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PRELIMINARY FINDINGS

Did the Increase in Minimum Wage Cause Our Unemployment Rate to Rise?

By **Michael J. Hicks PhD**, *Bureau of Business Research*¹

This report estimates the impact of the July 2008 minimum wage increase on unemployment rates in the United States. The July minimum wage increase affected only 26 states, with increases between 5 cents and 70 cents per hour. The remaining 24 states had minimum wage laws above the 2008 Federal level. Our analysis concludes that a 10 percent increase in the minimum wage would result in a roughly 0.19 percent increase in unemployment. Applied to the U.S. labor market in July, this results in a one-time decrease in employment of approximately 160,000 workers. This suggests other efforts to mitigate poverty, such as extension of the Earned Income Tax Credit.

Introduction

The role of minimum wage legislation on the well-being of workers is a complex issue, but not because of complex theory. It is a trivial exercise in high school economics to demonstrate that a minimum wage law should decrease employment, leaving in its wake workers willing and able to work at the now illicit lower wage. Otherwise we could simply set the minimum wage at \$25 per hour and eliminate poverty. Yet almost no issue in economics is as easy to explain and as widely misunderstood as the putative effect of a minimum wage on employment. For the minimum wage law to actually affect wages it must also reduce employment among low wage workers.

There are also normative factors to be considered. Minimum wage laws have a complex political economy. Any estimates of their impact – including this one – are apt to suffer criticism unrelated to the empirics of the matter.

As it so often is in economics, the empirics of the matter are a bit more complicated than the theory. There are a few confounding factors to be considered.

First few workers labor at the minimum wage. Fewer than 1.5 percent of workers over the age of 25 earn minimum wage, and most of these are in the food service industry, where tips comprise a significant part of income. Thus, the relative paucity of minimum wage workers suggests that employment changes will be difficult to measure amid the clutter of other effects.²

Second, the minimum wage law was never designed to boost employment. Rather, an unstated goal may be to induce low wage workers to remain out of the labor market, with the hope that they acquire additional skills which boost their earnings.³

As an empirical matter, uniform national changes in minimum wage laws do not provide comparative samples of re-

gions from which to compare. The few studies that have examined uneven timing of effects (where a city or state raised their minimum wages unilaterally) have not convincingly disentangled other effects across the regions.⁴

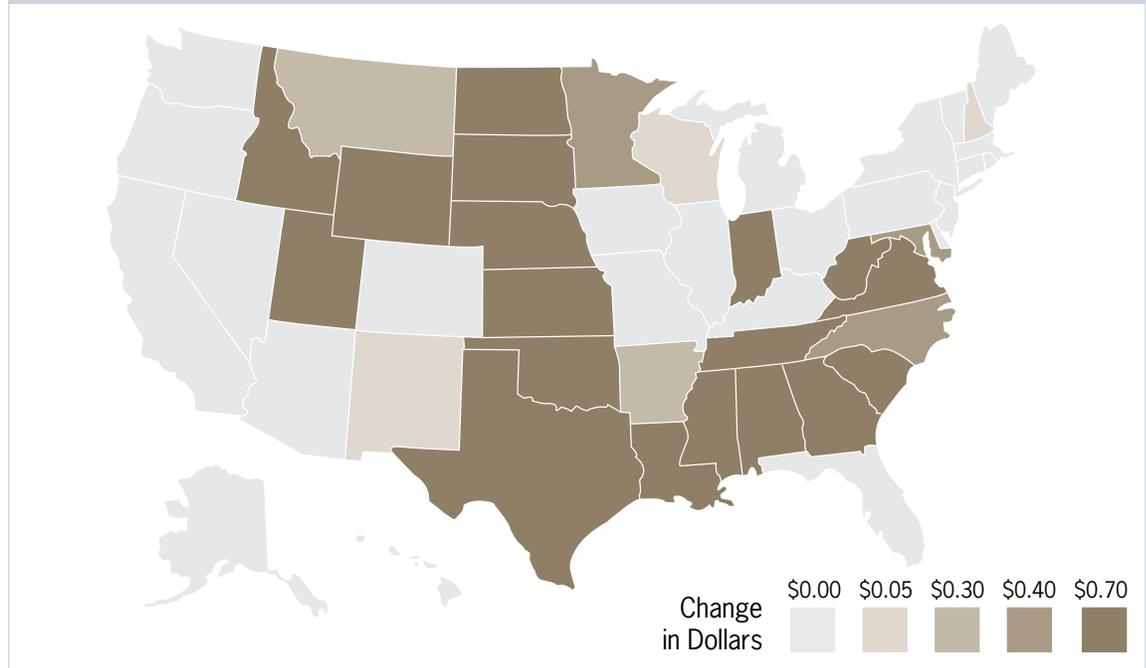
The Minimum Wage Study Commission reported in 1981 that a 10 percent increase in the minimum wage would lead to a modest 1 to 3 dip in employment. That conclusion hasn't been effectively challenged over the past 25 years. In its wake, research has tended to focus more heavily on the incidence of employment changes, so studies linking rural or minority job losses to minimum wages changes have dominated the research agenda.

This report focuses on a few simple questions. What has been the effect of the change in the minimum wage law on unemployment rates in the United States in the summer of 2008? And, what dynamics are at work that would explain the effects? We proceed with a brief history of the minimum wage law and research regarding it. We then move to an estimate of the impact of the minimum wage change in July 2008, on state level unemployment rates. We then provide a description of the dynamics of the matter, using job turnover as a key descriptor of the rise in unemployment. We end with a brief policy summary.

The History and Impact of Minimum Wage Laws

The Federal minimum wage was enacted in 1938, following two decades of state minimum wage laws. Within a decade it had come under significant criticism with future Nobel Laureate George Stigler explaining its negative impact on low wage workers. His argument continues to explain the potential negative consequences of the wage floor on employment.

Figure 1: Change in Minimum Wage, in Dollars



The next four decades saw a significant flood of research. The findings can easily be characterized as finding some negative to no effect of the legislation. Rottenberg [1981] published an extensive collection of research papers on the subject the same year the Minimum Wage Study Commission completed its work. The Joint Economic Committee of Congress, in 1995 also produced a very accessible review of the research.

Douty [1960] found minimum wages reduced employment in low wage industries, while Brozen [1962] and Welch [1974] found that minimum wage legislation drove workers to employment in jobs not covered by minimum wage laws (e.g. the shadow economy).

Kaun [1965] found that small businesses bore the brunt of cost increases due to the legislation and Beranek [1982] argues that minimum wage legislation promoted illegal immigrant labor. Others, including Gallasch [1975], Peterson [1957], Peterson and Stewart [1969] found the minimum wage reduced employment.

The clustering of effects among the young saw significant research, as did the concern over effects on African Americans.⁵ Overall the young, and particularly African-American teenage males were found to be disproportionately affected by the minimum wage.

Recent research (Aaronsen, French and Macdonald, 2008) found that the minimum wage caused a price increase in restaurants, while earlier research had found it had an inflationary effect (see Adams [1987], Brozen [1966], Gramlich [1976], Grossman [1983]), increase the crime rate (Hashimoto [1987] and Phillips [1981]).

International studies of the minimum wage have confirmed most of the impacts observed in the U.S. (see Forrest (1982); Corbo (1981); Gregory (1981); Rosa (1981), Freeman and Freeman[1981], and Bosch and Manacorda, [2008]).

Some newer research also points to the absence of an impact on employment due to increases in the Minimum wage (Card, 1992a,b) and Card and Kreuger (1992). These studies also found a modest positive wage impact. Further, Betsey and Dunson [1981] find that cyclical unemployment, especially among youths contributes to an over estimate of the impact of the minimum wage on employment. Despite finding job losses associated with minimum wages, Cox and Oaxaca [1981] find that income for low wage workers rises more proportionately.

The research here to date can be summarized easily in providing a range of results. First, the overwhelming majority of studies find small, albeit small negative employment effects of a minimum wage. A small number of studies find no effect on employment. A few studies find small positive wage effects, a much larger number of studies find no effect.

These results can be explained by the timing of the studies, and particularly the absence of effects could well result from a minimum wage increase that was beneath the market wage for the affected workers.

A recent study of economists opinions found that between half and three quarters did not support the minimum wage, and felt it could cause reduced employment (Whaples, 2006). What is clear is that the minimum wage is a relatively high cost mechanism for ensuring low wage workers are better off.

The recent history of the minimum wage points to reasons why it might have had little effect on employment. In recent

5. See Adie [1973]; Brown, Gilroy and Kohen [1981]; Fleisher [1981]; Hamermesh [1982]; Meyer and Wise [1981, 1983a]; Minimum Wage Study Commission [1981]; Neumark and Wascher [1992]; Ragan [1977]; Vandenbrink [1987]; Welch [1974, 1978]; [Welch and Cunningham 1978]. For effect on African-Americans see Al-Salam, Qvester, and Welch [1981], Iden [1980], Mincer [1976], Moore [1971], Ragan [1977], Williams [1977a,b].
 6. This is why several studies have found significant union support for minimum wages (see Cox and Oaxaca [1982] and Linneman [1982]).
 7. A Welch test (T-test with unequal variances) was statistically meaningful at any reportable level, including tests on transformations of the data to percentage changes.

years it has been so low as to be beneath the market wage for the vast majority of workers. Before the current increase, the minimum wage was \$5.85, and had been increased only once before 1997.

As a consequence of the long period of static minimum wages many states, and several municipalities enacted minimum wage laws greater than the Federal minimum wage. Figure 1 depicts the changes in effective minimum wages that accompanied the July 2008 minimum wage legislation.

It is behind this backdrop that we examine the minimum wage and its potential effect on employment in the summer of 2008.

The Summer of 2008

The Fair Labor Standards Act mandated an increase in the Federal minimum wage to \$6.55 an hour in July 2008. The legislation had mandated an increase in the summer of 2008 and another in 2009. This legislative change offered a rare natural experiment from which to evaluate the role a change in the minimum wage legislation would play in altering levels of employment. Before proceeding to the empirics, it is important to review some issues that potentially influence results.

Again, few workers labor at the Federal minimum wage. So for most employees, the minimum wage does not play a direct role in wage or salaries. However, any potential increase in minimum wages without concomitant adjustments in other workers wages leads to salary compression. This is likely mitigated by firms adjusting at least some wages upwards, which are already above the minimum wage.⁶

There are regional differences in cost of living which may, or may not be related to minimum wages, so in our analysis we treat nominal not real wages across regions. Also, the focus on a single policy variable – minimum wages – fails to account for other policies which could have similar effects. This would be particularly true with labor market policies that limit market flexibility occur simultaneously with minimum wage laws.

The sum effect of these issues is what any prudent analyst of minimum wage laws should offer: caution in interpreting results and deriving conclusions.

The 2008 minimum wage legislation affected 26 states. The remaining 24 states had in place minimum wage legislation that was already above the July 2008 Federal level. Of these 26 states, eight had state level minimum wage laws above the July 2007 Federal minimum wage. For these states, the new minimum wage rose between 5 cents and 40 cents per hour. Eighteen remaining states saw a July increase of 70 cents per hour or an almost 12 percent increase in wages for a minimum wage worker.

A single conclusive test regarding the impact of the minimum wage on this sample is elusive. Instead we will offer a number of tests. We begin with a simple comparison of the means of states which did, and did not experience a minimum wage increase. See Table 1.

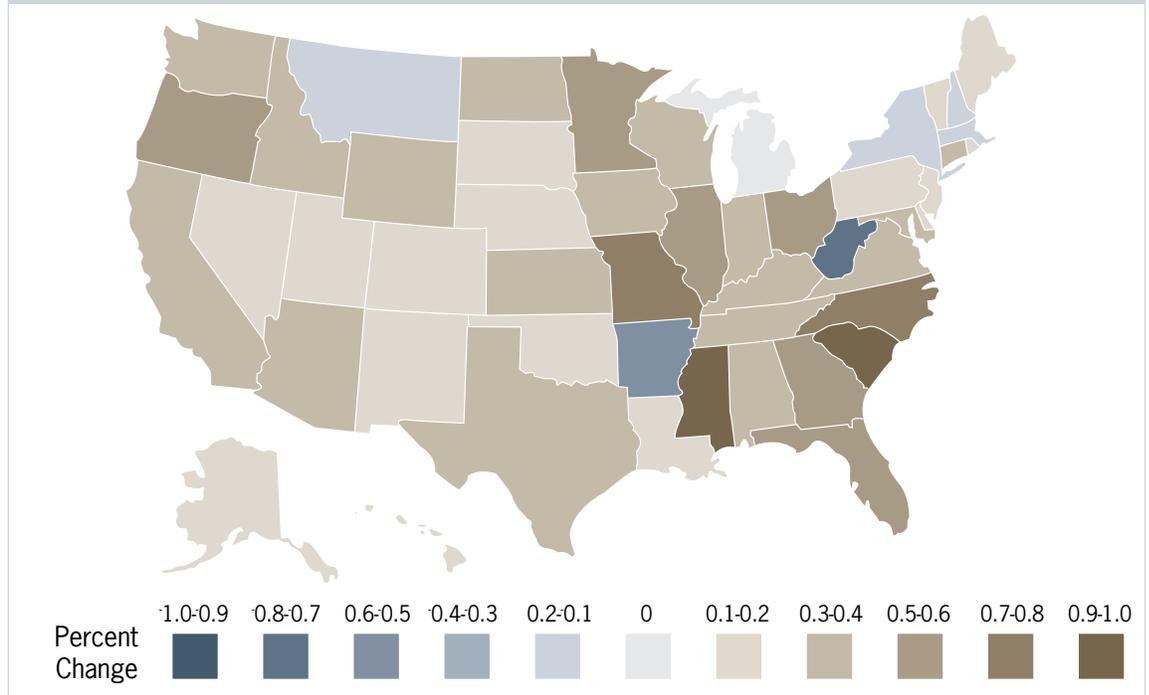
A simple comparison of these data provides the first evidence of a minimum wage effect. When we compare the average change in the unemployment rate between states that experienced a 70-cent minimum wage increase, and those that experienced no minimum wage increase, we observe increases in unemployment rates of 0.31 and 0.25 from June to July 2008 respectively. This difference enjoys strong statistical significance.⁷ A map of the July 2008 unemployment rate increases appears in Figure 2.

A more appropriate test involves transforming these data into percentage changes. This eases interpretation and pro-

Table 1: Effect on Minimum Wage

State	Minimum Wage	Change in Minimum Wage	Unemployment Rate		Change in Unemployment Rate
			June '08	July '08	
Alabama	6.55	0.70	4.70	5.10	0.4
Alaska	7.15	0.00	6.70	6.90	0.2
Arizona	6.90	0.00	4.80	5.10	0.3
Arkansas	6.55	0.30	5.00	4.50	-0.5
California	8.00	0.00	7.00	7.30	0.3
Colorado	7.02	0.00	5.10	5.20	0.1
Connecticut	7.65	0.00	5.50	5.80	0.3
Delaware	7.15	0.00	4.20	4.40	0.2
Florida	6.79	0.00	5.50	6.10	0.6
Georgia	6.55	0.70	5.60	6.20	0.6
Hawaii	7.25	0.00	3.80	3.90	0.1
Idaho	6.55	0.70	3.80	4.10	0.3
Illinois	7.75	0.00	6.80	7.30	0.5
Indiana	6.55	0.70	5.90	6.30	0.4
Iowa	7.25	0.00	4.00	4.30	0.3
Kansas	6.55	0.70	4.30	4.60	0.3
Kentucky	6.55	0.00	6.30	6.70	0.4
Louisiana	6.55	0.70	3.80	3.90	0.1
Maine	7.00	0.00	5.30	5.40	0.1
Maryland	6.55	0.40	4.00	4.40	0.4
Massachusetts	8.00	0.00	5.20	5.10	-0.1
Michigan	7.40	0.00	8.50	8.50	0
Minnesota	6.55	0.40	5.30	5.80	0.5
Mississippi	6.55	0.70	7.00	7.90	0.9
Missouri	6.65	0.00	5.70	6.40	0.7
Montana	6.55	0.30	4.10	4.00	-0.1
Nebraska	6.55	0.70	3.30	3.40	0.1
Nevada	6.85	0.00	6.40	6.60	0.2
New Hampshire	6.55	0.05	4.00	3.90	-0.1
New Jersey	7.15	0.00	5.30	5.40	0.1
New Mexico	6.55	0.05	3.90	4.10	0.2
New York	7.15	0.00	5.30	5.20	-0.1
North Carolina	6.55	0.40	5.90	6.60	0.7
North Dakota	6.55	0.70	3.20	3.50	0.3
Ohio	7.00	0.00	6.60	7.20	0.6
Oklahoma	6.55	0.70	3.90	4.10	0.2
Oregon	7.95	0.00	5.50	6.00	0.5
Pennsylvania	7.15	0.00	5.20	5.40	0.2
Rhode Island	7.40	0.00	7.50	7.70	0.2
South Carolina	6.55	0.70	6.10	7.00	0.9
South Dakota	6.55	0.70	2.80	3.00	0.2
Tennessee	6.55	0.70	6.50	6.90	0.4
Texas	6.55	0.70	4.40	4.70	0.3
Utah	6.55	0.70	3.30	3.50	0.2
Vermont	7.68	0.00	4.70	4.80	0.1
Virginia	6.55	0.70	4.00	4.40	0.4
Washington	8.07	0.00	5.40	5.70	0.3
West Virginia	6.55	0.70	5.30	4.50	-0.8
Wisconsin	6.55	0.05	4.60	4.90	0.3
Wyoming	6.55	0.70	3.20	3.60	0.4

Figure 2: Percent Change in Unemployment Rate



vides better comparative effects across different states, where levels of unemployment were markedly different. This transformation also found that the test was statistically meaningful, even when we include the eight states which had unemployment rate changes less than 70 cents as part of the 18 states with a 70 cent change.

The next step requires modestly more sophisticated modeling. Here we estimate the following relationship:

$$\frac{U_i^{July} - U_i^{June}}{U_i^{June}} = \alpha + \beta_1 \left[\frac{MW_i^{July} - MW_i^{June}}{MW_i^{June}} \right] + \beta_2 [U_i^{June} - U_i^{June2007}] + e_i$$

...where the percentage change in the June to July unemployment rate for each state, is a function of an intercept, the percentage change in minimum wage in that state, the change in unemployment rate in that state from a year previously and a white noise error term.⁸

This is a model that is commonly part of the conceptual treatment of the minimum wage (it approximates, the differences in difference model often employed). The difference here is that it includes a control for the existing performance of the economy of each state over the preceding year.

Results of this test, and alternative specifications which drop variously the intercept, the control for the states' economic conditions over the previous year, and a static measure of unemployment the year earlier yielded remark-

ably similar results.⁹ We find point estimates of additional unemployment resulting from 10 percent increase in the minimum wage leading to a .19 percent increase in the unemployment rate across different specifications of the model, with a standard deviation of 0.6. This finding is in the upper range of the estimates reported by the Minimum Wage Study Commission.

Our findings suggest that several states have experienced a loss of employment due to the increase in the minimum wage which went into effect in July 2008. In the following table we report the estimated effect of the minimum wage legislation in states which saw an increase in the minimum wage and an increase in unemployment rates. This gives us an unemployment rate that would have occurred in July 2007 without an increase in the minimum wage, the actual unemployment rate and the difference. The remaining four columns report the estimated losses to employment due to the minimum wage hike, the estimated number of minimum wage workers in the state, the percent who may have lost their jobs and the 2007 total labor force in each state. See Table 2.

Nationwide, we estimate roughly 160,000 workers did not have jobs available as a consequence of the minimum wage increase. This includes both jobs lost, and those not created. This is important to note because the labor force grew in July 2008, but new jobs did not expand at the same rate as the supply of workers. This effect is small – about what other studies which attributed employment loss to the minimum wage have found.

To help understand the dynamics of this effect, it is useful to examine the employment turnover data. In such low wage sectors as accommodations and food services, the month to month turnover in July 2008 included job openings of 3.3

8. The model performed well on diagnostics, and as is common in national cross sectional studies explained only a little more than 16 percent of the variance.

9. As a robustness test we estimated the impact of the July change in minimum wages on June employment, finding no measurable impact. It is not inconceivable that it would, as employers responded in advance to the expected change. Nonetheless, the absence of a change suggests a better model for a variety of reasons.

Table 2: Effect on Minimum Wage Workers

State	Minimum Wage			Labor Force			
	Estimated Unemployment Rate w/ No Minimum Wage	Actual Unemployment Rate	Difference	Employment Declines Attributable to Minimum Wage Change	Estimated Number of Minimum Wage Workers*	Percent of Minimum Wage Workers Who May Have Lost Jobs	Total Labor Force
Alabama	4.8	5.1	0.3	5,505	37,000	14.88%	2,184,600
Georgia	5.8	6.2	0.4	18,214	70,000	26.02%	4,818,400
Idaho	3.9	4.1	0.2	1,430	12,000	11.91%	756,400
Indiana	6.0	6.3	0.3	8,075	36,000	22.43%	3,204,200
Kansas	4.4	4.6	0.2	2,795	25,000	11.18%	1,478,900
Louisiana	3.8	3.9	0.1	1,255	40,000	3.14%	1,992,800
Maryland	4.1	4.4	0.3	9,403	27,000	34.83%	2,981,100
Minnesota	5.4	5.8	0.4	11,571	21,000	55.10%	2,934,700
Mississippi	7.3	7.9	0.6	7,455	31,000	24.05%	1,314,800
Nebraska	3.3	3.4	0.1	621	17,000	3.65%	986,100
New Mexico	3.9	4.1	0.2	1,835	11,000	16.69%	942,600
North Carolina	6.0	6.6	0.6	24,890	46,000	54.11%	4,509,100
North Dakota	3.3	3.5	0.2	731	5,000	14.63%	365,700
Oklahoma	4.0	4.1	0.1	2,186	25,000	8.75%	1,735,300
South Carolina	6.4	7.0	0.6	12,120	47,000	25.79%	2,137,600
South Dakota	2.9	3.0	0.1	559	6,000	9.32%	443,900
Tennessee	6.6	6.9	0.3	7,656	39,000	19.63%	3,037,900
Texas	4.5	4.7	0.2	22,136	221,000	10.02%	11,712,200
Utah	3.4	3.5	0.1	1,719	11,000	15.63%	1,364,300
Virginia	4.1	4.4	0.3	10,216	46,000	22.21%	4,053,800
Wisconsin	4.6	4.9	0.3	9,018	32,000	28.18%	3,087,600
Wyoming	3.3	3.6	0.3	727	4,000	18.17%	288,400

* Data on estimated minimum wage workers and labor force from Characteristics of Minimum Wage workers 2007.

percent and departures of 4.9 percent of total employment. This was less than in 2007 suggesting some dampening of employment dynamics. This may have been the mechanism for responding to the minimum wage.

As a final test we examined the impact of the unemployment rate changes through August 2008 adapting the model above to the new data. Here we found that the effect of the minimum wage on employment changes was transitory. That is, the shock occurred in one month, and did not occur in subsequent months. This is consistent with our observation that states with existing minimum wage laws above the Federal minimum wage experienced and unemployment rate slightly more than 1 percent higher, on average, than the remaining states in June 2008, before the law took effect. Thus, it would appear that the shock to employment is permanent, but one time. It occurs during the month the minimum wage changed.

Summary

The minimum wage is a tool to increase worker incomes. The cost of using this tool is a small loss of employment options for low wage workers. This brief study reinforces the dominant findings that the responsiveness of employment to a minimum wage increase is small, with a 10 percent increase in the minimum wage increasing the unemployment rate of 0.19 percent. Though we do not yet have the available data,

it is safe to conclude these job losses are likely clustered in rural areas and among young workers, who represent the bulk of minimum wage employees. This is what others have found and we expect later studies to confirm this.

These results should be interpreted with some caution, as is the case with all minimum wage estimates. However, it should be clear that efforts to mitigate poverty among the working poor could be done so at a smaller cost to the economy through the extension of Earned Income Tax Credits, a rebate of employee contributions to payroll taxes (Social Security and Medicare) or an alternative negative income tax.

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