Raising the minimum wage: effects on family poverty

Increases in the minimum wage reduce poverty among families more than previously estimated, a study of household data shows

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Disemployment effects and weak links among low wages, low income, and poverty have been at the center of the debate about the poverty-reducing effect of a higher minimum wage. Recent studies do not settle the debate. Charles Brown, Andrew Kohen, and Curtis L. Gilroy concluded that disemployment effects are small.[1] But Edward M. Gramlich and Terrence Kelly showed that most low-wage workers are not poor.[2] Several recent studies, using a variety of methods and data sources, confirm this result.[3] Most economists analyzing the subject conclude from this evidence that a higher minimum wage is a poor tool for fighting poverty. But economists who specialize in studies of the poor concentrate on changes that have occurred while the minimum wage remained at its 1981 level. For example, between 1981 and 1986, the poverty line for a family of three increased from $7,250 to $8,737 (20.5 percent) and the number of poor workers increased from 8.6 to 8.9 million (2.7 percent).[4] Anxious for ways to reduce working poverty that do not affect the Federal budget, poverty specialists still favor a higher minimum wage.[5]

Analysts on both sides of this debate neglect important barriers to reducing poverty through raising the minimum wage. These barriers are related to (1) the provisions of the minimum wage law, (2) the characteristics of low-wage workers, and (3) the characteristics of poor families with low-wage workers.

Previous studies suggest how some of these barriers affect poverty reduction through a higher minimum wage. But with new data and recent empirical evidence, researchers can integrate these factors much better today. This article uses the new data and evidence to provide more reliable and up-to-date estimates of the effect of a higher minimum wage on the poverty gap—the difference between the actual income of poor families and the income needed to bring these families up to the official poverty level—and on the number of poor families.

The study is organized as follows. The first section reviews and updates information showing how coverage, compliance, and the characteristics of the working poor affect poverty reduction through a higher minimum wage.

The next section develops a model—incorporating disemployment effects—to simulate the poverty-reducing effect of a higher minimum wage. The following section discusses the Current Population Survey (CPS) data on wages, hours, employment, and poverty status used for the simulations. The fourth section simulates the effect of a higher minimum wage on the poverty gap for poor and near-poor families with at least one member paid less than $4.25 in 1987. The simulations use different assumptions about disemployment effects, coverage and compliance, and the level of the minimum wage. The final section summarizes the results and suggests policy conclusions.

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Our model shows that a higher minimum wage would have a larger poverty-reducing effect than previous studies suggest. With full coverage, full compliance, and a $4.25 minimum wage, the poverty gap among families with at least one low-wage worker would fall by $881 million (11.1 percent) and the number of such families would fall by 193,000 (8.7 percent). These declines in poverty would be 3 to 4 percentage points lower if coverage and compliance were at 1987 levels. Changing assumptions about disemployment effects makes little difference because disemployment effects fall heavily on teenagers, whose contribution to family income is small.

Barriers to poverty reduction

The most often cited barriers to reducing poverty through a higher minimum wage are that: (1) few low-wage workers are in poor families and (2) few poor low-wage workers have full-time and full-year jobs.[6] To look at more recent results, define low-wage workers to be workers earning less than $4.25 per hour, the minimum wage effective April 1991. Define the low-wage working poor to be low-wage workers in poor families. In 1986, only 10.09 percent of low-wage teenagers and 18.04 percent of low-wage adults were in poor families. This weak link creates an important targeting problem. For example, Robert V. Burkhauser and T. Aldrich Finegan show that 40.0 percent of the higher earnings resulting from a higher minimum wage would go to workers in families with incomes at least three times the poverty level.[7]

Table 1 shows why the age, gender, employment status, and family characteristics of the low-wage working poor also create barriers to poverty reduction. Teenagers and women represent 77.7 percent of the low-wage working poor. These demographic characteristics help us to understand the close link between low wages and limited work hours. Only 14.9 percent of the low-wage working poor were full-time and full-year workers. Many teenagers and women want part-time or part-year work to avoid conflicts with other activities—such as schooling and child care. So a higher minimum wage may have small effects on poverty even with strong overall demand for low-paid labor. Further, 87.0 percent of the low-wage working poor had no other low-wage worker in their family. So the contribution of a higher minimum wage to the reduction of family poverty is generally through boosting the earnings of a single worker.

Exemptions to and noncompliance with the law also create barriers. Many of the low-wage working poor cannot benefit from a higher minimum wage because they are *not* covered by the minimum wage law. Small retail and service establishments employ the largest share of workers that are not covered. We have no data on the size of establishments employing low-wage workers. But table 2 shows that retail trade and service establishments employ 76.1 percent of the low-wage working poor. Without more coverage of retail trade and service establishments, many working poor families will be unaffected by a higher minimum wage. Other workers cannot benefit because they are already victims of minimum wage violations.

Table 1. **Selected characteristics of low-wage working poor paid up to $4.24 per hour, 1987**

Worker characteristics	Number of workers (thousands)	Percent
Total	1,922	100.0
Age group and gender:[1]		
Adults:		
Female	1,135	59.1
Male	430	22.4
Teenagers (16 to 19 years):		
Female	165	8.6
Male	193	10.0
Employment status:		
Full-time, full-year	286	14.9
Other	1,635	85.1
Number of low-wage family members:		
One member	1,672	87.0
Two members or more	250	13.0

[1] Percentages may not add to total because of rounding.

SOURCE: Unpublished tabulations by The Urban Institute based on Current Population Survey, March 1987.

Without a survey including matched data on worker and family characteristics, it was difficult to study the poverty-reducing effects of a higher minimum wage. Kelly matched May 1974 Current Population Survey (CPS) data on wages and hours to March 1974 data on family income and poverty status.[8] He used the result to study the effect of raising the minimum wage from $2 to $2.65, a 32-percent jump. This increase reduced the poverty gap and the number of poor families by 5.8 percent, which Kelly thought was "amazingly small." Unfortunately, reporting errors in each survey and errors occurring while matching records from the two surveys could have occurred. In addition to reporting and matching errors, the matched sample did not accurately represent the U.S. population because weights for the matched sample were not prepared in advance.[9]

Analysts neglect key barriers to reducing poverty.

This study uses better data than were available to Kelly and incorporates the disemployment effect. The March CPS now includes wage and hours data for employees, along with income and poverty status data for their families. The March CPS also has weights for respondents and their families, so researchers can estimate population distribution from sample distributions. Kelly's simulations ignored the disemployment effect because economists had reached no consensus on its size. However, Brown, Kohen, and Gilroy have provided widely accepted estimates for the disemployment effect.[10] The following section develops a method for incorporating these estimates into simulations of the effect of a higher minimum wage on poverty.

Incorporating disemployment effects

A higher minimum wage leads some firms to reduce employment, thereby penalizing some workers who were paid less than the new minimum wage. The poverty gap narrows if workers employed after the new minimum wage takes effect (hereafter, ex-post) have higher earnings than workers employed before (hereafter, ex-ante). This will occur if employment is relatively inelastic with respect to a higher minimum wage.[11]

To incorporate this disemployment effect, some notation must be introduced. M is the number of poor families ex-ante and N is the number of poor families ex-post. If the number of poor families falls, $M > N$. P_i is the poverty line for the ith poor family and F_i is income accruing to that family ex-ante. N_i is the number of working members of the ith family who earn less than the new minimum wage ex-ante. $E(dL_j)$ is the expected change in the jth worker's earnings, including the disemployment effect.

The model ignores changes in hours and prices following a higher minimum wage. A few studies estimate the effect of a higher minimum wage on hours worked.[12] But these studies are based on different samples, use different methods, and yield different conclusions. Studies of the effects of a higher minimum wage on prices also lack consensus. Specific estimates of changes in prices and hours worked could be used to adjust the simulations. For now, the model incorporates only the widely accepted estimates of the disemployment effect. This means that the simulations overestimate the poverty-reducing effect of a higher minimum wage.

The expected change in earnings for the jth worker is:

$$(1)\quad E(dL_j) = H_j\ [\lambda_j\, dw_j - (1-\lambda_j)\, w_j],$$

where j is the probability that the jth worker is employed ex-ante; w_j is the jth worker's wage ex-ante and dw_j is the change in the jth worker's wage; and H_j is annual hours worked by the jth worker.

If a higher minimum wage affects ex-ante poor families only, the ex-post poverty gap is:

$$(2)\quad G = \Sigma_i^N\ [(P_i - F_i) - \Sigma_j^{N_i}\ E(dL_j)]$$

The ex-post poverty gap is smaller than the ex-ante poverty gap $[\Sigma_i^M\ (P_i - F_i)]$ if the change in earnings $(\Sigma_i^N\ \Sigma_j^{N_i}\ E(dL_j))$ is positive.

Higher minimum wages increase poverty if fewer workers from near-poor families find jobs. To account for this possibility, add $P_k - [F_k - \Sigma_j^{nk}\ (1-\lambda_j)\ H_j\ w_j]\ (> 0)$ to equation 2. This term represents the expected poverty gap that occurs when the kth near-poor family becomes poor after one member or more is unable to find a job. If there are n such families with at least one worker earning less than the new minimum wage, the ex-post poverty gap is:

$$(3)\quad G = \Sigma_i^N[(P_i - F_i) - \Sigma_j^{N_i}\ E(dL_j)] + \Sigma_k^n\ P_k - [F_k - \Sigma_j^{nk}\ (1-\lambda_j) H_j\ w_j]$$

To complete the model, expected changes in earnings must be estimated. This requires information about the ex-post employment probability. A crude estimate of this probability can be derived from estimates of the elasticity of employment with respect to minimum wage changes (hereafter, the employment elasticity).

Table 2. **Workers earning up to $4.24 per hour and covered by the minimum wage, by industrial sector, 1987**

Industry	Number of workers (thousands)	Workers as a percent of total	Workers covered by the minimum wage (percentage)
Total	12,215	100.0	71.2
Agriculture, fishing, and forestry	238	1.9	36.5
Mining	32	.3	86.3
Construction	213	1.7	89.5
Manufacturing	1,243	10.2	85.9
Transportation, communication, and utilities	151	1.2	88.0
Wholesale trade	242	2.0	68.4
Retail trade	5,750	47.1	76.0
Finance, insurance, and real estate	239	2.0	64.8
Private household services	427	3.5	68.1
All services except private household services	3,537	29.0	59.1
Public administration	123	1.0	60.3
Industry not reported	20	.2	–

SOURCES: See table 1 and *Minimum Wage and Maximum Hours Standards Under the Fair Labor Standards Act* (U.S. Department of Labor, 1986), table 8.

NOTE: Dash indicates data not available.

Table 3. **How changes in the minimum wage, with full compliance and coverage, affect family poverty under varying employment elasticities, 1987**

Wage and employment elasticity levels	Poverty gap[1]		Poor families		Poverty gap per family	
	In millions of dollars	Percent reduction	Number, in millions	Percent reduction	Family average	Percent reduction
$3.35[2]	$7,940	–	2.218	–	$3,581	–
$3.80:						
Zero employment elasticities	7,451	6.2	2.083	6.1	3,577	.1
Published employment elasticities[3]	7,502	5.5	2.104	5.1	3,565	.4
High employment elasticities[4]	7,664	3.5	2.183	1.6	3,511	2.0
$4.25:						
Zero employment elasticities	6,960	12.3	1.995	10.0	3,488	2.6
Published employment elasticities[3]	7,059	11.1	2.025	8.7	3,486	2.7
High employment elasticities[4]	7,374	7.1	2.177	1.8	3,387	5.4

[1] The poverty gap is the difference between family income and the official poverty line, summed over all poor families.

[2] The current (1987) level of minimum wage, poverty gap, number of poor families, and poverty gap per family.

[3] The results in this row are averages of five simulations assuming the following published estimates of employment elasticities for young adults (ε_a) and teenagers (ε_t): (1) $\varepsilon_a = -.026$ and $\varepsilon_t = -.10$; (2) $\varepsilon_a = -.074$ and $\varepsilon_t = -.1$; (3) $\varepsilon_a = -.026$ and $\varepsilon_t = -.30$; (4) $\varepsilon_a = -.074$ and $\varepsilon_\tau = -.3$; and (5) $\varepsilon_a = -.10$ and $\varepsilon_t = -.30$.

[4] This row assumes $\varepsilon_a = -.30$; and $\varepsilon_t = -.30$.

SOURCE: Unpublished tabulations by The Urban Institute based on the Current Population Survey, March 1987.

If all workers were identical, the ex-post employment probability would be related to the employment elasticity as follows:

$$(4)\ \lambda = j^1/j^0 = 1 + (dw/w)\varepsilon'$$

where J^0 is ex-ante employment; J^1 is ex-post employment; w is the wage and dw is wage change, which are identical for all workers; and $\varepsilon(\leq 0)$ is the employment elasticity.

The following approximation keeps a simple link between the ex-post employment probability and the employment elasticity but drops the assumption that workers are identical:

$$(5)\ \lambda_j = 1 + (dw_j/w_j)\varepsilon$$

Substituting equation (5) into equation (2) and rearranging terms gives:

$$(6)\ E(dL_j) = H_j\, dw_j\, [1+(1+(dw_j/w_j))]\varepsilon'$$

Then, substituting equations (5) and (6) into equation (3) gives:

$$(7)\ G = \Sigma_i^N[(P_i-F_i) - \Sigma_j Ni\, H_j\, dw_j\, [1 +(1+(dw_j/w_j))\varepsilon']] + \Sigma_k^n P_k - F_k + \Sigma_j^{nk} H_j\, dw_j\, \varepsilon'$$

The approximation is a compromise reached by substituting time series estimates of average employment elasticities for individual employment probabilities. The model uses separate elasticity estimates for teenagers ($\varepsilon=\varepsilon_t$) and adults ($\varepsilon'=\varepsilon_a$). Then, the model uses individual wage data (dw_j and w_j) as weights. Brown, Kohen, and Gilroy provide low and high estimates of employment elasticities for teenagers (16 to 19 years old) and young adults (between 20 and 24 years old). The low estimates of the teenager and young adult elasticities are – 0.10 and – 0.026. The high estimates are – 0.30 and – 0.074.

The best proxy for ε' is an estimate of the employment elasticity for low-wage workers. Published estimates of the employment elasticity of teenagers are good proxies for ε_t because, in 1986, more than one-third of all teenagers earned below the current minimum wage and almost three-quarters of all teenagers earned below $4.25. Good proxies for ε_a are hard to find. Most estimates of the employment elasticity of adults are small or statistically insignificant. Even so, these estimates are lower than the employment elasticity of low-wage adults.[13]

The model uses several employment elasticities to substitute for the employment elasticity of low-wage adults. The basic simulation uses employment elasticities of young adults. The range of estimates for young adults was – 0.026 to – 0.074, so this simulation may overstate the poverty-reducing effect of a higher minimum wage. Two other simulations substitute low and high values of the employment elasticity of teenagers for the employment elasticity of low-wage adults. None of these assumptions is best on theoretical grounds, but the true effect of a higher minimum wage on poverty should fall within the range of the simulation results.

Among the poor, many who work are not covered by the legislation.

Besides simulations using published estimates of employment elasticities, a simulation

was made assuming no disemployment effect for teenagers or adults ($\varepsilon_a = \varepsilon_t = 0.00$). The results are compared with Kelly's simulations.[14]

A final methodological issue is the way the model treats workers now paid below the minimum wage; that is, workers exempt under the law and victims of minimum wage violations. The first set of simulations assumes all workers receive a higher wage. This assumption allows a higher minimum wage and expanded coverage to occur at the same time, which is consistent with the historical pattern of gradual expansion toward universal coverage. A second set of simulations assumes that workers now paid below the minimum wage, whatever the reason, do not benefit from a higher minimum wage.

The effects of disemployment make little difference in narrowing the poverty gap.

Evaluating the CPS data

The simulations use data from the March 1987 Current Population Survey (CPS). One-quarter of the respondents in this household survey were asked if family members who worked were paid by the hour and if so, what was the hourly wage in 1987. The March CPS also includes 1986 data on weekly hours and poverty status. Because the CPS now combines earnings and poverty status data in the same survey, the simulations can avoid the matching errors that may have adversely affected Kelly's results.[15]

The simulations avoid two other errors by relying on the CPS. First, as indicated, the CPS is a household survey, not an establishment survey. So deliberate misreporting of illegal wage payments does not affect the simulations.[16] Second, simulated changes in expected earnings rely on reported wage rates from the CPS, not on the quotient of usual weekly earnings and usual weekly hours. Respondents can make one error when reporting a wage rate, but two errors when reporting usual weekly earnings and usual weekly hours.

But the CPS has two faults. First, the wage and industry status data are for 1987, but all other data are for 1986. As a result, the simulations implicitly assume that wages did not change between the two years. If low-wage employers index their wages to the legal minimum, which did not change after 1981, this assumption is likely to be true for many workers. Second, the sample should exclude exempt workers; however, the CPS lacks the necessary data for doing so.[17] The following results partially adapt to this fault with two sets of simulations. The first set assumes complete coverage and compliance, so this set overestimates the poverty-reducing effect. The second set assumes compliance and coverage at 1987 levels, and so underestimates the poverty-reducing effect.

Impact on poverty

Table 3 suggests a larger poverty-reducing effect of a higher minimum wage, accompanied by full coverage and compliance, than other studies. Using the $3.80 minimum wage and published estimates of teenager and adult disemployment effects,[18] we find that the poverty

Table 4. **How changes in the minimum wage, with compliance and coverage unchanged, affect family poverty under varying employment elasticities, 1987**

Wage and employment elasticity levels	Poverty gap[1]		Poor families		Poverty gap per family	
	In millions of dollars	Percent reduction	Number in millions	Percent reduction	Family average	Percent reduction
$3.35[2]	$7,940	–	2.218	–	$3,581	–
$3.80:						
Zero employment elasticities	7,686	3.2	2.153	2.9	3,565	.4
Published employment elasticities[3]	7,707	2.9	2.155	2.8	3,577	.1
High employment elasticities[4]	7,770	2.1	2.180	1.7	3,570	.3
$4.25:						
Zero employment elasticities	7,244	8.8	2.065	6.9	3,454	3.5
Published employment elasticities[3]	7,305	8.0	2.077	6.3	3,517	1.8
High employment elasticities[4]	7,489	5.7	2.168	2.2	3,508	2.0

[1] The poverty gap is the difference between family income and the official poverty line, summed over all poor families.

[2] The current (1987) level of minimum wage, poverty gap, number of poor families, and poverty gap per family.

[3] The results in this row are averages of five simulations assuming the following published estimates of employment elasticities for young adults (ε_a) and teenagers (ε_t): (1) $\varepsilon_a = -.026$ and $\varepsilon_t = -.10$; (2) $\varepsilon_a = -.074$ and $\varepsilon_t = -.10$; (3) $\varepsilon_a = -.026$ and $\varepsilon_t = -.30$; (4) $\varepsilon_a = -.074$ and $\varepsilon_t = -.30$; and (5) $\varepsilon_a = -.10$ and $\varepsilon_t = -.30$.

[4] This row assumes $\varepsilon_a = -.30$; and $\varepsilon_t = -.30$.

SOURCE: Unpublished tabulations by The Urban Institute based on the Current Population Survey, March 1987.

gap narrowed from $7.94 billion to $7.50 billion.[19] A subsequent increase in the minimum wage to $4.25 narrows the poverty gap further to $6.96 billion. The combined effect of the two increases is an 11.1-percent reduction in the poverty gap. If there were no disemployment effect, the poverty gap would decrease by 12.3 percent.

Disemployment effects make little difference because these effects are small for adults, but adults make the largest contributions to the income of poor families. Adults contribute more to family income than teenagers, in part because adults work more hours during the week and more weeks during the year. There also are more adults than teenagers among the low-wage working poor. As a result, in the non-disemployment-effect simulation, for example, adults account for 87 percent of the additional earnings.

The poverty-reducing effect in table 3 is much larger than Kelly's estimate. The percentage decline in the poverty gap, assuming no disemployment effect, was more than five times Kelly's simulation, even though the minimum wage change considered here is just 5 percentage points larger.[20] Besides the superior data now available, substantive reasons account for a larger poverty-reducing effect in 1986. First, between 1973 and 1986, the number of poor workers grew from 6.2 to 8.9 million, and between 1976—the earliest year for which data are available—and 1986, average family size fell from 3.39 to 3.21 persons.[21] Similar percentage changes in wages would have caused a greater change in the ratio of earnings to needs in 1986 low-income families as compared with 1973 low-income families. This, in turn, would have caused the 1986 poverty gap to decrease by a larger amount.

Simulations assuming high disemployment effects for adults and teenagers show small declines in poverty. If low-wage adults and teenagers had the assumed upper bound elasticity for teenagers (– 0.30), the ex-post poverty gap would have been $7.4 billion. This gap is just 7.1-percent smaller than the ex-ante poverty gap. A previous observation explains why the poverty gap decreases so little. Low-wage adults contribute more to family income. If the employment probabilities of low-wage adults fall substantially after a minimum wage change, a small decline in the poverty gap would result.

Besides the decrease in the aggregate poverty gap, the decline in the number of poor families and the increase in income per family also are important. Again, assuming a $4.25 minimum wage and published estimates of minimum wage employment elasticities, almost 200,000 fewer families with a low-wage worker would be poor. The poverty gap for each of these families would be $95 smaller, on average. These results represent an 8.7-percent decline in the number of working poor families and a 2.7-percent decline in the poverty gap per family. Thus, in percentage terms, the aggregate poverty gap would decrease by more than either the number of working poor families or the poverty gap per family. This measurement anomaly comes from removing many families with small poverty gaps from the sample of poor families.[22]

Changing assumptions

Using different assumptions about minimum wage employment elasticities has little effect on the simulations. As we have already seen, simulations differ substantially only when they assume that the adult employment elasticity is equal to the upper bound for teenagers, rather than one of the published values for young adults.

Changing assumptions about coverage and compliance has large effects on the simulations. Table 4 shows the poverty-reducing effect of a higher minimum wage with coverage and compliance at 1987 levels. That is, workers benefit from minimum wage increases only if their 1987 wage was at least $4.25. The resulting declines in poverty are 3 to 4 percentage points smaller than declines in poverty assuming full coverage and compliance. This poverty gap falls by $635 million (8.0 percent) and the number of poor families falls by 138,000 (6.3 percent). Thus, 28 percent of the declines in the poverty gap, assuming full coverage and compliance, is due to more coverage and compliance.

Summary and conclusions

This article develops a model to simulate the effect of a higher minimum wage on poverty using wage, hours, employment, and poverty status data from the March 1987 Current Population Survey. Researchers can now match wage and hours data for workers to poverty status data for families. Such matches enable researchers to distinguish the working poor from other workers earning the minimum wage or less, so that researchers can distinguish the effects of a higher minimum wage on poverty from the effects of a higher minimum wage on the distribution of income. Besides these data, the model uses time series estimates of the disemployment effect to adjust for lower employment probabilities. Next, we compute a poverty gap for poor and near-poor families with at least one member

If full coverage and compliance are assumed, the effects are significant.

paid less than $4.25 in 1987. Finally, we simulate the aggregate poverty gap, using alternative assumptions about disemployment effects, coverage and compliance, and the value of the minimum wage.

If full coverage and compliance accompany an increase of the minimum wage to $4.25, the poverty gap among families with at least one low-wage worker falls by $881 million (11.1 percent) and the number of such families falls by 193,000 (8.7 percent). These declines in poverty would be 3 to 4 percentage points higher if the new minimum wage were $4.65 and 3 to 4 percentage points lower if coverage and compliance were at 1987 levels. Debates about the poverty-reducing effect of a higher minimum wage often focus on disemployment effects, but alternative assumptions about the size of these effects make little difference in our analysis. The reason is simple: disemployment effects fall heavily on teenagers, who make small contributions to family income.

These results appear to favor a higher minimum wage, but caution is necessary. Despite its inefficiency in reaching the poor, a higher minimum wage would significantly reduce poverty among working families. Further, the decline in poverty is sensitive to changes that policymakers can control—such as coverage and the value of the new minimum wage. But this possibility supports neither complete coverage nor a much higher minimum wage. Either move would require higher percentage wage changes than ever before, and the effects of such changes are uncertain. In particular, economists can only guess about the size of the disemployment effect for low-wage adult workers, who make the largest contributions to family income. If disemployment effects for low-wage adults are similar to disemployment effects for teenagers, complete coverage or a much higher minimum would have small poverty-reducing effects. □

Footnotes

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[1] Charles Brown, Curtis L. Gilroy, and Andrew Kohen,"The Effects of the Minimum Wage on Employment and Unemployment," *Journal of Economic Literature*, June 1982, pp. 487–528.

[2] Edward M. Gramlich,"Impact of Minimum Wages on Other Wages, Employment and Family Income," *Brookings Papers on Economic Activity 2*, 1976, pp. 409–51; and Terrence Kelly, *Two Policy Questions Regarding the Minimum Wage* (Washington, The Urban Institute, 1976).

[3] Carolyn S. Bell, "Minimum Wages and Personal Income," paper presented at the American Enterprise Institute Conference on Legal Minimum Wages (Washington, 1979); Robert V. Burkhauser and T. Aldrich Finegan, *The Minimum Wage and the Poor: The End of a Relationship*, Working Paper, 87–221 (Nashville, TN, Vanderbilt University, 1987); William R. Johnson and Edgar K. Browning, "The Distributional and Efficiency Effects of Increasing the Minimum Wage: A Simulation," *American Economic Review*, March 1983, pp. 204—11; Andrew Kohen and Curtis L. Gilroy,"The Minimum Wage, Income Distribution and Poverty," *Report of the Minimum Wage Study Commission*, March 1981, pp. 1–30; and Donald O. Parsons, *Poverty and the Minimum Wage* (Washington, 1980).

[4] U.S. Bureau of the Census, *Current Population Reports*, Series P–60, Nos. 138 and 160.

[5] David T. Elwood, *Poor Support: Poverty in the American Family* (New York, Basic Books, 1988); Sar A. Levitan and Issac Shapiro, *Working But Poor: America's Contradiction* (Baltimore, The Johns Hopkins University Press, 1987); Isabel V. Sawhill,"Poverty and the Underclass," in *Challenge to Leadership: Economic and Social Issues for the Next Decade* (Washington, 1988);

[6] In "The Minimum Wage," Kohen and Gilroy summarize these and other studies of the effects of minimum wages on the distribution of income.

[7] See Burkhauser and Finegan, "The Minimum Wage and the Poor."

[8] See Kelly, "Two Policy Questions."

[9] The May 1974 CPS data on low wages are suspect because respondents reported wages for the month and year that a new minimum wage took effect. In response to a question about their "normal" wage, respondents could have reported the wage they received before or after the minimum wage change.

[10] See Brown, Gilroy, and Kohen,"The Effect of the Minimum Wage."

[11] Estimates of the elasticity of employment with respect to minimum wage changes are between –0.10 and –0.30 for teenagers, and less than –0.10 for young adults. See Brown, Kohen, and Gilroy, "The Effect of the Minimum Wage."

[12] See Gramlich, "Impact of Minimum Wages," and Peter Linneman, "The Economic Impacts of Minimum Wage: A New Look at an Old Question," *Journal of Political Economy*, June 1982, pp. 443–69; Brigitte Sellekaerts, "Impact of Minimum Wage Legislation on Wage and Price Inflation," *Report of the Minimum Wage Study Commission*, 1981, pp. 1–17; and Albert Zurker, "Minimum Wages and the Long Run Elasticity of Demand for Low Wage Labor," *Quarterly Journal of Economics*, May 1973, pp. 267–77.

[13] There are two reasons. First, few adults make low wages. Second, a higher minimum wage may cause employers to substitute higher quality adult labor for lower quality adult labor. Wages are positively correlated with labor quality, so the percentage decline in low-wage, adult employment exceeds the percentage decline in total adult employment. In "The Effect of the Minimum Wage,"Brown, Gilroy, and Kohen review studies of the employment elasticity of adults. Two studies report that—for some adults—employment rises after a higher minimum takes effect. See Daniel S. Hamermesh, "Minimum Wages and the Demand for Labor," *Economic Inquiry*, July 1982, pp. 365–80; and, John F. Boschen and Hershel I. Grossman, "The Federal

Minimum Wage, Employment and Inflation," *Report of the Minimum Wage Study Commission*, 1981, pp. 19–43.

[14] Estimates of differential disemployment effects for blacks and whites or men and women yield mixed results. Therefore, the literature does not seem to justify further demographic disaggregation of the ex-post employment probability.

[15] Before proceeding with the simulation, our sampling procedure was validated using estimates by the U.S. Congressional Budget Office. The sampling procedure estimated that there were 53.2 million workers paid by the hour in 1985. This estimate appears in Ralph E. Smith and Bruce Vavrichek, "The minimum wage: its relation to incomes and poverty," *Monthly Labor Review*, June 1987, p. 24–30.

[16] Larry Cartensen and Henry Woltman, "Comparing Earnings Data from the CPS and Employer's Records," in *Papers Presented at the Annual Meetings of the American Statistical Association* (Washington, American Statistical Association, 1979).

[17] Besides industry and occupation, an establishment's annual sales volume is a criterion for determining if the establishment's employees are covered by the minimum wage. The annual sales volume exemptions present a serious problem because they affect retail and service establishments, which employed 76 percent of the workers earning less than $4.35. Because the CPS lacks sales volume information, it is impossible to exclude all exempt workers from our analysis.

[18] See Brown, Gilroy, and Kohen, "The Effect of the Minimum Wage."

[19] The text and tables present results of simulations after taking an average of five simulations involving a specific value of the new minimum wage and published estimates of teenager and adult disemployment effects. A table showing results of the five simulations separately is available from the author on request.

[20] Kelly also simulated the ex-post poverty gap using a number of new minimum wages. One of his simulations used a 25-percent jump in the minimum wage ($1.60 to $2) and produced a 2.5-percent decline in the poverty gap.

The present simulation uses a 27-percent jump in the minimum wage ($3.35 to $4.25) and produces a 12.3-percent decline in the poverty gap.

[21] U.S. Bureau of the Census, "Household and Family Characteristics: March 1986," *Current Population Reports*, Series P–20, No. 419, 1987; "Household and Family Characteristics: March 1986," *Current Population Reports*, Series P–20, No. 311, 1977; "Characteristics of the Low Income Population: 1973," *Current Population Reports*, Series P–60, No. 98, 1975; "Characteristics of the Poverty Population 1983," *Current Population Reports*, Series P–60, No. 160, 1988 (Washington, U.S. Government Printing Office.)

[22] To measure the total benefit, one should count the additional income accruing to all poor and potentially poor families, those that would escape poverty and those that would not. The author plans to extend the model to make this calculation as well.

A note on communications

The *Monthly Labor Review* welcomes communications that supplement, challenge, or expand on research published in its pages. To be considered for publication, communications should be factual and analytical, not polemical in tone. Communications should be addressed to the Editor-in-Chief, *Monthly Labor Review*, Bureau of Labor Statistics, U.S. Department of Labor, Washington, D.C. 20212.