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Does the Minimum Wage  
Reduce Poverty?

Dr. Richard K. Vedder *and* Dr. Lowell E. Gallaway

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Ohio University • *June 2001*

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# Does the Minimum Wage Reduce Poverty?

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## Executive Summary

This study by economists Richard Vedder and Lowell Gallaway shows convincingly that minimum wages, because of inefficient targeting of the poor and unintended adverse consequences on employment and earnings, are ineffective as an antipoverty device. The report relies on an impressive array of empirical evidence showing that, however one views the data, in the United States, state and federal minimum wages have not reduced poverty.

## National Analysis for the United States

The authors conduct their national analysis using historical data on the official government poverty rate for households in the United States. They examine whether, after adjusting for price changes, the business cycle and the level of per capita federal transfer payments, the national minimum wage was effective in lowering the poverty rate. Drs. Vedder and Gallaway also estimate the effect of the national minimum wage on the poverty rates for sub-groups in the population based on gender, race, ethnicity and age. They find that the national minimum wage was ineffective in reducing poverty both in the aggregate and for specific subgroups. In fact, for some subgroups, the minimum wage actually appeared to raise the level of poverty.

The economists also experiment with different poverty definitions, including one recommended by the National Academy of Sciences, and other definitions that use different income cut-off levels. They find that the national minimum wage had no statistically significant negative relationship to the rate of poverty regardless of how poverty was measured.

To avoid any error from known deficiencies in the Consumer Price Index (CPI), the authors also repeat their analysis using an adjusted CPI that produced lower inflation rates in the 1970s and 1980s. Again, there is no statistically significant negative relationship between the minimum wage and poverty.

The minimum wage conceivably could reduce poverty in selected geographic areas, if not nationally. Therefore, the authors also investigate the possibility that minimum wages reduced poverty in particular geographic regions or in areas differing in population density. Once again, they find no statistically significant negative effects.

The authors also assess the effects of minimum wages on poverty among full-time workers who worked for an entire year. If minimum wages were to reduce poverty, the effect is most likely to show up among this group. This is because, if such fully employed workers keep their jobs and maintain their hours, they are likely to see a much larger effect on their annual income than those who are not so fully employed. However, the authors do not find a statistically significant poverty-reducing effect for full-time workers, either in the aggregate or for subgroups. It is likely that some of these workers saw little or no wage gain because their wages were above or in the upper part of the range affected by the wage mandate. Also, any gains to full-time workers in poverty may have been offset by employment losses (either in terms of jobs or hours) by other household members or loss in overtime pay to the full-time workers.

## State-Level Analysis

Because some states have minimum wage laws requiring higher wages than the federal law, the authors also consider the poverty rates in such states. Specifically, they examine whether, in states

with state minimum wages above the national level, poverty rates were lower than in states with the national minimum wage in effect. Their analysis reveals no statistically significant poverty-reducing effect of the higher state minimum wages. This finding is robust against alternative specifications of their statistical model.

This state-level analysis implies that states with lower minimum wages do not as a result experience higher rates of poverty. This is relevant for the current “State Flex” proposal of the current

Bush administration. Under this proposal, states would be given the flexibility to opt out of future federal minimum wage increases. Critics contend that this would lead to an increase in low-income families in those states that do not follow lockstep with a federal increase. However, this report implies that such a State Flex policy would not lead to increases in poverty.

— Dr. Richard S. Toikka  
Chief Economist

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By Dr. Richard K. Vedder and Dr. Lowell E. Gallaway

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# Does the Minimum Wage Reduce Poverty?

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## I. Introduction

In 1938, the United States enacted federal legislation (the Fair Labor Standards Act) mandating minimum wage levels for a large proportion of the labor force. The mandated wage levels have been increased over time, along with expansion of coverage to more workers. At the time the minimum wage legislation was enacted, the nation had been in the Great Depression for nearly a decade; 1938 was the eighth consecutive year of double-digit unemployment. Although there were several ostensible objectives behind the legislative impetus to enact the minimum wage law, first and foremost it was an attempt to reduce poverty in the United States. Using current federal poverty definitions, about one-half of the American population was in poverty at the time the legislation was implemented.<sup>1</sup> By increasing the wages of some of the nation's working poor, it was expected that some individuals would be lifted out of poverty.

This paper examines the success of minimum wage legislation in reducing poverty in the United States. The primary form of analysis is an econometric examination of data on minimum wages, poverty, and other variables for the period since 1953 (or later) through 1998, the exact beginning date depending on the availability of various types of poverty data.<sup>2</sup> The analysis reveals that, in general, minimum wage laws have been ineffective in lowering the rate of poverty, a conclusion that is not surprising given the underlying economic theory related to this issue. The obvious policy implication is that minimum wage laws cannot be justified as a poverty-reducing device.<sup>3</sup>

## II. Some Theoretical Issues and Empirical Realities

Proponents of minimum wages would argue that the higher rates of compensation mandated by minimum wages will lead to higher levels of incomes for affected workers. In terms of poverty, the minimum wage would permit some low-wage workers to move from below the income line used to measure poverty to above that line. Thus, proponents would argue, the minimum wage would lower the amount of poverty. Although the theory cannot predict with precision the extent to which poverty will be reduced, proponents would argue that even a modest reduction would make the legislation desirable, since the cost of enacting and enforcing the law is comparatively low in relation to the benefits associated with even fairly modest levels of poverty reduction.

Minimum wage laws, if meaningful, require employers to pay some workers more than they would have earned in an unhampered market economy. For example, whereas the federal minimum wage at this writing is \$5.15 per hour, in the absence of this minimum some employers might pay their workers \$4.50 per hour. Economic theory suggests that in competitive markets, workers will be paid their marginal revenue product—the amount of revenue that the worker contributes to the firm. That is a wage consistent with the profit-maximizing behavior of employers and the utility-maximizing behavior of employees. There is considerable historical evidence that changes in worker compensation are in fact closely tied to productivity

**The obvious policy implication is that minimum wage laws cannot be justified as a poverty-reducing device.**

changes.<sup>4</sup> Even with respect to the early days of the Industrial Revolution in the United States, the textbook productivity theory of wage determination seems to reasonably describe patterns in worker compensation.<sup>5</sup>

Thus, if a firm in an unregulated market economy is paying its workers \$4.50 an hour, it is probable that the marginal contribution of the worker to the firm<sup>6</sup> is about \$4.50 in revenue per hour. If, in fact, it were higher, say \$5.00, it would be profitable for another firm to offer the worker in question a higher wage than the existing \$4.50. If, however, the government requires the firm to pay a wage of \$5.15 per hour, it might discharge the worker in question (or allow its labor force to decline by attrition until the point that the marginal product of workers equals or exceeds the minimum wage of \$5.15). Thus, economic theory predicts that minimum wages cause some unemployment. Prominent economist Joseph Stiglitz put it well:

If the government attempts to raise the minimum wage higher than the equilibrium wage, the demand for workers will be reduced and the supply increased. There will be an excess supply of labor. Of course, those who are lucky enough to get a job will be better off at the higher wage... but there are others... who cannot find employment and are worse off... a higher minimum wage does not seem to be a particularly useful way to help the poor. Most poor people earn more than the minimum wage *when they are working*; their problem is not low wages.<sup>7</sup>

Moreover, there is an overwhelming body of empirical evidence to support that point.<sup>8</sup> An alternative way to explain it is that if the demand for labor varies inversely with its price (a manifestation of the Law of Demand), then increases in wages will lead to reductions in the quantity of labor demanded.

Suppose, in the example above, that the worker who made \$4.50 per hour prior to the minimum wage increase was a teenager who worked 1,000 hours a year, and thus contributed \$4,500 to the

income of his family, consisting of his single mother and one other child. Suppose the mother herself made \$13,000 a year working full-time year-round at a \$6.50-an-hour job, the family's total income of \$17,500 would put it above the poverty line.<sup>9</sup> If the imposition of the \$5.15 minimum wage leads the teenager to lose his job, the family income would fall to \$13,000, and the family's income would fall below the poverty line. Thus the family would be drawn *into* poverty by the imposition of the minimum wage.

The empirical question, then, is whether the poverty-reducing income effect associated with higher mandated wages is greater or less than the poverty-increasing impact of reduced employment of low-wage workers as a consequence of mandating a wage that renders some jobs unprofitable to employers. Proponents of minimum wage laws implicitly assume that the income effect is greater than the unemployment effect, but based on economic theory that conclusion is far from clear.

The literature on the poverty effects of the minimum wage is surprisingly modest compared with that on the employment effects. The empirical results, however, suggest that the impact of minimum wages on poverty rates varies between having modest negative to modest positive effects. On balance, economists David Neumark and William Wascher find minimum wages marginally *increase* poverty:

The estimated increase in the number of non-poor families that fall into poverty is larger than the estimated increase in the number of poor families that escape poverty, though this difference is not statistically significant... The evidence indicates that in the wake of minimum wage increases, some families gain and others lose.<sup>10</sup>

Economists John T. Addison and McKinley L. Blackburn find generally weak and typically statistically insignificant negative relationships between poverty and minimum wage levels.<sup>11</sup> Even Card and Krueger, who take the almost universally rejected

position that minimum wages have virtually no employment effects, find very modest and marginally significant statistical relationships between the minimum wage and the rate of poverty.<sup>12</sup>

There are other effects that minimum wage laws have that should be briefly mentioned. Minimum wages can impact workers making more than the minimum wage. In the previous example, suppose that a supervisor of workers being paid \$4.50 per hour was being paid \$5.25 per hour. As the minimum wage law forces wages for rank-and-file workers up to \$5.15, the employer probably will feel compelled to raise compensation for the supervisor, who otherwise would now be making very little more than those being supervised. That, in turn, could have effects on poverty similar to those on workers previously paid less than the new minimum wage, including the unemployment possibility discussed above.<sup>13</sup>

In the modern world in which laborers often receive fringe benefits from employment as well as on-the-job training, the imposition of a minimum wage can lead to reductions in these nonwage expenses of employers.<sup>14</sup> If an employer is forced to pay a wage higher than what market conditions dictate, fringe benefit payments not subject to the minimum wage law may be reduced. Such reductions could include ending or reducing health insurance payments, or forcing the worker to pay for parking. Although it pays to train workers whose contributions to the firm equal or exceed their wage, when that is no longer the case (e.g., when the minimum wage exceeds the marginal product of labor), the firm may abandon both the hiring of new workers or the providing of training for them that might be transferable to other jobs.

It is unlikely that the minimum wage would have much impact on labor markets in occupations in which almost all workers make substantially more than the minimum. Thus the unemployment rate among physicians and lawyers is unlikely to be directly affected by minimum wage laws. Even here, however, there may be indirect effects. If a large minimum wage increase induces a signifi-

cant rise in unemployment, it might contribute to an economic downturn that could have indirect consequences on the poverty rate and even on the employment of lawyers or other highly skilled persons. A reasonably good case can be made that increases in the minimum wage were a factor in triggering the last recession that began in 1990 and was accompanied by a rise in unemployment, and thus poverty.<sup>15</sup>

Finally, even proponents of the minimum wage would concede that mandated wage increases would have little poverty impact on groups not actively engaged in the labor force. Specifically, one would expect that poverty among the elderly, a group with modest levels of labor force participation, would be little affected by such wages.

That brings us to an empirical reality: Only a very small proportion of America's poor are actually workers with a high

level of involvement in the labor force. For example, in 1999, less than 12 percent of persons over 16 who were poor actually worked full-time. Fifty-seven percent did not work *at all*.<sup>16</sup> The poverty rate among full-time workers was 2.6 percent; among nonworkers it was 19.9 percent (it was 13.1 percent for part-time workers).<sup>17</sup> *Thus, poverty is primarily a phenomenon among nonworkers.* Since minimum wages reduce the attractiveness of hiring workers, this increases our a priori skepticism that increases in such wages will meaningfully reduce poverty.

Along the same lines, there is a tendency for low-paid workers who persist in employment to receive significant wage increases over time. The median percentage annual wage growth of minimum wage workers has been in the double digits during the past two decades, and about two-thirds of minimum wage workers have wages above the statutory minimum within one year of beginning work.<sup>18</sup> Thus, even if an employee working at a very low wage (below the current U.S. minimum of \$5.15 per hour) were living in poverty, the likelihood is great that the individual would rise above the poverty condition within a relatively short time.

## Poverty is primarily a phenomenon among nonworkers.

If the minimum wage were to prevent or end his or her employment, that rise up the job ladder might well be prevented. This adds to our skepticism about the effectiveness of minimum wages in reducing poverty in the United States.

### III. The Poverty–Minimum Wage Relationship in the United States: A First Approximation

Beginning in the 1960s, the Bureau of the Census began publishing poverty statistics using the federal poverty definition developed by Mollie Orshansky of the Social Security Administration. Roughly speaking, for a typical-sized family poverty was said to exist if more than one-third of available income was needed to maintain a minimally adequate diet. Obviously, the poverty line varied with household size and, over time, with the purchasing power of the dollar. With these qualifications, the original poverty definition essentially exists today.<sup>19</sup> Although there are arguments for alternative definitions of poverty, the current definition does have the virtue that it allows comparison of persons of like economic status over time, to the extent that the Consumer Price Index (CPI-U) adequately measures changes in the purchasing power of the dollar arising from inflation.

Although federal statisticians have calculated the aggregate poverty rate as far back as 1953, disaggregated data for various subgroups of the population are available only from 1959, or even later. The aggregate poverty rate fell from 26.2 percent in 1953 to 11.8 percent in 1999, but the *entire* decline occurred in the first 20 years, with very little trend since 1973, when the poverty rate stood at 11.1 percent, an all-time low. The trend for various subgroups varies considerably: For example, there has been a pronounced decline since 1966 in the poverty rate for elderly (63 percent) and for blacks (37 percent), whereas poverty among children actually rose slightly.

In recent years, the government has defined alternative poverty rates to deal with alleged defi-

ciencies in the official rate. For example, some definitions incorporate in-kind transfer payments such as food stamps, which are excluded from the official poverty definition. Some discussion of these alternative definitions occurs later in the paper.

The federal minimum wage has risen from 25 cents an hour at its inception to \$5.15 per hour at the present. Since poverty is defined in terms of an absolute income threshold adjusted by the consumer price index to correct for inflation, the appropriate procedure would be to similarly adjust the nominal minimum wage for inflation by deflating by the CPI-U. The caveat should be offered, however, that because the CPI-U may significantly overstate inflation, both the poverty rates for recent years and the real minimum wage may be somewhat misstated (the poverty rate overstated, the real minimum wage understated).<sup>20</sup> To the extent this is true, it supports analyzing annual *changes* in poverty rather than the *level* of poverty itself, since the latter is likely to be significantly distorted over time by inflationary factors, a problem that is minimized by examining 1-year changes in rates. This issue will be discussed again later.

In our first approximation of evaluating the poverty–minimum wage relationship, we used ordinary least squares regression analysis to see the extent and direction to which the level of the real minimum wage (RWAGE) influences the total poverty rate. Since the poverty rate has a strong cyclical component, we introduced the U.S. unemployment rate (UNEM) as a variable to control for cyclical fluctuations in business conditions. Additionally, since advocates of federal transfer programs (TRAN) argue that they are essential in reducing poverty, we introduced real federal domestic transfer payments per capita as a second control variable. The data are for the years 1953 through 1998.

The results of this first estimation are interesting. The relationship between RWAGE and poverty is not statistically different from zero at standard confidence levels (e.g., 95 percent). By contrast, there is a strong statistically significant relationship between UNEM and poverty (and no relationship between TRAN and poverty). On

the basis of this estimation, we would reject the hypothesis that higher real minimum wages (or higher transfer payments) are associated with reduced poverty.

$$(1) \text{ POVERTY} = 10.756 - 0.410 \text{ RWAGE} + 0.635 \text{ UNEM} - 0.001 \text{ TRAN}$$

$$(5.00) \quad (0.69) \quad (5.75) \quad (0.27)$$

$$R^2 = .980, D-W = 1.89, F\text{-Statistic} = 392.02, \text{ARIMA} (1,1).$$

*\*The numbers in parentheses are t-statistics.*

The above regression, of course, can be criticized on a variety of grounds. First of all, there may be other control variables that explain poverty that are excluded from the analysis, creating an omitted error bias. It may be that the poverty data are excessively aggregated, and that higher real minimum wages benefit certain subgroups of the population, and that these positive effects are eliminated when these subgroups are included with other groups for whom minimum wage laws have little impact. Also, there are econometric issues that can be raised, including matters relating to the stationarity of the data, which argue for using “first differences” (changes) instead of the absolute values of the variables.

Accordingly, we did a great deal of sensitivity analysis, examining some 143 other variations on equation 1. All told, we ran eight different regression models for nine different cohorts using the levels of variables (72 regressions total), and repeated the same (another 72 regressions) using the absolute annual *change* in the value of the variables. Specifically, we examined poverty rates for the entire population; for females and males; for whites; blacks, and Hispanics; and for age groupings: children (under 18), working-age individuals (16 to 65), and older Americans (persons over 65). The results on balance are consistent with those in (1): Most evidence suggests no statistically significant relationship between real minimum wages and the rate of poverty.

The eight regressions run for each different subgroup all included RWAGE and UNEM as independent variables. All eight also included one or

more public assistance/transfer payment–type variables. Different definitions of transfer payments were examined besides real domestic federal transfer payments per capita (TRAN). In some regressions, a quadratic expression was examined, including TRAN and the square of TRAN. This is consistent with testing the validity of literature showing a “poverty-welfare” curve where small

transfer payments per capita lower poverty, but high transfers raise it. Some models also include a variable capturing transfer payments relative to wage payments, hypothesizing that higher transfer payments per capita relative to wages might lead to work-disincentive effects that could raise poverty. In some regressions, transfers are redefined to exclude federal Social Security payments, leading to a measure of transfers more closely tied to means-tested income support programs. We also experimented with an additional business cycle variable, namely the growth in real gross domestic product (GDP) for the year. Finally, we looked at the real level of GDP per capita as a separate independent variable, arguing that poverty rates should be affected by the rise in real total output per person over time.

Let us look at the statistical results as they pertain to the real minimum wage–poverty relationship for all nine demographic subgroups. Altogether, 144 regressions were run. In 127 of those, or 88 percent, there was no statistically significant relationship between the real minimum wage and poverty at the 5 percent level. We would conclude that in the overwhelming majority of tests, we reject the hypothesis that the real minimum wage lowered the relevant poverty rate.

To be sure, in 17 (almost 12 percent) of the regressions, a statistically significant relationship between the two variables was found, but in some of those cases, the observed relationship was *positive*, implying minimum wage hikes raise the amount of poverty. Excluding those, in over 90 percent of the cases, we reject the position of

those who believe that minimum wages are a poverty-fighting device. Moreover, for *not a single subgroup* can we accept the hypothesis that minimum wages reduce poverty in a majority of the 16 regressions run. For four of the nine population categories examined, in *no* case was there a statistically significant negative poverty–minimum wage relationship: total population, blacks, children, or those over the age of 65. In nearly one-third of the regressions, a positive relationship between poverty and real wages was observed, albeit in most cases not in a significant fashion. Interestingly, in a majority of the regressions for females, whites and seniors (over 65), a positive relationship was observed between poverty and the real minimum wage.

Even looking at the group for which the traditional hypothesis of a negative poverty–real minimum wage relationship looks strongest, namely males, the evidence is not very convincing. In a majority of the 16 regressions, the observed relationship is not statistically significant at the 5 percent level. Moreover, the coefficients on the real minimum wage variable suggest that the impact of minimum wages on poverty, even if valid, would be weak. Taking the median coefficient for the eight regressions using the level of the male poverty rate, the estimated elasticity of poverty with respect to the minimum wage is smaller (in an absolute sense) than  $-0.20$ . A 10 percent increase in the minimum wage would reduce the incidence of poverty by less than 2 percent (reducing the poverty rate, for example, from 15.0 to 14.7 percent). Even this fairly weak relationship, however, is exceedingly dubious, since a majority of the underlying coefficients used in calculating the elasticity are not statistically significantly different from zero. Accordingly, based on the evidence to this point we would reject the hypothesis that raising the minimum wage would reduce the rate of poverty.

While this study focuses on the minimum wage's impact on poverty, the other variables introduced for control purposes deserve a cursory mention. In general, we observed a strong and statistically significant negative relationship be-

tween unemployment and different definitions of poverty. Many of the transfer payment variables were statistically significant, very often in the direction suggesting that higher transfer payments *increase* poverty. Clearly there is a strong suggestion that the higher transfer payments are relative to average wages, the greater will be the observed level of poverty. Other control variables (e.g., real GDP per capita) worked less consistently well.

In performing the regressions discussed above, we analyzed the results for possible econometric problems, including serial correlation, model specification, homogeneity of data, stationarity, heteroskedasticity, and so forth. We initially put the 72 regressions using the level of the poverty rate as a dependent variable above through a battery of statistical tests (e.g., unit root tests, Chow break-point tests, Ramsey RESET test). The general conclusion was that a majority of the regressions seemed to pass muster on most tests. However, a large number of regressions failed to pass Chow break-point tests, meaning that there were model-specification problems owing to changes in the relationship between the variables over time. An even more serious potential problem arose with respect to the assumption of stationarity in the data, with the testing indicating nonstationarity in a number of regressions.

To address these problems, we used the diagnostic tests with all 72 regressions run in first-difference form (e.g., looking at the change in the poverty rate as it relates to the change in the real minimum wage, change in the unemployment rate, etc.). This procedure almost entirely eliminated nonstationarity and other econometric problems as an issue. The revised regressions pass virtually all the diagnostic tests, and are thus more trustworthy than those based on levels. Most important, however, the first-difference models confirm and strongly strengthen the findings regarding the minimum wage based on analysis of data reported as levels. Indeed, it turns out that *in all 72 regressions, the observed relationship between the poverty rate and the real minimum wage was not statistically different from zero*. This strengthens our confidence in concluding that the evidence does not support

the hypothesis that minimum wages do have an impact on the rate of poverty.

Another issue relates to the definition of poverty. Many scholars find various deficiencies with the definition of poverty, and the Bureau of the Census itself has for many years used some 15 alternative definitions of the poverty rate in addition to the official one. Does our conclusion about the general absence of a relationship between the minimum wage and poverty hold for different definitions of poverty?

To begin our investigation of this issue, we utilized some experimental poverty rates derived by the U.S. Bureau of the Census for the 1990s that incorporate the recommendations of a National Academy of Sciences (NAS) panel regarding the definition of poverty. Essentially, the NAS approach uses Consumer Expenditure Survey data from the U.S. Bureau of Labor Statistics in refining the definition of poverty. The actual NAS estimates for the years of the 1990s have been standardized around the official 1997 poverty rate.<sup>21</sup> For a few years, the difference between the official and NAS poverty rates are moderately large (e.g., the official rate for 1993 was 15.1 percent; the NAS rate was 16.5 percent).

We reran the initial eight aggregate poverty regressions using levels of the official U.S. poverty data for 1953 to 1989, but the NAS numbers from 1990 through 1998 (POVRATE2). In all regressions, there was no observed statistically significant relationship (even at the 10 percent level) between poverty and the real minimum wage. Interestingly, in every regression, the statistical relationship was weaker than with the official data. For example, re-estimating our initial equation (1), we observe that the already very weak and statistically insignificant relationship between real wages and poverty is still more anemic (e.g., the coefficient has declined nearly 20 percent), whereas the relation-

ship between poverty and unemployment remains highly significant and robust. The results are shown in equation 2.

Some people believe that poverty is inappropriately defined and want to look at either a smaller cohort of “hard-core” extremely low-income individuals or a somewhat larger group of persons than recorded as poor under the official definition. Accordingly, we performed some statistical analyses using four alternative measures of poverty. We looked at the poverty rate using four different definitions: those earning 50 percent or less than the official poverty level, 75 percent or less, 125 percent or less, or 150 percent or less. These definitions encompass dramatically different numbers of people. For example, in 1998, only 5.1 percent of Americans were below 50 percent of the official poverty threshold, whereas some 23.7 percent were below 150 percent of that threshold. Thus we use definitions ranging from what most citizens would probably regard as “the poorest of the poor” to merely “low income,” the latter a term incorporating in a typical year nearly one-fourth of the population.

Using our eight variants of the model with first differences (to minimize econometric problems), and using four definitions of poverty as the dependent variable, we observed *no statistically significant relationship between the real minimum wage and poverty level in any of the 32 regressions*. Indeed, in 10 cases, the observed relationship was positive—increases in the real minimum wage were associated with increases in measured poverty. Further, for the poorest of the poor, the group most in need of assistance, the observed relationship between changing minimum wage and changing poverty rates was positive in a majority of cases. We certainly reject the hypothesis that higher minimum wages reduce the rate of poverty, however defined.

Table 1 includes the results using one model

$$(2) \text{POVRATE2} = 10.240 - 0.343 \text{RWAGE} + 0.643 \text{UNEM} - 0.000 \text{TRAN}$$

$$(1.90) \quad (0.53) \quad (5.30) \quad (0.17)$$

$$R^2 = .976, D-W = 1.91, \text{ARIMA} = (1,1), F\text{-Statistic} = 313.87.$$

\*The numbers in parentheses are *t*-statistics.

**Table 1****The Real Minimum Wage and 4 Definitions of Poverty: Regressions**

<b>Variable or Statistic</b>	<b>Pov.Rate: 50% Inc. Threshold</b>	<b>Pov.Rate: 75% Inc. Threshold</b>	<b>Pov.Rate: 125% Inc. Threshold</b>	<b>Pov.Rate: 150% Inc. Threshold</b>
Constant .....	0.245 (2.415) .....	0.216 (1.594) .....	0.169 (1.107) .....	- 0.029 (0.127)
Change, Real Minimum Wage .....	0.123 (0.328) .....	- 0.081 (0.159) .....	- 0.710 (1.197) .....	- 1.097 (1.256)
Change, Rate of Unemployment .....	0.424 (3.988) .....	0.558 (3.744) .....	0.851 (6.080) .....	0.759 (3.067)
Ch., Per. Cap. Real Tran.Paym. ....	- 0.011 (0.933) .....	- 0.008 (0.465) .....	- 0.020 (2.964) .....	- 0.005 (0.299)
Ch.Square,Real /Cap. Tr.Paym* .....	0.000 (0.783) .....	0.000 (0.378) .....	0.000 (2.644) .....	0.000 (0.456)
R <sup>2</sup> .....	.641 .....	.657 .....	.733 .....	.693
F-Statistic .....	7.593 .....	8.613 .....	15.804 .....	11.267

\*Units of measurement are extremely small, so a one-unit change has no discernible impact on poverty.

for each of the four poverty definitions.

As was typical in all 32 regressions, the relationship between changing minimum wages and changing poverty rates is weak—never statistically significant even at the 10 percent level. By contrast, the unemployment rate is a consistently strong and significant predictor of changing poverty, and the two transfer payment variables were occasionally so. All told, the simple model typically explained approximately two-thirds of the variation in the various poverty rates over time.

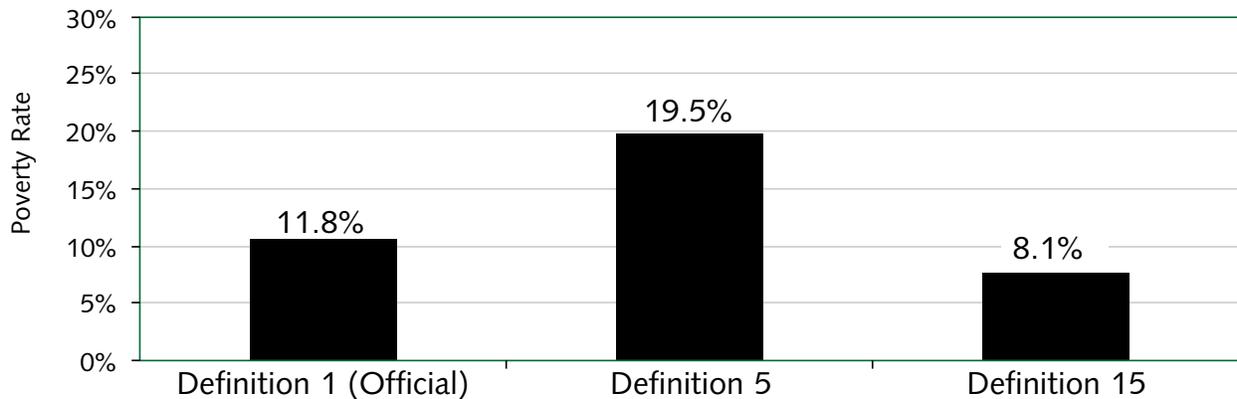
### ***Poverty and the Real Minimum Wage: The CPI-U-X1 Index, Alternative Definitions***

There is a considerable agreement among economists that the CPI-U overstated inflation in the 1970s and early 1980s, in large part because of overstatement of the rise in housing costs. To deal with this, an experimental price index, the CPI-U-X1 was constructed. With that index, the incomes necessary to pass over the threshold between poverty and nonpoverty are lower. For example, in 1998, the official overall poverty rate was 12.7 percent of the population, whereas the rate using the CPU-U-X1 was only 11.3 percent.

Also, there are different schools of thought as to what should be included in income in calculating the poverty rate. As indicated above, the Census Bureau now calculates some 15 different poverty rates, each incorporating different assumptions as to what is appropriate to be included in the definition of income. As Figure 1 indicates, the “poverty rate” varies enormously by definition. “Definition 15,” for example, which includes all noncash payments and the Earned Income Tax Credit as income, is based on after-tax income, and includes as income capital gains and the imputed rental value of owned homes. “Definition 5,” by contrast, excludes both non-means-tested government cash transfers, Medicare, Medicaid, free school lunches and so forth, from the definition of income.

Arguments can be made for or against any poverty definition. We take an agnostic approach, simply observing the relationship between the real minimum wage and poverty *however you want to define it*. Accordingly, we re-estimated the poverty–minimum wage relationship using the CPI-U-X1 with the official definition (definition 1), and with the two definitions most at variance (in opposite directions) from the official definition, namely the Census Bureau’s definitions 5 and 15.

**Figure 1**  
The 1998 Poverty Rate by Three Different Definitions



Source: U.S. Bureau of the Census.

The results again confirm earlier findings. We again used eight different variants of a regression model with the three dependent variables (poverty using the official definition but the CPI-U-X1 price deflator, definition 5 and definition 15), or a total of 24 regressions. Again to avoid econometric problems, we used first differences (e.g., looked at the change in poverty or the change in the minimum wage rather than levels of those variables).

In all 24 regressions, there was no statistically significant relationship between changes in minimum wages and changes in the rate of poverty. Indeed, there was not a single regression for which there was an observed negative poverty–minimum wage relationship significant even at the 20 percent level. The only regression coefficient significant at that level was positive (higher minimum wages, higher poverty). Again, we reject the hypothesis that minimum wages reduce poverty. By contrast, there was typically a statistically significant relationship observed between unemployment and poverty, and often between one or more welfare-related variables as well.

### ***Geographic Dimensions to Poverty***

Poverty trends may vary in different parts of the country, and also between urban centers, suburbs, small towns and rural areas. The minimum wage

conceivably could help reduce poverty in one or more of these geographic subgroups, even if it were more generally ineffective. Accordingly, we estimated the poverty–minimum wage relationship for seven groups of residents:

- 1) living in central cities in metropolitan areas
- 2) living in other parts of metropolitan areas, mostly suburbs (hereafter, suburbs)
- 3) living outside metropolitan areas, in small towns and on farms (hereafter, rural areas)
- 4) from the Northeast
- 5) from the South
- 6) from the Midwest
- 7) from the West.

Turning first to groups 1 through 3, the historical trend over time in poverty differs. For example, from 1967 through 1998, the central city poverty rate rose noticeably (from 15 to 18.5 percent), the suburban rate rose moderately (from 7.5 to 8.7 percent), while the rural poverty rate fell sharply, from 20.2 to 14.4 percent.<sup>22</sup> We estimated the same eight variants of a regression model using first differences for central cities, suburbs, and rural areas. Of the 24 regressions estimated, none shows a statistically significant negative relationship between changes in the real minimum wage

and changes in the appropriate poverty rate. Although 14 did have the negative sign on the change in minimum wage variable, 10 had positive signs. Interestingly, for seven of eight regressions for suburban areas, the observed signs were positive (higher minimum wages, higher poverty), whereas for central cities the signs were all negative, although not statistically significant (for rural areas, they were more mixed). This hints that there might be some slight differential impact of minimum wages, with their having a slight positive effect (reducing poverty) in central cities but slight adverse effects in the suburbs. That conclusion, however, is extremely speculative because none of the observed statistical relationships regarding the minimum wage is statistically significant, even at the 10 percent level. Accordingly, the most appropriate assessment is simply to conclude that changing minimum wages does not have an impact on poverty.

Regarding the poverty rates by regions, again in all 32 regressions (eight variants of the model for four regions), there was no statistically significant relationship between changing minimum wages and changing poverty rates. Seventeen of the observed coefficients had negative signs, whereas 15 had positive signs. We again reject the hypothesis that minimum wages reduce poverty. As with the previous regressions, there are interesting differences in poverty rate trends: Poverty over the period from 1971 to 1998 has risen in the Northeast and West, stayed about the same in the Midwest and the nation as a whole, and fallen sharply in the South. Although none of the regressions showed statistical significance with respect to the minimum wage–poverty relationship, the signs on the Northeast regressions were consistently positive, those in the West consistently negative, and those in the Midwest and South were mixed.

To give readers some better sense of specifics, Table 2 gives results for one of the more elabo-

rate models for each region. Again, some of the independent variables (e.g., the transfer payment variables for the South) show fairly robust results, and virtually all variables are stronger statistically than the minimum wage variable. Even looking at data regionally, there simply is no meaningful relationship between minimum wage changes and changes in the rate of poverty.

#### **IV. Minimum Wages and Poverty Among Workers**

As indicated before, poverty is particularly prevalent among nonworkers. Yet there are some poor persons who do work, even some who work full-

time year-round. The negative effects of minimum wages in creating unemployment are not directly present among those working full-time, who by definition are fortunate enough to avoid losing their jobs. Surely, if increases in the minimum wage are effective in reducing poverty for any group of workers, it would be for this group.

We used a time series of data constructed by the U.S. Bureau of the Census for The Conference Board.<sup>23</sup> The data show poverty rates among full-time workers have varied from 2.0 percent (1973) to 4.8 percent. Given the superior econometric properties of the models using changes in values of the variables, we regressed the change in the poverty rate among full-time workers against our original eight regressions utilizing different sets of independent variables. Not only in every case was there no statistically significant relationship between changes in the real minimum wage and the poverty rate among full-time workers, but also *every observed relationship was positive*—higher real minimum wages are associated with higher poverty. The results were statistically not significant, however, so the

**Accordingly, the most appropriate assessment is simply to conclude that changing minimum wages does not have an impact on poverty.**

most appropriate interpretation is to simply reject the hypothesis that increased minimum wages lower poverty among the working poor.

As was the case with other estimations, several of the control variables were statistically significant. For example, worker poverty and unemployment are significantly inversely related (even at the 1 percent level) in every regression estimated. Generally, the variables measuring transfer payments worked as anticipated, indicating support for the concept of a quadratic relationship between those transfers and poverty—when transfers are small, increases in transfers tend to reduce poverty, but when those transfers rise above a certain point, further increases in transfers tend to increase the rate of poverty.

The statistical models used generally showed modest explanatory power (coefficients of multiple determination of .50 or lower), so we did some additional testing, adding to the model with the highest explanatory power an additional independent variable measuring changes in the real average annual wage in the American economy. Inclusion of that variable actually increased the t-statistic on the observed positive relationship between changes in the real minimum wage and changes in poverty among full-time workers.

Given the generally low explanatory power of the first-difference models, we ran a model using levels of the various variables. The results are reported in Table 3. The observed relationship between the real minimum wage and worker poverty was positive but insignificant, whereas there was a very strong statistically significant relationship between four other independent variables and worker poverty. For example, each one-percentage-point increase in the unemployment rate was associated with an increase in the worker poverty rate of 0.43 percentage points. Moreover, the model's overall explanatory power was extremely high, with no serious econometric problems (e.g., serial correlation).

One might argue that although minimum wage laws do not have much of an impact on poverty for all full-time workers, they may impact special groups, especially minorities. Accordingly, we re-ran the 10 regressions estimated above (nine using first differences, one using levels), this time only for non-white workers. The trend in nonwhite worker poverty is somewhat different than for workers in general, with the rate falling dramatically from 17.6 percent in 1966 to 4.4 percent by 1998.

Again, the results are the same. There was no observed statistically significant relationship be-

**Table 2**  
Relationship Between Changing Poverty,  
Minimum Wages, 4 Regions

Variable or Statistic	Northeast	Midwest	South	West
Constant .....	0.969 (3.412).....	0.521 (1.420).....	0.399 (1.394).....	0.588 (2.300)
Change, Real Minimum Wage .....	0.950 (1.328).....	- 0.061 (0.066).....	0.070 (0.103).....	- 0.562 (0.872)
Change, Rate of Unemployment .....	- 0.008 (0.027).....	0.563 (1.513).....	0.078 (0.275).....	0.348 (1.342)
Ch., Non-S.S. Transfers / Cap. ....	- 0.020 (1.015).....	- 0.017 (0.687).....	- 0.028 (2.152).....	- 0.021 (1.196)
*Ch., Non-SS. Trn./Cap.Square .....	0.000 (0.864).....	0.000 (0.415).....	0.000 (2.222).....	0.000 (1.204)
Change, Growth of Real GDP .....	0.108 (2.055).....	0.102 (1.500).....	- 0.046 (0.901).....	0.040 (0.851)
Ch., Real GDP Per Capita .....	- 0.002 (2.80).....	- 0.001 (1.094).....	- 0.001 (1.780).....	- 0.001 (1.876)
R <sup>2</sup> .....	0.567.....	0.500.....	0.609.....	0.730
F-Statistic .....	4.371.....	3.339.....	5.709.....	8.996

\*Units of measure are extremely small, leading to a coefficient of zero for a one unit change.

**Table 3**

## Explaining Poverty Rates for Full-Time Year-Round Workers, 1966-1998

<b>Variable or Statistic</b>	<b>Coefficient or Value</b>	<b>T-Statistic</b>
Constant.....	4.120 .....	3.572
Real Minimum Wage .....	0.053 .....	0.398
Unemployment Rate .....	0.431 .....	9.590
% Growth, Real GDP .....	0.005 .....	0.348
Real GDP Per Capita .....	0.000 .....	5.843
Real Domestic Transfers/Cap .....	0.000 .....	14.845
Real Transfers Squared .....	2.71E-06 .....	15.746
R <sup>2</sup> .....	0.932	
Durbin-Watson Statistic .....	2.195	

tween the poverty rate for nonwhites working full-time year-round and the real minimum wage or changes therein. To be sure, the observed sign on the relationship was negative, but in no case was it statistically significant, even at the 10 percent level. The hypothesis that higher minimum wages lower poverty among minority workers is rejected.

We carried the disaggregation one step further. We looked at the full-time year-round worker poverty rate by region. Interestingly, regional trends in worker poverty vary substantially. Over time, poverty rates among full-time workers have generally fallen, particularly dramatically in the South (where the average rate in 1996-1998 was 5.75 percentage points lower than in 1966-1968). The West, however, is an exception, where rates were higher in 1996-1998 than in 1966-1968. Thus by the latter period, the average poverty rate was higher in the West than the South, although higher in both regions than in the Northeast or Midwest.

We examined a model with six independent variables for each of the four regions using the level of poverty rates as a dependent variable, and then another similar model for each region using changes in poverty rates as the dependent variable. In all eight regressions, there was no observed statistically significant negative relationship between the real minimum wage and the poverty rate. There was, however, in one case a statistically significant

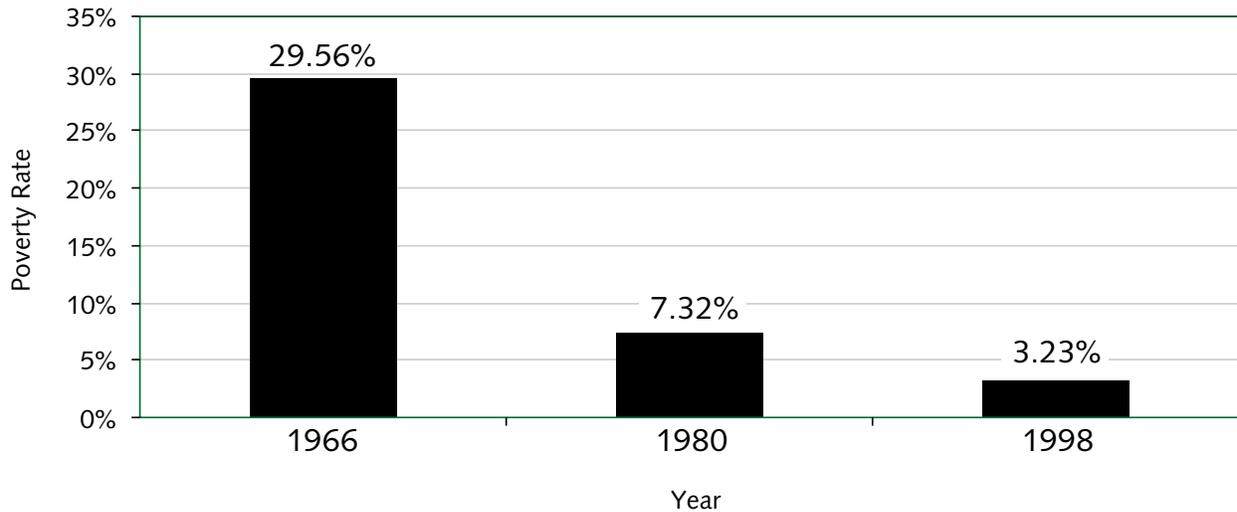
*positive* relationship observed, specifically for the levels model for the Northeast. By contrast, in most of the models, the variables measuring transfer payments, wages, or unemployment were significant. To conclude, the evidence suggests that the impact of minimum wage changes on poverty among workers is inconsequential, except in one region, the Northeast, where minimum wage legislation might actually increase it.

One might argue that even further disaggregation is needed. For example, regional nonwhite poverty among workers might differ from that of white workers. It is true that there have been dramatic changes over time in poverty among nonwhite workers, as Figure 2 shows for the region with the most dramatic change, the South. In the mid-1960s, nearly 30 percent of southern nonwhite full-time workers were considered poor; by 1998, that percentage had fallen to 3.2 percent, probably the sharpest decline in any U.S. poverty rate observed over that time span. The 1998 poverty rate for the South was lower than that for the Midwest, whereas in 1966 it was more than three times higher. Unskilled and disadvantaged, southern blacks and other minorities are a group that proponents of minimum wages have long argued benefited from minimum wage laws. What is the evidence?

We ran eight regressions, one a “levels” model and one a “changes” model, for each of the four

**Figure 2**

The Poverty Rate for Non-White Southern Full-Time Workers



Source: U.S. Bureau of the Census, The Conference Board.

census regions. In five of the regressions, the sign on the minimum wage variable was negative, in three it was positive. The only case where the results were statistically significant at the 5 percent level was for nonwhite workers from the Northeast—and the sign was *positive*: higher minimum wages, higher poverty. As before, several of the explanatory variables introduced for control purposes were highly significant.

All told, we ran 36 regressions examining poverty for the one group for which on theoretical grounds we might expect minimum wages to reduce poverty: full-time year-round workers. In *not one* of the 36 regressions, was there a negative and statistically significant relationship between poverty and minimum wages.

Aside from generally showing the ineffectiveness of minimum wage changes in dealing with work-related poverty, these findings suggest that the indirect, secondary negative effects of mini-

um wage laws may be relatively powerful, offsetting any income effects associated with raising wage levels for some employees above the market wage. Minimum wage laws lead to distortions in market signals in labor markets, they have impacts on inflation, profits and other key variables in a manner that could induce a general decline in income and output that impacts many in the economy, including full-time workers.

It may well be that the income effect arising from paying some workers more because the minimum wage exceeds market wages is completely offset by adverse labor market effects even for fully employed workers. To examine how this might be so, we regressed the number of overtime hours in manufacturing, 1966-1999, against the real minimum wage (RLMINWAGE) and two business-cycle control variables, namely the percent growth in real GDP (EGROWTH) and the unemployment rate (UNEM). The findings are quite robust:

$$(3) \text{ OVERTIME} = 6.693 - 0.605 \text{ RLMINWAGE} - 0.203 \text{ UNEM} + .070 \text{ EGROWTH}$$

(10.360) (4.049) (4.354) (4.472)

$$R^2 = .899, \text{ ARIMA} = (0,2), \text{ D-W} = 1.910, \text{ F-Statistic} = 48.180.$$

*\*The numbers in parentheses are t-statistics.*

The results suggest that increases in the real minimum wage lead to a statistically significant (at the 1 percent level) decrease in overtime hours, controlling for the business cycle. What workers gain on one hand (via higher hourly wages), they may lose at least in part on the other (via fewer overtime hours).

Although a comprehensive examination of this issue is beyond the scope of this paper, there is an overwhelming body of historical evidence that suggests that employment opportunities are inversely related to real wages adjusted for productivity change.<sup>24</sup> We regressed the productivity-adjusted real minimum wage against the employment-population ratio for the years 1966 through 1998 and observed the expected statistically significant negative relationship. Thus, as a full-time low-wage worker gains added income from higher minimum wages, often he or she loses the financial gains that a wage increase might provide because of declining employment of other family members and/or the loss of overtime income.

## V. State Minimum Wage Laws and Poverty

Many states impose minimum wage laws of their own and in some instances the statutory minimum rate is higher than that provided for in federal legislation. Does the imposition of a higher minimum wage than required under federal law lead to a reduction in poverty? The use of state cross-sectional data avoids some of the econometric problems (e.g., stationarity, serial correlation) incurred using the time-series approach. Does the cross-sectional data confirm the results obtained using time-series statistics?

To test that proposition for recent years, we gathered data on the poverty rate for the 50 states plus the District of Columbia. We used the 3-year average poverty rate (POV) for 1996-1998 as our poverty measure.<sup>25</sup> State poverty rates are more problematic than national rates because of the smaller sample sizes used in their construction. The Census Bureau generally does not even publish single-year poverty rates for this reason. The use of a 3-year average significantly reduces statistical error in the calculation of the rate of poverty. Also, it smooths out variations in rates caused by special ephemeral circumstances (e.g., a natural disaster).

As our measure of state minimum wages, we simply used the number of times that the state minimum wage exceeded the national one over four dates (MINWAGE), namely the beginning of the years 1996, 1997, 1998 and 1999. These dates encompass the beginning, the middle and the end of the period of poverty being examined. Seven jurisdictions had minimum wages exceeding the national average on all four dates: Alaska, Connecticut, District of Columbia, Hawaii, Massachusetts, Oregon and Vermont. Six other states had statutory minimums exceeding the federal standard on at least one of those dates: California, Delaware, Washington, New Jersey, Iowa and Rhode Island.

As before, we incorporated some additional independent variables to control for other possible determinants of interstate variations in the rate of poverty. Specifically, we used the unemployment rate in each state in the middle of the period examined (UNEMP) (1997), as well as the level of personal income per capita (INPCAP) in the same year.<sup>26</sup> We would hypothesize that, other things equal, poverty rates would fall with higher incomes and rise with higher unemployment. The results in equation 4 are consistent with those reported using time-series data:

$$(4) \text{ POV} = 10.420 - 0.492 \text{ MINWAGE} - 0.0003 \text{ INPCAP} + 1.941 \text{ UNEMP}$$

$$(3.161) \quad (1.509) \quad (2.293) \quad (5.947)$$

$$R^2 = .490, F\text{-Statistic} = 15.040.$$

*\*The numbers in parentheses are t-statistics.*

The hypothesis that higher minimum wages are associated with reduced poverty is rejected again at the 5 (and even the 10) percent level. By contrast, there are statistically robust statistical relationships in the expected direction with respect to income per capita and the unemployment rate.

One might argue that the years 1996-1998 were atypical times, because the nation was in the advanced stages of an unprecedented economic expansion. Perhaps in more troubled (or at least more typical) economic times, the minimum wage's effects on poverty would have been more robust. To test that possibility, we re-estimated (4), using, however, data for poverty for 1991-1993, a period encompassing part of the last recession and the rather tepid early recovery. The results are shown in equation 5. We defined the minimum wage as before, whether states exceeded the national standard on January 1 of 1991, 1992, 1993, and 1994. We took midrange statistics (1992) for per capita income and unemployment rates.<sup>27</sup>

$$(5) \text{ POV} = 18.946 - 0.743 \text{ MINWAGE} - 0.0006 \text{ INCPCAP} + 1.129 \text{ UNEMP}$$

(5.30)            (0.56)                            (3.61)                            (3.95)

$$R^2 = .403, \text{ F-Statistic} = 10.573.$$

*\*The numbers in parentheses are t-statistics.*

The notion that minimum wages help reduce poverty during periods of slow growth or recession is not supported by the results. Again, we reject the hypothesis that there is a statistically significant relationship between higher state minimum wages and poverty. And, as before, there is a robust statistical relationship in the expected direction between income per capita and poverty on one hand, and the unemployment rate and poverty on the other.

One might argue that equations 4 and 5 exhibit relatively low explanatory power, and that there is a bias in the results from variables omitted from the estimation procedure. Accordingly, we experimented with some alternative, expanded models. In every case, there was no observed statistically significant relationship between the presence of a state minimum wage above the federal minimum and the presence of poverty.

Table 4 reports one such estimation, using the poverty rate data for the 1996-1998 period. We incorporated two variables measuring transfer payments (transfer payments per capita, and those payments as a percent of average annual pay per worker), a variable indicating the percentage of workers belonging to labor unions in 1997, and the employment-population ratio for that year. The total explanatory power of the model rises sharply from equation 4, substantially reducing any potential omitted error bias. The minimum wage variable has by far the weakest statistical result of any of the seven independent variables. The addition of more control variables reduces the coefficient and t-statistics from already low levels. By contrast, the labor market variables (the unemployment rate, employment-population ratio, and union membership) are mostly statistically significant, two at the 1 percent level. This again supports the point that the primary determinant of poverty is failure to work, not insuffi-

cient wages from working. Above all, however, it further suggests that minimum wages do nothing to reduce poverty.

## VI. Conclusion

This paper has a somewhat monotonous but clear message: However defined, the American evidence is clear that raising minimum wages does not reduce poverty. That holds true using different definitions of poverty; evaluating different age, racial and gender groups within the broader population; using different geographic areas, using different samples (e.g., cross-sectional vs. time-series data) and using different independent variables to control for other factors that impact poverty. Many things affect poverty, such as the magnitude of unemployment in particular, but

also the overall level of income, the prevalence of transfer payments, the existence of single-parent families and so forth. Public policy would be better directed toward changing these other variables rather than the minimum wage if the goal is to reduce the amount of poverty in the United States.

That returns us to an empirical reality stated earlier: Poverty occurs mainly among nonworkers, or at least among people who work less than full-time. For every full-time working poor person that exists, there

**[I]t is not surprising that there is virtually no meaningful evidence that higher minimum wages reduce poverty in the United States.**

are at least seven poor people who either do not work or do so only part-time. The key to reducing poverty is getting individuals jobs, and having them stick with those jobs until incomes rise with the higher productivity that comes with on-the-job training and work experience. Minimum wages are barriers to reducing poverty the old-fashioned way, through work. Thus it is not surprising that there is virtually no meaningful evidence that higher minimum wages reduce poverty in the United States.

**Table 4**

State Minimum Wages and Poverty in 1996-1998: Expanded Model

<b>Variable or Statistic</b>	<b>Coefficient</b>	<b>T-Statistic</b>
Constant .....	42.019 .....	3.465
State Minimum Wage More Than Federal Minimum? .....	- 0.075 .....	0.269
Income Per Capita, 1997 .....	- 0.0003 .....	1.287
1997 Unemployment Rate .....	0.842 .....	1.876
Transfer Payments Per Capita, 1997 .....	0.002 .....	1.029
Trans./Cap As % of Ave. Pay .....	- 0.409 .....	1.011
% Workers, 1997 in Unions .....	- 0.205 .....	3.087
Employment-Population Ratio, 1997 .....	- 0.375 .....	2.754
R <sup>2</sup> F-Statistic .....	0.701 .....	14.372

# Endnotes

1. See James T. Patterson, *America's Struggle Against Poverty, 1900-1994* (Cambridge, MA: Harvard University Press, 1994), p. 79.
2. The bulk of this paper was completed prior to the release of the 1999 poverty data. Since both the real minimum wage and the poverty rate fell in 1999, the inclusion of that year's data would likely strengthen the paper's major conclusion, namely that there is no statistically significant negative relationship between minimum wages and poverty.
3. There are other rationales advanced for the minimum wage. For example, it was argued that higher wages would raise purchasing power of workers, stimulate aggregate demand, and reduce unemployment. There is a plethora of literature suggesting the employment effects are the opposite: minimum wages increase unemployment. There are also political arguments for the minimum wage, namely that they seem to be popular with the general public, help win support of politically powerful labor unions, etc.
4. For example, from 1900 to 1960, productivity per worker in the U.S. is estimated to have risen 3.89 times, while real wages rose 3.53 times; the modest discrepancy between the two measures is probably explainable owing to changes in work hours per year. See U.S. Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1970* (Washington, D.C.: Government Printing Office, 1975) pp. 162, 164. Similarly, from 1959 to 1999, non-farm productivity rose 2.25 times, compared with a 2.04 times growth in hourly compensation. Again, measurement issues probably explain most of the modest differential in reported growth rates. See the *2000 Economic Report of the President*, p. 362. For a more lengthy discussion, see Richard Vedder, "Regulation's Trillion-Dollar Drag on Productivity," Center for the Study of American Business Policy Brief No. 165 (St. Louis, Washington University, March 1996).
5. See Richard K. Vedder, Lowell E. Gallaway and David Klingaman, "Discrimination and Exploitation in Antebellum American Cotton Textile Manufacturing," Paul Uselding, ed., *Research in Economic History, Vol. 3* (Greenwich, Conn.: JAI Press, 1978).
6. This is the contribution of a single worker holding other labor and capital inputs constant.
7. Joseph E. Stiglitz, *Economics* (New York: W.W. Norton, 1993), pp. 130-133.
8. A review of earlier studies is found in Charles Brown, Curtis Gilroy and Andrew Kohen, "The Effect of the Minimum Wage on Employment and Unemployment," *Journal of Economic Literature* 46(1), October 1982, pp. 487-528. A more recent review is contained in Charles Brown, "Minimum Wages, Employment and the Distribution of Income," in O. Ashenfelter and D. Card, eds. *Handbook of Labor Economics*, 3B, 1999, pp. 2101-2163. On the impact of the 1990-91 changes, see Donald Deere, Kevin M. Murphy and Finis Welch, "Employment and the 1990-1991 Minimum Wage Hike," *American Economic Review*, 85(2), May 1995, pp. 232-237. David Neumark and his colleagues have also performed much valuable recent research. See, for example, David Neumark and William Wascher, "A Cross-National Analysis of the Effects of Minimum Wages on Youth Employment," National Bureau of Economic Research (NBER) Working Paper No. 7299, August 1999, Neumark's "The Employment Effects of Recent Minimum Wage Increases: Evidence from a Pre-Specified Research Design," NBER Working Paper No. 7171, June 1999, and David Neumark, William Wascher and Mark Schweitzer, "The Effects of Minimum Wages Throughout the Wage Distribution," NBER Working Paper No. 7519, February 2000. The NBER studies are available at <http://www.nber.org>. See also Richard V. Burkhauser, Kenneth A. Couch and David C. Wittenburg, "Who Minimum Wages Bite: An Analysis Using Monthly Data," *Southern Economic Journal*, 67(1), 2000, pp. 16-40; David Macpherson, "The Effects of the Proposed California Minimum Wage Hike," Employment Policies Institute, October 2000, available at <http://www.epionline.org>. The one major dissenting voice to the consensus that minimum wages cause unemployment comes from David Card and Alan Krueger. See, for example, their "Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania," *American Economic Review*, 84(4), September 1994, pp. 772-793 and "Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania: Reply," *American Economic Review*, 90(5), December 2000, pp. 1397-1420. The Card and Krueger work has been severely criticized on a variety of grounds. See, for example, Neumark and Wascher, "The Effect of New Jersey's Minimum Wage Increase on Fast-Food Employment: A Re-Evaluation Using Payroll Records," *Econometrics and Economic Theory Papers*, Michigan State University, January 1998, revised and published as "Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania: Comment," *American Economic Review*, 90(5), December 2000, pp. 1362-1396; see also the comments by Daniel Hamermesh and Finis Welch in "Review Symposium: Myth and Measurement: The New Economics of the Minimum Wage," *Industrial and Labor Relations Review*, 48, 1995, pp. 835-838 and 842-848.
9. In 1999, the poverty threshold for a family of four was \$17,029. See U.S. Bureau of the Census, Current Population Reports Series P-60, No. 210, *Poverty in the United States: 1999* (Washington, D.C.: Government Printing Office, 2000, p. 1).
10. David Neumark and William Wascher, "Do Minimum Wages Fight Poverty?" National Bureau of Economic Research Working Paper No. W6127, August 1997, available at <http://www.nber.org>. See also their paper with Mark Schweitzer, "Order from Chaos? The Effects of Early Labor Market Experiences on Adult Labor Mar-

- ket Outcomes," *Industrial and Labor Relations Review*, 51(2), January 1998, pp. 299-322.
11. John T. Addison and McKinley L. Blackburn, "Minimum Wages and Poverty," mimeographed, University of South Carolina, 1996. However, in another paper, Addison and Blackburn find some evidence of poverty-reducing effects of minimum wages among teenagers and "older junior high school dropouts." See their "Minimum Wages and Poverty," *Industrial and Labor Relations Review*, 52(3), April 1999, pp. 393-409.
  12. David Card and Alan B. Krueger, *Myth and Measurement: The New Economics of the Minimum Wage* (Princeton, N.J.: Princeton University Press, 1995).
  13. See, for example, David Neumark, Mark Schweitzer, and William Wascher, "Order from Chaos...op cit.
  14. The negative impact of minimum wages on training was suggested by several prominent labor and public finance economists in the 1970s. See, for example, Sherwin Rosen, "Learning and Experience in the Labor Market," *Journal of Human Resources*, 7(3), Summer 1972, pp. 326-342; Martin Feldstein, "The Economics of the New Unemployment?" *Public Interest*, 33 (Fall), 1973, pp. 3-42, and Finis Welch, "The Rising Impact of Minimum Wage," *Regulation*, November/December 1978, pp. 28-37. Empirical evidence that minimum wages reduce training is provided in Masanori Hashimoto, "Minimum Wage Effects on Training on the Job," *American Economic Review*, 72 (5), December 1982, pp. 1070-1087. For a more recent affirmation of that evidence, see David Neumark and William Wascher, "Minimum Wages and Training Revisited," NBER Working Paper No. W6651, available at <http://www.nber.org>.
  15. We argue that in "Should the Federal Minimum Wage Be Increased?" Dallas: National Center for Policy Analysis, Policy Report 190, February 1995.
  16. *Poverty in the United States: 1999*, p. 18.
  17. *Ibid.*
  18. William Even and David Macpherson, *Rising Above the Minimum Wage* (Washington, D.C.: Employment Policies Institute, January 2000); web address: <http://www.epionline.org/even-macpherson.htm>.
  19. There are a large number of poverty thresholds, depending not only on the size of the family unit, but the number of related children under 18 present, and, in the case of one and two person households, by whether the householder is under the age of 65. For example, for a family unit of three with no children under 18, the threshold is \$13,032, but if two of the unit's members are children under 18, the threshold rises to \$13,423. The weighted average (of number of unrelated children under 18) thresholds are \$8,667 for those under 65 years old), \$11,214 for two persons (householder under 65), \$13,290 for three persons, \$17,029 for four persons, \$20,127 for five persons, \$22,727 for six persons, \$25,912 for seven persons. For historical detail on changing thresholds, see *Poverty in the United States: 1999*, op. cit., Appendix Table A-3.
  20. See the Symposium on "Measuring the CPI" in the Winter 1998 issue of the *Journal of Economic Perspectives*. See especially, Michael J. Boskin, Ellen R. Dulberger, Robert J. Gordon, Zvi Griliches, and Dale W. Jorgenson, "Consumer Prices, the Consumer Price Index, and the Cost of Living," pp. 3-26. For a more recent commentary, such Robert J. Gordon, "The Boskin Commission Report and its Aftermath," NBER Working Paper No. W7759, June 2000, available at <http://www.nber.org>.
  21. For recent official poverty reports and other information relating to poverty, go to the U.S. Bureau of the Census Web site at <http://www.census.gov/hhes/www/poverty.html>.
  22. We would note that poverty researchers trying to explain trends in the overall level of poverty would do well to examine the factors behind these rather different trends.
  23. See Linda Barrington, "Does A Rising Tide Lift All Boats? America's Full-Time Working Poor Reap Limited Gains in the New Economy," Research Report 1271-00-RR, The Conference Board, June 2000.
  24. See Richard Vedder and Lowell Gallaway, *Out of Work: Unemployment and Government in Twentieth-Century America*, Updated Edition (New York: New York University Press, 1997).
  25. See U.S. Census Bureau, Current Population Reports P-60, No. 207, *Poverty in the United States: 1998* (Washington, D.C.: Government Printing Office, 1999), p. xi. The average poverty rate for the entire United States over the period was 13.2 percent, with state averages ranging from 8.4 percent in New Hampshire to 22.7 percent in New Mexico.
  26. The unemployment data were taken from the Bureau of Labor Statistics, Bulletin 2515, *Geographic Profile of Employment and Unemployment, 1997* (Washington, D.C.: Government Printing Office, June 1999), pp. 42-55. The personal income data were taken from the Bureau of Economic Analysis Web site at <http://www.bea.doc.gov/bea/regional/spi/pcpi.htm>. Minimum wage information was gathered from the annual survey of state labor legislation published in the January issue of the *Monthly Labor Review* for various years.
  27. Data sources: poverty: U.S. Bureau of the Census, Current Population Reports, Series P60, no. 188, *Income, Poverty and Valuation of Noncash Benefits: 1993* (Washington, D.C.: Government Printing Office, 1995), p. xviii; income per capita: "Comprehensive Revision of State Personal Income," *Survey of Current Business*, June 2000, p.85; unemployment rates: U.S. Bureau of the Census, *Statistical Abstract of the United States: 1994* (Washington, D.C., Government Printing Office, 1995), p. 419; minimum wage information came from the annual surveys of state labor legislation, as published in the January issues of the *Monthly Labor Review* for 1992, 1993, and 1994.

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