Is Minimum Wage An Effective Anti-Poverty Tool?

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Abstract

Since its inception due to the passage of the Fair Labor Standards Act of 1938, the minimum wage has been a highly debated topic. Originally set at 25 cents, the minimum wage has grown much larger over time. The Federal minimum wage currently stands at $7.25, unchanged since 2009 (DOL, 2019). Many states, however, have decided to set their own minimum wages, and some are much higher than the minimum Federal level. In this study, we attempt to determine the effect that minimum wage laws at the state and Federal level have had on poverty in the United States. We ran multiple models observing this relationship and, in each model, poverty was positively correlated with the minimum wage, although not always at a statistically significant level. We conclude that the minimum wage is an inefficient anti-poverty tool. The minimum wage has not decreased poverty as it was intended to. Although it may pull some workers out of poverty, job loss created by higher minimum wages could be pushing more into poverty.
Section I: Introduction

Since its inception due to the passage of the Fair Labor Standards Act of 1938, the minimum wage has been a highly debated topic (Wolla, 2014). Originally set at 25 cents, the minimum wage has grown much larger over time. The Federal minimum wage currently stands at $7.25, unchanged since 2009 (DOL, 2019). Many states, however, have decided to set their own minimum wages, and some are much higher than the minimum Federal level. Washington and Massachusetts currently have the highest minimum wages at $12, while many other states have wages somewhere in between $12 and the Federal rate of $7.25 (DOL, 2019). Even some cities have even opted to maintain an even higher minimum wage than their respective states mandate.

The minimum wage law was initially enacted to be used as an anti-poverty tool (Wolla, 2014). It was and is still reasoned that increasing the wage of society’s lowest earners will lift many individuals and families out of poverty. This theory seems very reasonable at first glance, but after understanding who actually earns the minimum wage, the argument begins to break down. Do minimum wages actually lower the poverty rate?

Background

The Official Poverty Rate (OPM) is determined by the U.S. Census Bureau. The Bureau compares pre-tax income with a threshold determined to be three times the cost of a minimum food diet in 1963 and is adjusted for family size (IRP, n.d.). In 2016, the poverty threshold for a family of 4 was set at $24,339 (IRP, n.d.). A family of three, two,
or one individual would have a completely different and lower threshold than a family of four. These thresholds are adjusted annually for inflation and changes in the structure of families. It is not however adjusted for geographical location (IRP). This could lead to higher poverty rates being observed in states and cities with lower cost of living and lower poverty rates in states with higher cost of living.

Understanding the theory behind minimum wage and discovering who actually earns it is extremely important to understand the effect it has on poverty. According to the Bureau of Labor Statistics (2017), half of those that earn the minimum wage are age 25 or younger, even though that age group makes up only a fifth of the labor force. On top of that, only 1 percent of the entire labor force fits the bill of being a full-time minimum wage earner. For part-time workers, only 6 percent earn the minimum wage. It would seem that the idea that many individuals are full-time minimum wage earners who are trying to support their family isn’t very accurate. Even more interesting is the industry that these individuals work in. BLS found that three-fifths of all minimum wage earners worked in restaurants and food services, many of which receive tips that supplement their wages (BLS, 2017).

With such a small portion of the labor force earning the minimum wage and the majority of that small portion being young people who probably are not supporting themselves or a family, the underlying theory behind minimum wage seems to break down. Increasing the minimum wage would indeed help low wage workers, but the characteristics of low wage workers are probably not those that policy makers and activists believe they are.
Literature Review

The Congressional Budget Office (CBO) analyzed the effects that an increase in the current minimum wage from $7.25 to both $9.00 and $10.10. The study found that while wages would increase for some individuals and families living in poverty, only 19% of the higher earnings would go to those that live under the poverty threshold (CBO, 2014). Burkhauser and Sabia (2007) found similar results and argued that 87% of all benefits would go to non-poor families. This implies that a large portion of those that receive wage increases would not be the working poor, the individuals that are being targeted by this policy. Instead, they are more than likely to be teenagers and young adults who live with their parents. This would suggest that using the minimum wage as an anti-poverty tool would be very inefficient. With only 20% of the benefits going to non-poor families, minimum wage increases may not have a large effect on the poverty rate.

The CBO also found that increasing the minimum wage would cause job loss concentrated on those that are currently earning less than the new proposed minimum wages. Increasing the minimum wage from $7.25 to $10.10 would reduce the amount of jobs available by 500,000 in the same year it was implemented (CBO, 2014). Gindling (2018) found similar results when studying various countries around the world that introduced minimum wages. In many of the countries studied, minimum wage actually lowered the incomes of the low-income workers it was intended to help. This suggests that while it may lift some individuals out of poverty, minimum wage also could force some into poverty, based on these findings.
David Neumark and William Wascher (2002) also conducted a similar study examining whether or not minimum wage policies were effective at combating poverty. They found similar results to what the CBO found. According to Neumark and Wascher, “minimum wages increase both the probability that poor families escape poverty and the probability that previously non-poor families fall into poverty” (Neumark & Wascher, 2002). They also found that minimum wage could be moving more individuals and families into poverty than it moves out. The research done by Sen, Rybczynski, and Van De Waal (2011) supports this idea. They found that “a 10% rise in the minimum wage is also significantly associated with a 4%-6% increase in the percentage of families living under ‘low income cut offs’” (Sen, Rybczynski, & Van De Waal, 2011).

Neumark’s & Wascher’s research also found that the effects of minimum wage resembled income redistribution. But rather than redistributing income from high to low earners, minimum wage policies seem to redistribute income among just low-income earners (Neumark & Wascher, 2002). This finding is consistent with the CBO suggesting that many low-income jobs will be lost due to minimum wage increases. Some poor families may earn higher wages, but at the cost of many other lower paying jobs.

**Section II: Data Sources and Empirical Implementation**

The data that will be used for this analysis has been gathered from the most recent Census report and from Federal Reserve Economic Data. Data collected by the Census has been used in countless numbers of analyses. The Census collects very
detailed data about individuals and businesses, attempting to understand the economy as well as possible. It is conducted by administering surveys that are filled out with extensive detail. Data from the Federal Reserve is also planned for and collected in a similar manner to how the Census is conducted. Data from both sources are extremely reliable and used extensively in various types of analyses.

The data that has been collected is panel data, drawing data from each U.S. state over the time period 1995 to 2016. Including the 7 independent variables and the dependent variable, the data will consist of 1,352 observations. All but three of the variables being used will contain data from 1995 to 2016. One variable will consist of data from 2000 to 2016 while the remaining two variables will consist of data from 2003 to 2016. A complete dataset that includes observations for all 21 years was not available, so as to not influence the analysis through different data collection methodologies only certain years will be used. This may limit the conclusions of the analysis, but due to the large dataset that has been gathered. However, STATA will limit the observations used in the models that utilize those variables and only analyze data for all variables from 2003-2016.

The models being used will utilize the Fixed Effects form. Fixed Effects will be used because all of our variables vary over time and each state in the U.S. is different from the others. Each state has unique characteristics that may or may not influence the variables included for that state. Using panel data will also allow the regression to account for any unobservable factors that were occurring across the United States during this time period. The dependent variable is the rate of poverty in each U.S. state.
Minimum wage will be our main independent variable of interest. As discussed before, the minimum wage has increased over time in every state. This analysis takes into account state level variations from the minimum wage, but not city level. Some states have chosen to base their minimum wage off the federally mandated minimum while others have chosen to raise theirs considerably higher. The differences between the states should help us to examine the true effect minimum wage is having on poverty throughout the U.S.

All other independent variables that will be used will be control variables, helping to reduce omitted variable bias and allowing the best measure of the effect minimum wage is having on poverty to be made. Median household income, unemployment rate, population density, inflation rate, the percentage of state population that are minorities, percent of the state population that has obtained a bachelor’s degree, and the percentage of children living in single mother homes will all be utilized as control variables.

As mentioned before, poverty is measured on a household basis, not an individual level basis. Controlling for median household income will help limit the influence cost of living may have on the regression, due to the manner in which the poverty rate is calculated. Median household income and the unemployment rate will also help to control for the effects of the Great Recession on the poverty rate.

The unemployment rate is also a control variable that will be utilized in the regression. Poverty has been shown many times to be correlated positively with the unemployment rate (NBER, 2019). As unemployment increases, household income decreases from lost wages, which causes more families to fall into poverty. The
unemployment rate will also help control for the effects of the Great Recession on poverty, just as median household income does.

Population density will also be used as a control variable. Tinsley and Bishop (2006) found that areas with higher population density were prone to higher levels of poverty. The differences in population density between the states then would need to be controlled for. The inflation rate and the percentage of the population that are minorities will also be used. Studies have also shown that minorities experience higher levels of poverty than whites, especially black Americans (EPI, 2018). Educational attainment levels are also an important determinant of poverty. Douglas-Hall and Chau (2007) found that 82% of children who had parents that didn’t have high school diplomas lived in low-income families. Finally, the percentage of children living in a single mother home is a huge determinant of poverty. Studies have shown that about 58% of all poor children live in single mother homes (Children’s Defense, 2018). This will be accounted for in our regression models as well.

Section III: Summary Statistics and Regression Results

Below is the regression model that will be used in this analysis. We will be using several variations of this model to demonstrate the accuracy of the model.

\[ \text{PovRate}_{it} = \beta_0 + \beta_1 \log(\text{MinWage})_{it} + \alpha X_{it} + u_{it} \]
Where $PovRate_{it}$ is the poverty rate in state $i$ at time $t$, $\log(MinWage)_{it}$ is the natural log of the minimum wage in state $i$ at time $t$, $X_{it}$ is a set of control variables for each state $i$ at time $t$, and $u_{it}$ is a residual. The controls variables in $X_{it}$ are mentioned and explained above.

Our variable summary statistics table is included at the end of the paper. In our dataset, the poverty rate ranges from 5.6% to 23.9%, with an average rate of 13% across the states over this time period. The minimum wage across the states range from $4.25 to $10 over this same time period. While states may have had lower minimum wages than the Federal rate over this time period, the Federal rate would have been the minimum wage actually observed in such a state.

Our regression models returned results that support the before mentioned studies. As mentioned before, we ran multiple models to account for various factors that could introduce bias into our calculations. However, for four of the models we ran the coefficient on Minimum Wage was positive and statistically significant at the 95% confidence level, although small and probably economically insignificant. On two of our regressions, the results were still positive but only statistically significant at the 90% level. Our 3 models with the highest R-Squared values had coefficients ranging from 1.10 to 1.74. Interpreting these coefficients means that a 1% increase in the minimum wage leads on average to a $1.74/100$ percentage point increase in the poverty rate, which is not very large. Even a 100% increase would only lead to a $1.74$ percentage point increase in the poverty rate. But any positive coefficient or statistically insignificant coefficient would be interpreted as minimum wage not doing its intended job of
decreasing poverty. We utilized robust standard errors to account for any heteroskedasticity that may have been present in our model.

This seems to support the assertion that there are trade-offs when implementing minimum wage laws and increases. On the one hand, wages may increase for a select number of individuals who are earning the minimum wage or close to it. But on the other, many jobs may be lost as technology improves and automation is put into place to maintain business profits.

Our results also support the evidence that only a small portion of the working poor actually receive the benefits of the wage increases. Much of the wage increase probably went to individuals that were not under the poverty threshold at that time. Many were probably teenagers living with their parents or people with part-time side jobs. Our results show that there could actually be a small negative effect felt by the working poor.

Lastly, our results could also support the idea that minimum wage causes income redistribution among the poor. The coefficient on minimum wage in our model was very small and probably not economically significant. Thus, minimum wage doesn’t have much of an effect on poverty. However, there are individuals that will receive pay raises and also individuals that will experience job loss. Our results show that the costs and benefits of minimum wage, with respect to poverty, probably cancel each other out by redistributing income among low-wage earners.

Section IV: Conclusions and Discussion of Policy Implications
Our analysis has supported past studies on minimum wage and determined that minimum wage is not an efficient policy tool to use against poverty. These findings are important because there is currently an on-going debate about how high the Federal minimum wage should be set. Many advocates of increasing the minimum wage assume that increasing the rate to $15 an hour will drastically decrease poverty and boost wages for the working poor, especially those that work full-time and earn the minimum wage. But based on our findings and other studies on this topic, these assertions simply are false and not based on statistical evidence. Increasing the minimum wage could actually increase poverty, based on our findings.

Usage of a state or Federal minimum wage should be seriously reconsidered. If the goal of minimum wage is to lower poverty, it is likely that it is not doing a good job. I would describe minimum wage as trying to use a blunt hatchet to combat poverty. It simply is not a great tool to use. Again, that could be due to the demographics that actually earn minimum wage. It could also be due to the costs and benefits of minimum wage, meaning the higher unemployment due to higher wages. It could also be due to the push and pull factors discussed earlier, meaning minimum wage can pull some individuals out of poverty, but it also could push others into poverty. Whatever the case may be, other proven policies should be utilized in place of minimum wage. The EITC has been shown to have positive effects on poverty and should be utilized more extensively in place of minimum wage. Other policy alternatives exist as well to help combat poverty in place of minimum wage.
References:


Gindling, T. Does increasing the minimum wage reduce poverty in developing countries?. IZA World of Labor 2018: 30 doi: 10.15185/izawol.30.v2


Wolla, Scott A. "Would increasing the minimum wage reduce poverty?." Page One
Economics® (2014).

**Tables:**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
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<tr>
<td>Poverty</td>
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<td>13.07936</td>
<td>3.307014</td>
<td>5.6</td>
<td>23.9</td>
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<td>MinWage</td>
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<td>1.320425</td>
<td>4.25</td>
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<tr>
<td>Income</td>
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<td>9892.973</td>
<td>24880</td>
<td>76260</td>
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<td>Population~y</td>
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<td>188.0182</td>
<td>252.4678</td>
<td>1.053806</td>
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<tr>
<td>Unemploy</td>
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<td>5.525591</td>
<td>1.887679</td>
<td>2.3</td>
<td>13.60833</td>
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</tbody>
</table>

| Inflation       | 1,100 | 2.222727 | 1.030443  | -.4  | 3.8   |
| Minority        | 700   | 16.6027 | 11.39476  | 1.292407| 65.52288 |
| Bachelors       | 700   | 20.13378 | 4.175428 | 10.77009| 35.11542 |
| SingleMother    | 850   | 32.06824 | 5.388996 | 17   | 49    |

**Regression Results**

<table>
<thead>
<tr>
<th>Log(Min Wage)</th>
<th>M1</th>
<th>M2</th>
<th>M3</th>
<th>M4</th>
<th>M5</th>
<th>M6</th>
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<tr>
<td>Log(Median Household Income)</td>
<td>-1.30</td>
<td>-5.54**</td>
<td>-0.31**</td>
<td>3.08</td>
<td>2.91</td>
<td>3.45**</td>
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<td>Unemployment</td>
<td>0.46**</td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td>Log(Pop Density)</td>
<td>5.98**</td>
<td>3.08</td>
<td>2.91</td>
<td>3.45**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Minority</td>
<td>0.32**</td>
<td>0.25**</td>
<td>0.26**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Single Mother</td>
<td>0.06</td>
<td>0.05</td>
<td>0.08**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Bachelor's</td>
<td>0.07**</td>
<td>0.15**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation</td>
<td>5.14**</td>
<td>17.91**</td>
<td>28.24**</td>
<td>-14.71</td>
<td>-12.48</td>
<td>1.64</td>
</tr>
</tbody>
</table>

| Observations    | 1,100 | 1,100 | 700  | 700  | 700  | 700  |
| Adjusted R-Squared | 0.34  | 0.56  | 0.62 | 0.69 | 0.68 | 0.7  |
| F Stat           | 106.87 | 201.25 | 50.49 | 70.84 | 104.67 | 92.72 |

95% Statistically Significant **, 90% Statistically Significant