other words, it is not possible to negotiate a lower price with suppliers in order to compensate for the increased cost of labor. Finally, firms would not want to share profits with employees through higher wages or other incentives. After surveying a number of fast-food restaurants around New Jersey and Pennsylvania before and after an increase in the New Jersey minimum wage, Card and Krueger (1995) determined that an increase in the minimum wage does not result in firms laying off workers. After reviewing the assumptions, one can determine that the labor market is not as simple as the traditional market.

Often suggested by proponents, the shock effects due to the increase in the wage rate may force employers to demand greater productivity of their workforce. Instead of laying off workers after an increase in the minimum wage, the employer will require better performance from the current workforce (Brown et al, 1982). Along with the pressure from employers for greater productivity, the higher wage will provide a greater incentive for better performance (Gregory and Reynolds, 1965). The higher wage rate will provide a disincentive to shirk. With the increased loss of income, workers will be less likely to risk behavior that may result in being fired. As a result of the higher productivity of labor, the increase in unemployment due to the increase in the minimum wage will be offset by productivity gains. Gregory and Reynolds (1965) found that there was a positive relationship between an increase in wages and expect output among firms in Puerto Rico. Therefore, the increase labor cost incurred by an increase in the

minimum wage would be offset by the resulting increase in labor productivity. If the shock effect occurred, firms that employed minimum wage workers would not lay off current employees to reduce labor costs.

There are two important flaws to the shock effect argument. First, the idea assumes that the current amount of workers maximizes productivity. It is possible that the current wage encourages firms to employ additional unproductive or counterproductive workers. An increase in the minimum wage would encourage employers to hire fewer, more productive workers. Therefore, any gains in productivity from an increase in the minimum wage would result in greater unemployment. Second, even if there were a gain in productivity from an increase in the minimum wage, it is unlikely that the gain in productivity would completely negate the increase in the cost of labor (Brown et al 1982, p. 490). While the increase in unemployment would be small, the unemployment rate would rise after the minimum wage rate was increased.

In addition to Card and Krueger's criticism of the standard model, one can not assume that labor markets are homogenous. Neither employers nor employees are the same across all industries. Therefore, an increase in minimum wage will have a different effect on the various sectors in the labor market. While most people working in minimum wage jobs have similar characteristics in terms of level of education and work experience, there are a wide variety of differences in potential productivity and an individual's willingness to work. Also, minimum wage laws do not cover all industries. An increase in the minimum wage may shift employment into lower paying industries not covered by the law. Due to the latter concerns, one has to develop a more holistic model

of the labor market in order to understand the potential consequences of the minimum wage.

Also, the labor market can be considered homogenous in terms of the workforce or between industries. Industries that are not covered by minimum wage laws may cushion some of the unemployment effects of an increase (Brown, 1988 p. 136). There are two possible impacts of the partial coverage of minimum wage. An increase in the minimum wage will shift employment towards industries not covered by the law. Furthermore, if the uncovered industries have a lower wage rate than the minimum wage, any increased income may be offset by the shift in employment. Even among firms of the same industry, a workforce is not homogeneous. In particular, a large percentage of minimum wage workers are dependent teenagers from middle-income households. Any increase in the minimum wage may not affect the labor market uniformly. The disemployment effects from an increase in the minimum wage may affect teenagers proportionally more than adults (Mincy, 1990, p. 23). Arguably, full time adult workers have a greater potential for gains in productivity from work experience than seasonal or part-time teenagers. Employers will seek out the higher quality adults over lower-quality teenagers. Consequently, minimum wage earning adults are less likely to be affected by any possible disemployment and receive the benefits of a greater income. Therefore, an increase in the minimum wage would aid low-income households and reduce poverty.

There are two implicit flaws to the argument made by the proponents. First, minimum wage earning adults are more productive than teenagers. Both adults and teenagers working in minimum wage jobs have one common characteristic, a lack of education and experience. It is the latter characteristic that is key to the individual's

inability to earn a higher income (Mincy, 1990, p. 19). There is little evidence to support the argument that adults have a greater potential for productivity gains than teenagers. Also, only a small fraction of the minimum wage earning workers are adults whom support a significant portion of their household (Brown, 1988, p. 140). Consequently, any increases in the minimum wage would affect only a small portion of the Americans living in poverty. Despite the arguments against increasing the minimum wage, the idea has merit as an economic tool in reducing poverty.

III. Model

After reviewing the literature, a holistic model appeared to be the best choice for modeling the effects of the minimum wage on poverty. In order to capture the possible upward pressure of minimum wage and unemployment effects across all industries, a complete model of poverty would have to be developed. Using data from the 2000 Census and the Bureau of Labor and Statistics March 2006 Supplement, poverty was modeled in terms of education, age, state minimum wage, race, and gender.

$$\begin{aligned}
 (\text{Income / Person})_i = & \beta_0 + \beta_1 \text{Y2006}_i + \beta_2 \text{Minimum Wage}_i + \beta_3 \text{High}_i + \\
 & \beta_4 \text{SCAS}_i + \beta_5 \text{BCH}_i + \beta_6 \text{Black}_i + \beta_7 \text{Asian}_i + \beta_8 \text{Other}_i + \beta_9 \text{Female}_i + \\
 & \beta_{10} \text{Age}_i + \beta_{11} \text{Employ}_i + \varepsilon_i
 \end{aligned} \tag{1}$$

(Income/Persons) is used as an absolute measure of poverty defined by household income divided by the number of household members. Since the federal poverty guidelines are based on income and household size, by using household income per person, it is easy to interpret coefficient estimates in terms of the federal poverty line. The hypothesized

coefficient of each variable is summarized in table 1. The focus of the analysis is the effects of the minimum wage on working individuals. Those that are too young to be in the labor force (under 15) or old enough to retire (Over 65) are excluded from the data set.

The data is constructed as an independently pooled cross section; therefore the term Y2006 captures the change in household income per person from 2000 to 2006. The coefficient of the income variable should be positive since income per capita rose from 2000 to 2006. Minimum wage is based upon the minimum wage of the individual's state. For states with no state minimum wage law, the federal minimum wage of \$5.15 is used. In order to determine the effect of an increase in the minimum wage, one must examine the sign of the coefficient of the minimum wage variable. If the coefficient of the minimum wage is positive and significant, minimum wage laws decrease poverty.

In both data sets, education of the individual is recorded as one of thirteen categories based upon the highest year of schooling completed. The model used three dummy variables to estimate the effects of education on household income per person. The variable High captures the difference in household income per person between individuals who have and have not completed a high school degree. The SCAS coefficient measures the impact of completing some college, an associate's degree, or vocational training on household income per person compared to not completing a high school. Finally, BCH differentiates the effect of attaining a Bachelor's degree or higher in comparison to not having a highschool diploma. Income should increase with number of years a person has completed. Therefore, each of the education variable coefficients

should have a positive and increasing impact on income. In other words, SCAS should be greater than High and BCH should be greater than SCAS.

The race dummy variables Black, Asian and Other capture the impact of an individual's race on household income per person. Black, Asian and Other measure the difference in income between an individual that identifies themselves as either Black, Asian, or another race in comparison to someone who identifies themselves as White. All of the race variables should have a negative impact. Female captures the impact on income per person between the different genders. Like the coefficients of the dummy variables on race, the gender coefficient should be positive. Employ is the dummy variable for employment status of the individual. The coefficient of Employ should be positive. Age is the age of the individual and its coefficient should be positive when measured in absolute terms. However, one should consider that income increases at a diminishing rate as age increases and it may become negative due to age discrimination. Therefore, a squared variable of age will be added after the initial regression to take into account possible age discrimination. The coefficient of the squared age variable should have a negative impact on income.

VI. Empirical Results

After estimating the initial regression model, the coefficients of the variables follow the hypothesized pattern. Only one of the variables is statistically insignificant, the race variable Asian. All of the other race variable coefficients are negative and significant coinciding with their hypothesized values. The coefficient of the minimum wage variable is positive and significant which indicates that increasing the minimum

wage lowers the level of poverty. In terms of magnitude of the initial estimate, a one-dollar increase in the state minimum wage will increase the income of an individual by \$1918.16. From the perspective of the federal poverty guidelines, it would take an increase in the state minimum wage of around \$11 in order to increase the predicted income of a family of four from the poverty line (\$20,000) to twice the poverty line. The initial estimate indicates that the minimum wage may be effective as an anti-poverty measure, but before a final conclusion can be drawn it is necessary to address the assumptions of the initial model.

While most states without a state minimum wage must comply with the federal minimum wage set by the Fair Labor Standards Act, there is one exception to the law. In Kansas, for workers under the age of 19, the federal minimum wage is \$2.65. Since the initial regression assumed the minimum wage for all Kansas observations was \$5.15, it is necessary to address the possibility of biased estimates as a result of the lower minimum wage for minors. By eliminating observations from Kansas from the data, it is possible to see if the exception to the federal minimum wage law has any impact on the coefficients of the estimates. After obtaining the coefficients from the data without Kansas's observations, one notices that there is little change from the initial regression estimates. All the coefficients follow the same hypothesized pattern and all remain significant except for the Asian dummy variable coefficient.

In addition to the assumption about the minimum wage of Kansas, it is important to account for the possibility of age discrimination. In other words, while income will increase with age, at a certain point the impact of age on income will decline and possibly become negative. By including a squared variable of age, it is possible to capture the

diminishing returns of the age variable and any possible age discrimination. However, after estimating the new model, both of the coefficients of the age variable and the squared age variable become statistically insignificant indicating that age does not have diminishing return. The result of the new model is not surprising. Since the model only uses data from individuals of working age, income may not significantly decline until after an individual retires. Therefore, age discrimination may not appear in the data sets used in the model.

While all of the regressions have indicated a positive impact of an increase in the minimum wage, it is important to consider the intent of the law before drawing a final conclusion. If the ultimate intent of the minimum wage law is to raise the income of people in poverty, logically, one should examine the impact of the minimum wage on individuals earning an income close to the poverty line. Therefore, the model will use only observations living in households earning less than three times the poverty line. By using a generous definition of poverty, it is possible to develop a model that captures the impact of minimum wage on individuals sufficiently close to poverty. With the new sample, coefficients were estimated using the initial model. The estimates of the coefficients showed some contrasting results from the initial regression.

There are two noticeable differences between the initial regression and the estimates from the regression using only observations less than three times the poverty line. First, the coefficient of the race variable Asian is negative and significant. In contrast to the initial regression, the estimate follows the hypothesized direction. Second, the coefficient for minimum wage is negative. The negative relationship implies that an increase in minimum wage decreases income per person of individuals below three times

the federal poverty line. It is possible that the benefits of increased income gained from the higher minimum wage are outweighed by increase in unemployment of low-income workers.

Furthermore, if we look at the effect of minimum wage on individuals of a particular race, it is possible to develop a clear picture of the impact of minimum wage. Instead of using observation below a certain level of poverty, one should examine the effects of minimum wage on Black individuals. After estimating a regression on African American individuals in the sample, the coefficient of the minimum wage variable is negative. Therefore, an increase in minimum wage reduced the household income per person of African American. Along with the analysis of households in poverty, the analysis of African American households furthers the conclusion that minimum wage laws do not help individuals in poor households. Therefore, one should reconsider their effectiveness as a poverty reducing measure.

V. Conclusions

The results of the minimum wage laws are mixed. An increase in minimum wage definitely increases the predicted income of individuals. However, the primary benefactors of the increased income may not be people the law intends to assist. There are two possible explanations for the greater impact of minimum wage on wealth. First, it is likely that an increase in minimum wage exerts upward pressure on wages for all workers. The increase in wages due to upward may be greater for higher income households than for low-income households. Also, the unemployment, which occurs as a result of the increase in the minimum wage, will undoubtedly affect household earning a wage closer to the minimum than those earning in excess of the minimum wage. Second,

most of the individuals earning minimum wage are teenagers living in households that have an income greater than three times the federal poverty line. One can assume that most of the increased income from minimum wage earners benefits members of a household well in excess of the poverty line. After examining the data analysis, it is not unreasonable to conclude that the primary benefactors of the increase in minimum wage are white middle class teenagers. The conclusion of the estimates are clear the minimum wage does not benefit households in poverty. Ultimately the results of the empirical analysis are clear, minimum wage laws are less than ideal as a poverty reducing measure. It is essential that future policy makers consider other possible solutions to reducing poverty in the United States.

VI. Tables

Variable	Variable Explanation	Hypothesized sign of coefficient
Y2006	Change in household income between 2000 and 2006	Positive
Minimum Wage	State Minimum Wage in 2006 dollars	Positive
Age	Age of the individual	Positive, may diminish over time
Employ	Difference in income between an individual that is employed and one that is unemployed or not in the labor force	Positive
Female	Difference in income between a man and a woman	Negative
Education		
High	Difference in income between an individual with a high school diploma and someone without one	Positive
SCAS	Difference in income between an individual with either some college, an associates degree or vocational training and someone without a high school diploma	Positive, Coefficient should be greater than High
BCH	Difference in income between an individual with bachelor's degree or greater and someone without a high school diploma	Positive, Coefficient should be greater than High and SCAS
Race		
Black	Difference in income between someone who identifies themselves as black and someone who identifies themselves as white	Negative
Asian	Difference in income between someone who identifies themselves as Asian and someone who identifies themselves as white	Negative
Other	Difference in income between someone who identifies themselves as a race other than white, black or Asian and someone who identifies themselves as white	Negative

Table 1

Variable	Beta Coefficient	Standard Error	T-statistic
Constant	-13052.9	766.408	-17.031
Y2006	20774.813	151.699	136.948

Minimum Wage	1918.162	116.242	16.502
Age	383.642	5.598	68.528
Employ	7126.201	168.669	42.250
Female	-2174.884	148.788	-14.617
Education			
High	3616.596	221.264	16.345
SCAS	10122.997	221.915	45.617
BCH	30573.098	241.255	126.654
Race			
Black	-7960.104	242.255	-32.858
Asian	251.832	369.727	0.681
Other	-5501.230	293.390	-18.751

Table 2 – Controlling for Kansas Observations

Variable	Beta Coefficient	Standard Error	T-statistic
Constant	-13143.4	777.781	-16.899
Y2006	20936.433	154.749	135.293
Minimum Wage	1891.318	117.641	16.077
Age	384.642	5.727	67.114
Employ	7190.201	172.470	41.693
Female	-2171.883	152.232	-14.267
Education			
High	3653.585	226.109	16.158
SCAS	10238.318	226.886	45.125
BCH	30699.388	246.856	124.361
Race			
Black	-7947.464	246.856	-32.032
Asian	281.126	376.722	0.746
Other	-5436.943	299.761	-18.138

Table 3 - Using Observations below three times the Federal Poverty line

Variable	Beta Coefficient	Standard Error	T-statistic
Constant	5417.675	189.724	28.556
Y2006	2468.809	38.453	64.203
Minimum Wage	-164.342	28.945	-5.678
Age	77.894	1.327	58.712
Employ	2978.536	37.275	79.908
Female	-163.638	36.268	-4.512
Education			
High	997.051	45.660	21.836
SCAS	1066.674	48.527	21.981
BCH	1888.441	68.799	27.420
Race			

Black	-1433.137	50.518	-28.369
Asian	-1059.435	96.423	-10.987
Other	-1063.676	59.512	-17.873

Table 4 – Using African American Observations

Variable	Beta Coefficient	Standard Error	T-statistic
Constant	13560.227	179.227	7.537
Y2006			
Minimum Wage	-1555.670	281.755	-5.521
Age	261.167	12.818	20.375
Employ	9250.923	375.106	24.662
Female	-3990.668	348.240	-11.460
Education			
High	2948.255	468.495	6.293
SCAS	8231.287	488.301	16.857
BCH	27464.629	609.227	45.081

References

- Brown, C., G. Curtis and A. Kohen (1982) "The Effects of Minimum Wage on Employment and Unemployment" *Journal of Economic Literature*, 20(2), pp. 487-528.
- Brown, C. (1988) "Minimum Wage Laws: Are They Overrated?" *Journal of Economic Perspectives*, 2(3), pp. 122-145.
- Card, D. and A. Krueger (1995) *Myth and Measurement: The New Economics of the Minimum Wage*, Princeton University Press, Princeton, New Jersey
- Gregory, P. and L. Reynolds (1965) *Wages, Productivity, and Industrialization in Puerto Rico*, Richard D. Irwin Inc, Homewood, Illinois
- Mincy, R. (1990) "Raising the Minimum Wage: Effects on Family Poverty" *Monthly Labor Review*, 113(7), pp. 18-25.