The minimum wage: No minor matter for teens

Donna C. Vandenbrink

"One of the Nation's most serious and longstanding problems is providing adequate employment for our young people. ...The restricted job opportunities for youth, especially minority youth, due to the minimum wage have contributed to the growing consensus on the value of a lower minimum wage for youths as a means of expanding their employment."

Presidential Message to Congress, May 17, 1984

"The record does not justify the establishment of a youth differential [minimum wage]."

Minimum Wage Study Commission, Report of the Commission, 1980.

Whether teenagers should receive special treatment under the federal minimum wage law has been a matter of controversy for some years. Bills to introduce a special lower minimum wage for teenagers have been proposed in the last two sessions of Congress. Advocates contend that the minimum wage has a significant negative impact on job opportunities of low-skilled youth. But some research suggests that the employment gains from a differential minimum wage might be quite modest. The 1980 Congressional Minimum Wage Study Commission concluded that a differential of 25 percent less than the adult minimum wage would likely increase youth employment by at most 5 percent.

In this paper, I look at the effects of such special treatment on teenage employment in the states of the Seventh Federal Reserve District. I find a much larger effect on youth employment than earlier time-series studies based on aggregate data. This study analyzes individual wages and personal characteristics rather than the average wages and population characteristics. Another study using data on individual adults finds similar results. The research also shows that the positive employment effect of a lower youth minimum wage is roughly the same across racial groups and geographic areas.

Minimum wage legislation

A federal minimum wage, intended to ensure all workers a "living wage," was established in 1938 by the Fair Labor Standards Act (FLSA). The minimum has been raised over the years from the original level of $0.25 per hour to $3.35 in 1981. Initially, the federal minimum covered 43 percent of all nonsupervisory and salaried workers. Today, the coverage rate is over 80 per cent. Currently, the FLSA exempts low-volume retail establishments, trade and service establishments, seasonal amusement establishments, and certain other establishments from paying the minimum wage. There were about 22 million exempt workers in the private sector in 1980. (This included 13 million executive, administrative, and professional workers who already earn well above the minimum wage.)

The employment effects of wage regulation

A teenage minimum wage differential is intended to ease a problem created when government sets a legal minimum on wages. Economic theory suggests that a minimum wage reduces the demand for low-skilled labor.[1] In a competitive market, with no regulation, the wage a worker is paid reflects the value of his time in the marketplace. Other things equal, the more skilled or productive a worker, the higher the market wage he can command. When a minimum wage is introduced, it raises the cost of employing workers whose market wage is below the legal floor.

Faced with a minimum wage, employers have several options. They can bring workers previously paid below the minimum up to the minimum, offsetting the added cost by reducing

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nonwage compensation or requiring greater effort. Or, they can choose to employ only those workers whose hourly contribution to output exceeds the minimum wage. When employers choose the latter course, the institution of a minimum wage (or an increase in the level of the minimum) reduces employment. This outcome has been substantiated in a number of empirical studies of the effects of the federal minimum wage.[2]

The side effects of minimum wage regulation may be felt particularly by teenagers who, because of inexperience and lack of skills, tend to have low market wages. If the minimum wage set by the FLSA were higher than the market value of most teenage workers, the regulation would make teens too costly to hire and thereby foster teenage unemployment. A survey of empirical research on the minimum wage concluded that the federal minimum wage has indeed reduced teenage employment, in the range of 1 to 3 percent for a 10 percent increase in the minimum.[3]

Youth joblessness is of considerable concern to policymakers. Whether induced by the minimum wage or caused by other factors, youth joblessness may have long-range consequences for individuals and society. Research has shown that although early periods of unemployment are not associated with later recurring periods of unemployment, the effect of lost work experience on a young worker's wage level persists as he gets older.[4] Furthermore, teenage joblessness may be associated with crime and other antisocial behavior.[5]

Permitting employers to pay teens less than the adult minimum wage would make more teenagers more employable. Minimum wage differentials—lower minimums that apply to certain types of workers—have been used in the past. For example, the FLSA permits authorized employers to pay below-minimum wages to some students and entry-level workers. Until recently, such differentials were not an important feature of federal minimum wage policy. However, since 1972 Congress has considered a number of proposals for a youth differential minimum wage. And, while failing to pass such a broad-based differential, it has greatly expanded the full-time student subminimum program.[6]

Proponents of a minimum wage differential for youth believe that by increasing teenage employment such a policy would encourage the development of positive work attitudes and the accumulation of job-related skills among youth. Critics of a differential object to singling out teenagers for special treatment. A minimum wage, they point out, makes employment of any low-skilled worker less attractive, regardless of age. According to Linneman (1982) almost 10 percent of the U.S. *adult* population did not have the characteristics to earn a wage above the minimum wage in 1974. Moreover, a subminimum wage for teenagers would encourage employers to substitute the cheaper teens for very low-skilled adult workers, increasing the unemployment problem in the adult population. These important issues are beyond the scope of this study.

Overview

The purpose of this study is to estimate the effect of a special minimum wage for teenagers on the level of teenage employment in the Seventh Federal Reserve District. Two alternative youth minimum wages are analyzed—one 25 percent below and one 15 percent below the adult minimum wage level. These translate into teenage minimum wage levels of $2.33 and $2.64, respectively, given the adult minimum wage of $3.10 in 1980, the year for which employment estimates are made.

A lower minimum wage for youth is expected to increase teenage employment, but the size of the increase depends on the distribution of market wages among teenagers and on individual teens' employment decisions. The wage distribution indicates how many teens have market wages between the existing adult minimum and the new youth minimum, and hence, how many teens would be available for hire as the legal minimum wage is lowered. However, not all of these teens would be willing to work even when employers were permitted to offer them their market wage. For some, employment at their market wage is not as attractive as alternative uses of their time. How many teens would choose to work depends on each individual's employment decision.

This study develops expected market wage distributions specifically for the population of teenagers in the Seventh District States and predicts aggregate employment using individual survey data. If there is significant individual variance in the distribution of

wages or in employment rates, then this approach will be more accurate in measuring the total change in employment than one based on aggregate data and population averages.

The distribution of market wages

As a starting point, it is useful to look at the distribution of wages for teenagers in the Seventh Federal Reserve District. The coefficients of a wage equation estimated on data from a national survey of youth (see Box), together with socio-demographic data for individual teenagers from the Public-Use Micro Samples (PUMS) of the 1980 Census of Population, were used to calculate expected market wages for individual teenagers in each of the five District states. The resulting wage distribution is shown in Figure 1. According to this measure, just under half of the teens in the five states could expect market wages below the 1980 federal minimum wage level of $3.10.

The characteristics of the teens in the District with expected wages above the $3.10 minimum differ considerably from those of the teens with expected wages below the minimum. The above-minimum teens are older, averaging just under 18 years of age. They have about one and one-half more years of education. Only slightly more than one-fourth of the above-minimum group is female, but young women comprise over three-fourths of the below-minimum group. Overwhelmingly, the below-minimum group is still enrolled in school. All five states exhibit similar above- and below- minimum differences by race, marital status, and motherhood status, but the average level of these characteristics differs among the states.

A youth differential would have its greatest effect on teens whose expected wage was between the youth minimum and the current minimum. In order to estimate the size of this group, I compared the proportion of teens having expected wages under $3.10 with the proportions below the alternative minimum wage levels of $2.33 and $2.64.[7]

These proportions are given in Table 1. According to the table, setting a teen minimum at $2.33 would reduce the proportion of teens below the minimum from approximately 47 percent to about 20 percent. Under this scenario, roughly 27 percent of teenagers would become newly eligible for employment. With a teenage minimum at $2.64, slightly under one-third of teens would remain in the below-minimum group. Under this scenario only 16 percent would become newly eligible for employment.

Employment probabilities

In order to measure the employment effect of lowering the minimum wage we also need to understand what determines whether a teen will decide to work if he is given the opportunity to earn his market wage. After we have developed a model of the probability of employment given an expected market wage and the level of the minimum wage, we can calculate how the rate of teenage employment would change under different minimum wage levels.

The employment decision

An individual will choose to work if the value of his wage income exceeds the value of time spent in school, homemaking, or other activities. But, when a minimum wage is in place, some individuals—those with market wages below the minimum—will not be able to work even if they choose to. So whether or not a person works depends not simply on his market wage, but on the relation of the market wage to the level of the minimum wage.

Thus, in a teenager's employment decision, the probability of his employment depends on opportunities for work in the locale where he resides, the nonmarket activities he engages in, and the probability of his market wage lying below the minimum wage. This latter probability captures the effect of the minimum wage on his ability to find work as well as the effect of his market wage on his decision to seek work. It varies with individual characteristics as well as with the level of the minimum wage.

Table 2 shows the specific variables used to predict employment along with the coefficients generated by the analysis. The sample was composed of all 16-to-19-year-olds in the five District states. Conventional statistical techniques are not appropriate for predicting "yes/no" decisions. The employment decision is an example of this, since people either have a job or they don't. A special statistical technique known as probit analysis was used to

The wage equation

The distribution of wages for teenagers in the Seventh District used in this analysis was based on imputed hourly wage rates. I describe here the rationale for that imputation and the details of its derivation.

Gaps in employment information make hourly wage rates constructed from the Census of Population unreliable. Rather than use the Census data to measure wage rates, we derived wage rates for the teenagers in the Seventh District census samples by estimating a wage equation on another data set and applying those coefficients to the personal characteristics reported in the Census samples. The other source of data was the 1980 interview wave of the Second Youth Cohort of the National Longitudinal Survey (NLS). The questions on this survey were designed specially to provide information on the labor market behavior of youth in the general population.*

The wage rate of interest is one which indicates the true market value of an individual worker. However, minimum wage regulation may distort actual observed wages from this true market wage when it does not cover all workers in the economy. If workers excluded from employment in the covered sector seek work in the uncovered sector, the additional supply of labor will push wages there below their value in an unregulated labor market. As a practical matter, this means that when a teenager on the NLS survey reports a wage less than the federal minimum, we cannot be sure what his true market wage would be. On the other hand, actual wages which are higher than the federal minimum should be relatively unaffected by the regulation and should indeed represent unconstrained market wages. Consequently, I used only those NLS observations with reported wages above $3.10 (the federal adult minimum wage in 1980) as the sample for the wage equation.

Having thus excluded from the wage equation teens who were not employed and those who were employed but with below-minimum wages, I needed to adopt an appropriate estimating technique. Standard ordinary least squares (OLS) estimates of the wage equation would be biased if the chance of inclusion in the sample (here, the chance of employment at an above-minimum wage) were systematically correlated with the personal characteristics that determine the market wage. I adopted Heckman's solution, controlling for the potential bias by adding to the wage equation a variable (lambda) whose value depends on the probability of being included in the sample (here, the probability of being employed at a wage above the minimum).**

Table A reports the estimates of the wage equation. The explanatory power of the equation is reasonable, with an R^2 of .15. The wage structure is consistent with our expectations about the relationship of various personal characteristics and their market value. More education, greater age (and presumably more experience), and married family status all garner higher wages while being female, being black, and being enrolled in school reduce an individual's wage, other things equal.

The second column of Table A shows the OLS estimates of the wage equation without controlling for the probability of employment with a higher than minimum wage. Comparing these results with those in the first column we can see that including lambda in the wage equation shifts the intercept without having much effect on the coefficients of the other variables. This suggests that average wage levels differ with the probability of employment, although the slope of the wage structure

Table A
Wage and employment analysis of NLS youth sample

	Adjusted OLS wage	OLS wage	Employment probit
Intercept	0.52 (.323)	0.77 (.059)	−8.68 (1.103)
Highest grade	0.02 (.005)	0.02 (.003)	—
Education 9-12 years	—	—	0.49 (.058)
Education over 12	—	—	0.60 (.073)
Female	−0.18 (.021)	−0.17 (.011)	−0.29 (.028)
Age	0.04 (.008)	0.03 (.004)	0.75 (.117)
Age ^{2}	—	—	−0.02 (.003)
Enrolled	−0.11 (.039)	−0.80 (.013)	−0.57 (.036)
Black	−0.05 (.025)	−0.03 (.013)	−0.37 (.033)
Married	0.02 (.026)	0.04 (0.17)	−0.31 (.050)
Lambda	0.24 (.316)	—	—
F	91,061	106.121	—
$R^2/\bar{R}^2$	.1491/.1475	.1475	—
log likelihood ratio	—		−5477.99
n	3645	3645	9819
Standard error	.3553	.3094	

with respect to personal characteristics does not. In any case, this NLS youth sample does not suffer from conventional selection bias, since the coefficient on lambda is not significant.

Table B compares the distribution of wages actually reported on the NLS with the distribution constructed from the parameters of the wage equation in Table A. The predicted distribution is constructed by taking into account not only each individual's expected wage level derived from the wage equation but also the variance in this predicted value. (The variance arises because a person's wage is influenced by many unobserved factors and by variables not included in the wage equation.) The actual distribution in Table B is more concentrated above $3.10 than the predicted distribution. Of course, this is as it should be since the minimum wage law prohibits many employers from paying wages under $3.10.

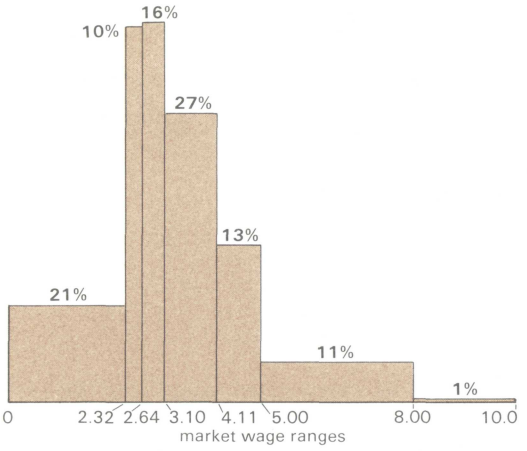
Table B
Comparison of actual and predicted wage distribution NLS sample

	Actual (workers only)	Predicted (workers + nonworkers)
$0.01 - 2.32	8.9%	15.9%
2.33 - 3.09	14.0	23.2
3.10 - 4.11	43.7	27.9
4.12 - 5.00	12.5	15.4
5.01 - 8.00	16.3	15.9
8.01 and over	4.6	1.7

*The NLS Youth Cohort is a sample of 5,700 young men and 5,700 young women who were interviewed annually between 1979 and 1984. At the time of the 1980 interview they ranged in age from 15 to 23 years old.

**The value of lambda is computed from a probit estimate of employment status. The employment states were: "employed with a wage higher than the minimum wage" and "other." The results of this probit are shown in the third column of Table A. This lambda differs slightly from the conventional "Heckman lambda" which controls only for potential bias due to censoring the sample by employment probability. These results also are consistent with expectations. Being female, enrolled in school, black, or married makes one less likely to be employed. Greater age increases the probability of employment, with a diminishing effect as one gets older (age-squared is negative). Individuals with a high school education are more likely to be employed than those completing eighth grade or less (the omitted category) and those with education beyond high school are even more likely to be employed.

Figure 1
Distribution of expected market wages of 15-19 year olds in Seventh District states



predict employment status. The dependent variable is individual employment status. The variable PROBSUB is the probability that the individual's expected wage is below the minimum wage of $3.10. The other explanatory variables include four state dummies, two indicators of local labor market opportunities—a local unemployment rate for teens and local per capita income—and three measures of nonmarket alternatives—school enrollment and marital and motherhood status.

According to the coefficients on the state dummies, the average probability of employment, other things equal, is higher in Indiana, Iowa, Michigan, and Wisconsin than in Illinois (the omitted category). The difference between Illinois and Indiana is not statistically significant, however. Teens living in counties with a higher per capita income are more likely to be employed while those in areas with a higher proportion of unemployed teens are themselves less likely to be employed. Being enrolled in school, being married, or being a mother all reduce the probability of being employed, although the effect of marital status is not statistically significant. As expected, the higher the probability of having a market wage below the minimum wage, the lower the probability of being employed.[8]

Figure 2 demonstrates the relative importance of each of the independent variables by showing the change in employment probability that results from a 10 percent increase in the mean value of each explanatory variable. In these terms, the below-minimum status—PROBSUB—is the most important determinant of employment probability.

Table 1
Effect of alternative minimum wages on the proportion of teenagers with below-minimum wages

Proportion of teens with wages below	
$3.10	47.40%
$2.33	20.80
$2.64	31.36

Figure 3 illustrates how changes in the probability of earning a subminimum wage affect the probability of employment. As the figure shows, lowering the minimum wage has its biggest impact on individuals who already have a 50-50 chance of being employed. The impact on individuals with extremely high or extremely low probabilities of employment will be much smaller.

Increase in employment with teenage differential

We can calculate the effect of a youth minimum wage on teenage employment in the Seventh District by combining our understanding of the determinants of individuals' market wages with our analysis of the determinants of employment. From the wage equation we can determine the probability of a teen's

Table 2
Employment equation for 7G States

	Probit coefficient	Standard errors per probit
Intercept	0.8316145	.037
Indiana	0.00579456	.012
Iowa	0.04991053	.014
Michigan	0.12036113	.010
Wisconsin	0.09386675	.012
Enrolled	−0.36047791	.010
Married	−.0.00818144	.018
Mother	−0.72281929	.021
Teen unemployment rate	−0.03103838	.001
PROBSUB	−1.37434363	.032
Per capita income	.02998966	.003
log likelihood ratio	−83,903.2	
n	129,623	

market wage lying below the alternative minimum wages of $2.33 and $2.64.

These new values of PROBSUB can be used to recompute each individual's probability of employment using the employment model from Table 2. These in turn can be used to generate an aggregate employment rate for teenagers. Comparing these new employment rates with the baseline rate gives the effect of the new policy.

Table 3 shows the employment rates calculated in this way for the five states of the Seventh District. The expected baseline employment rates with the minimum at $3.10 range from 39.3 per cent in Indiana to 46.7 percent in Wisconsin. Under a $2.33 minimum wage, estimated teenage employment rates stand above 50 percent in all five states, and with a $2.64 minimum, estimated employment rates range between 47 and 55 percent.

These predicted employment rates suggest that reducing the minimum wage by 25 percent (to $2.33) would raise the teenage employment rate by fourteen percentage points. In the District states this would translate into a 30 to 36 percent increase. Lowering the minimum by 15 percent would increase employment by 18 to 21 percent. By comparison, the Minimum Wage Study Commission determined from a review of previous research that we might expect a 2.5 to 5 percent increase in teenage employment for a 25 percent youth minimum wage differential.

Figure 2
Change in probability of employment with a 10 percent increase in independent variables

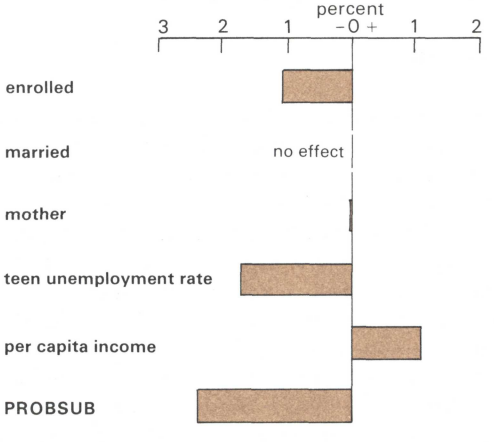
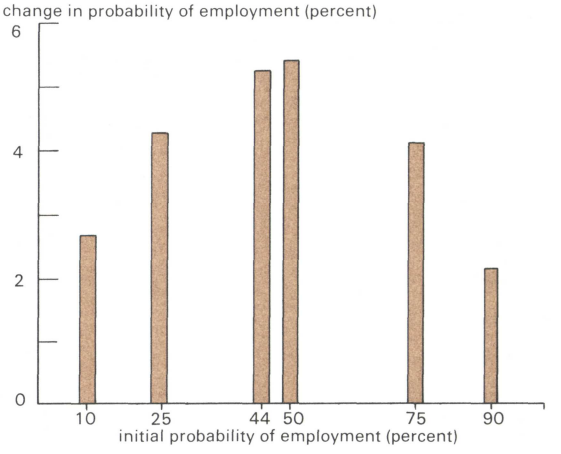


Figure 3
When the probability of having a subminimum wage decreases by 10 percentage points, the probability of actually having a job increases. The effect is greatest when the probability of employment is nearly even



Some insight into the greater employment responsiveness of our results can be gained by looking back at Figure 3. In that figure, which is based on our employment probability model, reductions in the minimum wage have their greatest effect on employment when initial employment rates are between 25 and 50 percent. This is exactly the range of teen employment rates obtained for the District states under the baseline, $3.10, minimum wage assumption (see Table 3).

Our estimates of the responsiveness of employment to changes in the minimum wage are consistent with the results of one other study. Linneman investigated changes in adult employment following the 1974 increase in the minimum wage from $1.60 to $2.00. He calculated employment rates of 64 percent and 51

Table 3
Expected employment rates among District teenagers under alternative minimum wage levels

Percent employed with a minimum wage of:	Illinois	Indiana	Iowa	Michigan	Wisconsin
$3.10	42.6	39.3	46.6	39.6	46.7
$2.64	50.8	47.4	55.1	47.8	55.1
$2.33	56.4	53.0	60.6	53.3	60.6

Table 4
Predicted increase in teenage employment under alternative minimum wage differentials

By age, sex, race, employment status, and location for Seventh District states
(Percentage point difference from predicted employment rate with $3.10 minimum wage)

Change in employment rate when minimum lowered to:	Illinois		Indiana		Iowa		Michigan		Wisconsin	
	$2.33	$2.64	$2.33	$2.64	$2.33	$2.64	$2.33	$2.64	$2.33	$2.64
All 15 to 19 yr. olds	13.8	8.2	13.7	8.1	14.0	8.5	13.7	8.2	13.9	8.4
By age										
15 yr. olds	15.5	8.7	15.2	8.5	16.0	9.1	15.1	8.4	16.0	9.1
16 yr. olds	15.3	8.9	15.1	8.7	15.6	9.2	14.9	8.6	15.6	9.2
17 yr. olds	14.5	8.7	14.3	8.6	14.8	9.0	14.3	8.6	14.6	8.8
18 yr. olds	12.7	7.9	12.8	7.9	13.0	8.1	12.7	7.9	12.8	8.0
19 yr. olds	11.0	7.1	11.1	7.1	10.8	6.9	11.2	7.2	10.7	7.0
By sex										
Males	12.6	7.9	12.6	7.9	12.6	7.9	12.6	7.8	12.5	7.9
Females	15.0	8.6	14.7	8.5	15.4	8.9	14.6	8.4	15.3	8.8
By race										
Black	13.9	8.1	13.6	7.8	14.8	8.7	13.3	7.7	14.5	8.5
Other	13.7	8.3	13.7	8.2	14.0	8.5	13.7	8.2	13.9	8.4
By employment										
Unemployed	12.3	7.7	12.2	7.6	11.9	7.5	12.3	7.6	12.0	7.5
Not in labor force	14.2	8.5	14.1	8.4	14.4	8.1	13.9	8.3	14.4	8.7
By location										
Center city	13.8	8.2	13.0	7.6	13.9	8.4	15.0	9.6	16.6	8.3
SMSA outside center city	13.8	8.3	13.9	8.3	13.8	8.4	13.9	8.4	14.0	8.4
Non SMSA	13.6	8.1	13.5	8.0	14.1	8.5	13.5	8.0	13.9	8.4

percent before and after the change in policy, respectively, for those adults who had below-minimum wages in 1974. In other words, Linneman found that the 25 percent increase in the minimum wage resulted in a thirteen percentage point decline in the employment rate for this group. This result is quite close to our own estimate of a fourteen percentage point change for teenagers. Significantly, Linneman's work, like ours, is based on the analysis of data on individuals, not on aggregate employment statistics such as were used in most other studies.

The distribution of employment benefits

By using the employment equation in Table 2 to predict unemployment rates for different demographic groups, we can get a better idea of who will benefit most from a lowering of the teenage minimum wage. Table 4 shows the percentage point increase over the predicted baseline employment rate by age, sex, race, current employment status, and residential location.

Lowering the minimum wage generates larger increases in employment rates for younger than for older youth, for females than for males, and for those currently not in the labor force than for the unemployed.

Noteworthy is the fact that the increment to the employment rate for nonblacks is as large as it is for blacks. Also, the gain in the employment rate of teens living in suburban areas is on a par with that of center city teens. Thus, a youth differential would not appear to benefit primarily blacks or primarily center city youth. Its benefits would be felt across all racial groups and geographic areas.

Conclusion

This study used survey data on individual teenagers to investigate the effect of a youth minimum wage differential on teenage employment in the Seventh Federal Reserve District. The study found that allowing employers to pay teenagers a minimum wage 25 percent below the adult level would likely increase teenage employment rates by about one third. This is a substantially greater increase in youth employment than many observers, including the Minimum Wage Study Commission, have predicted. This study also showed that the

youth differential would draw new teen workers from outside the labor force as well as from the unemployed, from all racial groups, and from all geographic locations. Thus, a youth differential minimum wage should not be considered a job program for the inner city, minority, hardcore-unemployed youth. Rather, it would be a broadbased youth employment program.

[1]See George J. Stigler (1948) for the classic analysis of the economic impact of minimum wage legislation.

[2]See Brown, Gilroy and Kohen, (1982), for a review of this literature.

[3]Brown, Gilroy and Kohen (1982), p. 505.

[4] See Ellwood (1982) and Meyer and Wise (1982).

[5]See Albert Rees (1986) for discussion of the problem of youth joblessness and public policy.

[6]Before 1975 student employment under the program never exceeded 79,000 but it has fluctuated between 250,000 and 500,000 thousand annually since the changes initiated in 1974. Richard B. Freeman, Wayne Gray and Casey E. Ichniowski. "Low-Cost Student Labor: The Use and Effects of the Subminimum Wage Provisions for Full-Time Students," Vol. 5. Minimum Wage Study Commission. 1981, Table 3.

[7]I first calculate the probability that each individual's expected market wage is below-minimum under the three assumptions about the minimum wage level. The mean of this probability for each state sample indicates the expected proportion of teens in the state with a wage below the assumed minimum.

[8]The following table shows the results of ordinary least squares (OLS) estimates of an employment status equation similar to the one in Table 2. The regression on the left includes the variable PROBSUB, while the one on the right does not. Comparing these results, we can see that including the probability of a below-minimum wage increases the explanatory power of the model.

OLS employment results

	Model 1		Model 2	
	Coefficients	Standard errors	Coefficients	Standard errors
Intercept	.685833	.014	.801869	.014
Indiana	.000115832	.005	.00194259	.005
Iowa	.016953*	.005	.019478*	.005
Michigan	.050854*	.004	.043907*	.004
Wisconsin	.034730*	.004	.035551*	.004
Enrolled	−.225064*	.003	−0.138086*	.004
Married	.001073928	.007	−.0077382	.007
Mother	−0.308383*	.007	−.252184*	.007
Teen unemployment rate	−0.012438*	.000	−.011211*	.000
PROBSUB	—		−0.512270*	.012
Per capita income	.008595258*	.001	.011697*	.001
n	129,623		129,623	
R^2	.0620		.0756	
F	952.2		1061.0	

*Significant at 1%.

However, even the OLS version of the model with PROBSUB accounts for less than 8 percent of the variation in employment among the sample of Seventh District teens. The remaining variation must be explained by other factors not included in the model and their influence on individual employment decisions. (One of the factors omitted from the employment model is the existence of programs, like the full-time student certification program, which do permit some employers to pay below-minimum wages.) Since the employment model accounts for only a small percentage of variation in employment, it does not predict accurately whether a particular individual will be employed. But, since the coefficient on PROBSUB is significant, as long as factors omitted from the model are not correlated with PROBSUB, the model captures fully the effect of a change in the probability of below-minimum market wages on the probability of employment.

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