Minimum Wage and Unemployment

FE 312 Section 1001

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Abstract

General economic principles argue that increasing the minimum hourly wage employees are legally allowed to be paid causes a surplus of labor, or an increase in the unemployment rate. Countless studies over the years have tried to quantitatively observe this in the labor market, only to come up with mixed results. Many studies find that raising the minimum wage does indeed raise the unemployment rate. There are also studies that throw stones at this assertion and conclude that raising the minimum wage has no effect on unemployment, and even some argue that it actually increases employment. For this paper, data of the minimum wage and the unemployment rate was analyzed for correlation and causation. In the end, it was concluded that there is no outstanding evidence to conclude that raising the minimum wage increases unemployment in the economy, and that the macroeconomic climate causes the only visible results.
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A minimum wage is the lowest hourly, daily or monthly labor payment that employers may legally pay to workers. Equivalently, it is the lowest wage at which workers may sell their labor to an employer. In 1912, Massachusetts organized a commission to recommend non-compulsory minimum wages for women and children. Within eight years, at least thirteen states and the District of Columbia passed minimum wage laws. The federal minimum wage was finally established in the United States in 1938 at $0.25 per hour, and did not gain its highest purchasing power in real constant dollar terms until 1968 when it was $1.60 per hour\(^1\).

Characteristically, minimum wage workers tend to be young. Although workers under the age of 25 represented only about one-fifth of hourly-paid workers, they make up half of those paid the federal minimum wage. Among employed teenagers paid by the hour, nearly 19 percent earned the minimum wage or less, compared with about 3 percent of workers age 25 and over\(^2\).

Additionally, by major occupational group, the highest proportion of workers earning at or below the federal minimum wage was in service occupations, at about 13 percent\(^3\). About 6 in 10 workers earning the minimum wage or less in 2009 were employed in service occupations, mostly in food preparation and serving related jobs.

As time has passed, the minimum wage has periodically been raised in an effort to combat the poverty that persists in the United States. On July 24, 2009, the federal minimum wage increased from $6.55 to $7.25 per hour, but some states and municipalities have set

\(^3\) Ibid.
minimum wages even higher than the federal level (with the highest state minimum wage being $8.67 in Washington)\(^4\). This paper analyzes whether manipulations of the minimum wage raises or lowers the rate of unemployment. The current economic proposition says that increasing the minimum wage creates a surplus of employment and thus increases the unemployment rate. This paper will explore the effects of minimum wage in this context of low-skilled labor.

**Literature Search**

There is a debate on increasing the minimum wage and how effective it is in combating poverty. The debate exists because there are different opinions about the benefits and drawbacks of enacting such a plan. Supporters of increasing the minimum wage say that it increases the standard of living of workers while reducing poverty. Opponents say that if it is high enough to have an impact, it increases unemployment, particularly among workers with very low productivity due to inexperience or handicap, thereby harming lesser skilled workers to the benefit of more-skilled workers. Three case studies were found that show different effects on unemployment from increasing the minimum wage. They are discussed in sequence. First, the article argues that it increases unemployment; the second argues that unemployment is unaffected, and the third argues that employment is actually raised from an increase in the minimum wage.

A study done in 2010 by Joseph J. Sabia and Richard Burkhauser investigating the federal minimum wage increases between 2003 and 2007 concluded that increasing the minimum wage would increase unemployment. In 2007 the federal minimum wage was increased from $5.15 to $7.25 per hour. The study investigated the effects of this increase and

the effects of increasing the minimum wage to $9.50 per hour, which was a key rationale for Senate Bill 2514. Using the overarching economic 101 model of supply and demand surpluses (which is discussed later) and holding the employment elasticity at -.6 for young minimum wage workers and -.2 for others, the study forecasted that approximately 1.3 million low-skilled workers would lose their jobs in the federal minimum wage increased again, including 168,000 jobs held by the working poor. This equates to a 3% increase in unemployment. The study argues that because low-skilled workers will be pushed out of the market as demand for the now better paying low-skilled jobs increases.

A study done by Brown, Gilroy, and Kohen in 1983 had an interesting result that showed only a slight increase in unemployment due to the minimum wage. It created an economic equation that showed raising the federal minimum wage would reduce teenage (16-19 years) employment by about .5 percent, which is a very low estimate when compared with other studies. Note that the study at hand is one that simply went back and re-worked its economic equations from an earlier article. The earlier article, using a shorter sample-time and inaccurate variables of wage elasticity’s, held that increasing the minimum wage increased unemployment by 1-3 percent. Now, after re-working the equations, the estimates are clustered between the .5-1.0 percent increase range. However, these results may be misleading. These results were not simply because the low-skilled workers were out of a job and continued to look for a job. The study instead found sufficient labor force withdrawal so that employment and the labor force were reduced in near-equal proportions. As a result, the unemployment effects of the minimum wage were estimated to practically be zero. Intuitively, this makes sense. As older, more skilled

\[ \text{employment} = \text{minimum wage} \times \text{employment elasticity} \]

\[ \text{unemployment} = \text{minimum wage} \times \text{unemployment elasticity} \]

\[ \text{minimum wage} = \frac{\text{wage}}{\text{employment elasticity}} \]

\[ \text{unemployment} = \frac{\text{wage}}{\text{unemployment elasticity}} \]

\[ \text{wage} = \text{minimum wage} \times \text{employment elasticity} \times \text{unemployment elasticity} \]

\[ \text{minimum wage} = \frac{\text{wage}}{\text{employment elasticity} \times \text{unemployment elasticity}} \]

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6 Ibid.
workers replaced the low-skilled teenage workers, these workers become discouraged and no longer looked for a job since they cannot compete with their more experienced counter-parts. The study notes that this withdrawal effect still would not raise the unemployment effect back to 3 percent like its earlier models, but it is a new viewpoint in which to see the effects of increasing the minimum wage.

The article that shook economic principles of the labor force was David Card and Alan Krueger who analyzed the effects of an increase in the minimum wage in New Jersey by evaluating 410 fast-food restaurants in New Jersey and eastern Pennsylvania. Pennsylvania was used as a control group in this study since there was no minimum wage increase in the state. The paper presented new evidence on the effect of minimum wages on establishment-level employment outcomes. They analyzed the experiences of 410 fast-food restaurants in New Jersey and Pennsylvania following the increase in New Jersey’s minimum wage from $4.25 to $5.05 per hour. Comparisons of employment, wages and prices at stores between the two states after the rise offered a sample for evaluating the effects of the minimum wage. Contrary to the central prediction of the textbook model, and the previous two literature articles, the study by Krueger and Card found no evidence that the rise in New Jersey’s minimum wage reduced employment at fast-food restaurants in the states at all. In fact, when they compared stores in New Jersey that were affected by the $5.05 minimum wage to stores in eastern Pennsylvania, the study found that the increase in the minimum wage actually increased employment. Even more, stores in New Jersey that were initially paying $5.00 per hour or more and thus were largely unaffected by the new law had an increase in employment as well. These findings, needless to say, shook up the pot in the economic world. These findings went against every economic


A very large criticism of the Krueger and Card model came from Tom Worstall, a Forbes columnist who had a very astute observation about the article. He argues that Card and Krueger were looking for their evidence in the wrong place. It was not correct for the study to just consider the fast food chains as the fast whole food industry. Worstall argues that the industry is made up into two very different groups that make up the industry as a whole. Burger King, Arby’s, and McDonald’s are all a major part of the industry and are what the study analyzed, but the delis, Mom and Pop stores, and the meatball sub places make up another large chunk of the industry. Worstall says that the independent sector is much more labor intensive then the chain sector because the chain sector is better equipped and differently supplied. Therefore, the chain sector is much more capital intensive then labor intensive compared to the independent sector. Using this distinction between capital and labor intensive sector, Worstall argues that believable models can be constructed that show employment rising, falling or staying stable in the chain sector while labor employed in fast food as a whole declines from the rise in the cost of labor. In this way, the Krueger and Card study may not have reached an accurate conclusion.\footnote{Worstall, Tim. Alan Krueger’s Mistake on the minimum wage. Forbes Magazine. 2011. http://www.forbes.com/sites/timworstall/2011/08/31/alan-kruegers-mistake-on-the-minimum-wage/}

### Application of Macroeconomic Mathematical Proposition and Results

Basic economic principles state that if the minimum wage is high enough, it increases unemployment, particularly among workers with very low productivity due to
inexperience or handicap. This is expected due to a few overarching macroeconomic principles. Raising the minimum wage induces some people to enter the labor market who would not apply if not for the higher level of pay. Now with a larger labor market, employers choose higher-skilled applicants. Thus, raising the minimum wage hurts low-skilled workers in two ways. First, because there are fewer jobs available since employers now must pay their employees more. Second, with a larger pool of applicants, competition is stiffer. Therefore, low-skilled workers have a more difficult time getting those jobs. The basic economic proposition in this scenario can easily be seen in a labor supply and demand graph. Where the two curves intersect, as economics 101 tells us, there is equilibrium quantity of labor supplied and quantity labor demanded. However, if the price paid per hour of work is increased and a price floor is therefore created, the quantity of supplied workers will increase to meet this increase in pay. The demand curve will not shift to intersect this new price and thus a surplus of employment, or unemployment, is created. Figure 3 illustrates this happening.

Figure 1. Labor Surplus

As seen in the figure, by increasing the wage above the free market wage, a surplus of labor is created. In this way, whenever an increase in the minimum wage occurs economists generally expect to see an increase in unemployment. Interestingly, minimum wage workers
tend to be young and thus teenage workers or high school dropouts are expected to be hurt the most with an increase in minimum wage.

Figure 2 was created to illustrate the historical unemployment rate in the United States, dating back to 1948.

As seen by the black regression line in the figure, it is clear that the unemployment rate has been continuously rising. The question is if the minimum wage is to blame. The following figure was created to show the minimum wage in 1996 dollars to investigate this question.
As it is seen from the black linear trend line the minimum wage has been declining in relative purchasing power. This is interesting seeing that the unemployment rate has been growing, but the minimum wage has been shrinking as seen in figure 2.

**Sources and Uses of Data**

Figure 2 and figure 3 was created using data downloaded from the Federal Reserve Bank of St. Louis (FRED) website. Microsoft Excel was then used to create the graphs. The data was accessible to the public without creating an account on the website to use it. No major problems were noted with the data. Microsoft Excel was used to do all the graphing, and the data used was assumed to be accurate.

For brevity, the link to the data used in figures 2 and 3 is:

http://search.stlouisfed.org/search?&client=Research-new&proxystylesheet=Research-new&site=publications&output=xml_no_dtd&num=30&filter=0&getfields=%2A&q=historical+minimum+wage
Figure 1 was taken from the website:


**Compare and Contrast Results**

Using the data displayed above in the unemployment and minimum wage figures, a graph was created that overlays both data sets at the same time. Figure 4 below illustrates these findings.

**Figure 4. Unemployment vs. Minimum Wage**

The results are rather interesting. Since they contrast the economic model that states as the minimum wage is increased, unemployment should increase as well. Figure 4 shows that there is no clear symmetry between the two lines as they rise and fall. From 1984 to the Great
Recession in 2008 both lines seem to be decreasing. That is the only argument, albeit weak, that can be made for similarities in the graphs.

Even more, when changes in the minimum wage are compared to the employment of people from the ages of 16-24, similar results of no symmetry are found. Figure 5 illustrates this phenomenon.

**Figure 5. Real Minimum Wage Rate vs. Unemployment Rates**

![Real Minimum Wage Rate vs. Unemployment Rates](http://aneconomicsense.com/2013/03/06/the-impact-of-increasing-the-minimum-wage-on-unemployment-no-evidence-of-it/)

The graph above shows the federal mandated minimum wage since 1950, in real inflation adjusted terms (using the CPI). The unemployment rate for all workers as well as a separate line for workers aged 16 to 24 is also displayed. The unemployment rate of those ages 16-24 was shown because it is expected that as the minimum wage increases, so should this group's unemployment level. This group should be the most affected by a raise in the minimum wage,
since approximately 51% of the hourly wage workers earning the minimum wage are in this age group. There may be a “lagging effect” between the minimum wage and the unemployment rate, meaning that unemployment will rise after a rise in the minimum wage occurs. By investigating the graph above, there seems to be some evidence of this from 1984 to 2006. However, these “lagging effects” may only be circumstantial if the larger macro-economic environment is taken into account.

If greater concern is taken into account of macro-economic conditions and how low skilled work is volatile when the macro economy is unstable, a new explanation can be discovered. The following graph illustrates the unemployment rate dating back to the 1950’s, with the macro-economic recessions in gray.

**Figure 6. Unemployment with Recession**

![Unemployment with Recession](http://research.stlouisfed.org/econ/cneely/wap/Unemployment -- CJN_06-02-2010 -- Public.pdf)


Using this very useful figure, it can easily be seen that unemployment very sharply increases when the macro-economy falls into a recession. Note that these sharp increases are also in figure 5. It is not simply circumstantial that unemployment drastically rises during recessions.
but arguably only rises 1 or 2 percentages when the minimum wage is increased. As seen through these figures the minimum wage has only a minor role in the unemployment rate, and even when studies show that it has a larger role great care needs to be taken to account for the larger macroeconomic climate.

In this way, it is concluded that the study done by Brown, Gilroy, and Kohen that found raising the minimum wage does not raise, or very marginally raises, the unemployment is correct. By analyzing the data and displaying them in a useful way in the figures above, it is clear that the minimum wage is decreasing over time and the unemployment level is increasing. Intuitively this shows that the two cannot be correlated in the way that the basic economic principles state they are. Instead, the greater macroeconomic environment may be the root of the discrepancies between raising the minimum wage having adverse employment effects.
References
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