

Federal Reserve Bank of Cleveland

# Will Increasing the Minimum Wage Help the Poor?

by David Neumark, Mark Schweitzer, and William Wascher

After holding at \$3.35 per hour from 1983 to 1989, the minimum wage has been raised four times over the past decade, reaching \$5.15 per hour in September 1997. Recently, the Fair Minimum Wage Act of 1999 was introduced in Congress; if enacted, it would raise the minimum wage an additional dollar over the next two years to \$6.15.<sup>1</sup> According to its proponents, the primary rationale for increasing the minimum wage is to raise the incomes of poor and near-poor families with members in the workforce. Introducing the Fair Minimum Wage Act in the U.S. Senate on January 19, 1999, Senator Edward Kennedy declared, "I intend to do all I can to see that the minimum wage is increased this year. No one who works for a living should have to live in poverty."

It is natural to assume that raising the minimum wage will help poor families with working members. Economists' estimates of the disemployment effects of minimum wages are usually characterized as small, suggesting that the main effect of minimum wages is to raise the earnings of low-wage workers in low-income families. However, the link between the relatively small disemployment effects of minimum wages commonly estimated by economists, and the effects of minimum wages on low-wage workers is not as straightforward as it may seem. Even more tenuous is the link with incomes of poor or low-income families. This

*Commentary* explores these linkages and describes some new research bearing on the effects of minimum wages on the poor.

## ■ Employment Effects of Minimum Wages

The simple textbook models of the labor market that are familiar to students of undergraduate economics imply that if the government sets a wage floor above the market-clearing wage for low-skilled workers, employment of such workers will be lower than in the absence of the wage floor. The lower employment occurs mainly because the increase in the cost of low-skilled labor, relative to the cost of using other productive inputs (such as machinery or more skilled workers), leads employers away from using low-skilled labor and toward these other inputs. This substitution effect is reinforced by the higher overall cost of production associated with the legislated increase in the wage for low-skilled workers, which in turn raises the price of the product and results in less output sold.

Labor economists have written numerous papers testing this prediction. The empirical tests typically have focused on relatively low-skilled workers, for whom minimum wages are likely to represent a binding constraint. These tests have had the common goal of attempting to measure how the employment of low-skilled workers changes in response to an increase in the minimum wage, holding

**If enacted, the Fair Minimum Wage Act of 1999 would raise the minimum wage an additional dollar over the next two years. But does the minimum wage *really* benefit the low-income families it purports to help?**

some factors constant—such as the business cycle—that also may influence the employment levels of this group.<sup>2</sup>

Earlier studies used time-series data to study the effects of changes in the national minimum wage. The consensus of these first-generation studies, which were completed in the 1970s and early 1980s, was that a 10 percent increase in the minimum wage would reduce the employment of low-skilled (young) workers between 1 and 2 percent. In the literature, the percent change in employment divided by the percent change in the minimum wage is referred to as the *elasticity of employment* with respect to the minimum wage. Thus, for low-skilled workers the consensus view placed this elasticity between  $-0.1$  and  $-0.2$ .<sup>3</sup>

Recent studies have used panel data covering many states over a period of years to study the effects of minimum wage changes at the state level.<sup>4</sup> Evidence from these second-generation studies has produced a more diverse set of results, spurring considerable controversy as to whether minimum wages actually reduce employment of low-skilled workers. In a series of papers and a recent book, David Card and Alan Krueger—leading proponents of the view that the predictions of the standard model are wrong—argue that not only do minimum wages *not* reduce employment, they may even increase it.<sup>5</sup> On the other hand, much of the recent evidence using similar sorts of data supports the textbook prediction that minimum wages reduce employment of low-skilled workers. Paralleling the earlier time-series evidence, this research concludes that the elasticity of employment of low-skilled workers with respect to the minimum wage falls between  $-0.1$  and  $-0.2$ , with estimates for teenagers—a frequent focus of minimum wage research—closer to  $-0.1$ .<sup>6</sup>

Because two of the authors of this *Commentary* are participants in this debate, it is perhaps difficult for us to provide an objective assessment of the evidence. However, a leading economics journal recently published a survey of economists' views of the best estimates of

various economic parameters.<sup>7</sup> Results of this survey, which was conducted in 1996 (after most of the recent research on minimum wages had become well-known to economists), indicated that the median best estimate of the minimum wage elasticity for teenagers was  $-0.1$ , while the mean estimate was  $-0.21$ . Despite some outlying perspectives, economists' views of the effects of the minimum wage still appear centered in the range of the earlier consensus.

### ■ Minimum Wages and Poverty

To illustrate the link between minimum wages and poverty, we have assumed for this *Commentary* that the correct estimate of the employment effect is the median of economists' current view—an elasticity of  $-0.1$ . This elasticity is often interpreted as a minor effect of minimum wages, and hence leads many policymakers (and many economists) to conclude that raising minimum wages is sound public policy. But if raising the minimum wage reduces employment—even if the elasticity is small—how can it help poor and low-income families? Two questions must be considered to judge whether the minimum wage, despite its unemployment effects, will accomplish this goal.

The first question is whether low-wage workers, on average, experience higher earnings as a result of minimum wage increases. That is, given the unemployment effects, it will generally be the case that some workers will be helped by an increase in the minimum wage while others will hurt by it. However, it is much more likely that an increase in the minimum wage will help the poor if the total earnings of low-wage workers as a group rise because of the higher minimum.

The second question is whether the low-wage workers benefiting from the minimum wage increase tend to be members of low-income families (for example, those below or near the poverty line). For example, if the job loss from a minimum wage increase is concentrated among teenagers in relatively affluent families, while, conversely, the wage gains from the legislated increase are concentrated among single-parent heads

of households, then it is considerably more likely that a minimum wage increase would help poor and low-income families. Economists might still argue whether low-income families might benefit more from alternatives to the minimum wage (such as expansion of the Earned Income Tax Credit), but policymakers advocating minimum wage increases would at least be on secure footing regarding the goals for their proposal.

### ■ Minimum Wages and the Earnings of Low-Wage Workers

In consideration of the first question, proponents of minimum wage increases sometimes make the following argument in support of a higher minimum: Existing studies yield an estimate of the elasticity of demand for minimum wage workers of  $-0.1$ . Whereas an elasticity of  $-1.0$  implies that total earnings of (initially employed) low-wage workers would be unaffected by a minimum wage increase (the implication being that the employment losses exactly offset the earnings gains), a much smaller elasticity (in absolute value)—such as  $-0.1$ —suggests that income will rise.<sup>8</sup> And in the extreme, an elasticity of zero implies that total income of low-wage workers would increase by the same percentage as the minimum wage.

Unfortunately, this argument is flawed. The problem is that the  $-0.1$  elasticity is taken from studies of the employment effects of minimum wages for entire age groups and is not equivalent to—as some have asserted—the elasticity of demand for minimum-wage workers. Rather, an estimate of the effect of a minimum wage increase on total employment in any particular age group is really the effect on the low-wage individuals in the group for whom the new minimum raises wages, averaged over all workers in this age category. As high-wage workers are, for the most part, unaffected by changes in the minimum wage, the aggregate elasticity understates the employment effect on low-wage workers. In addition, many workers affected by a minimum wage change do not receive the full amount of the legislated increase because they were

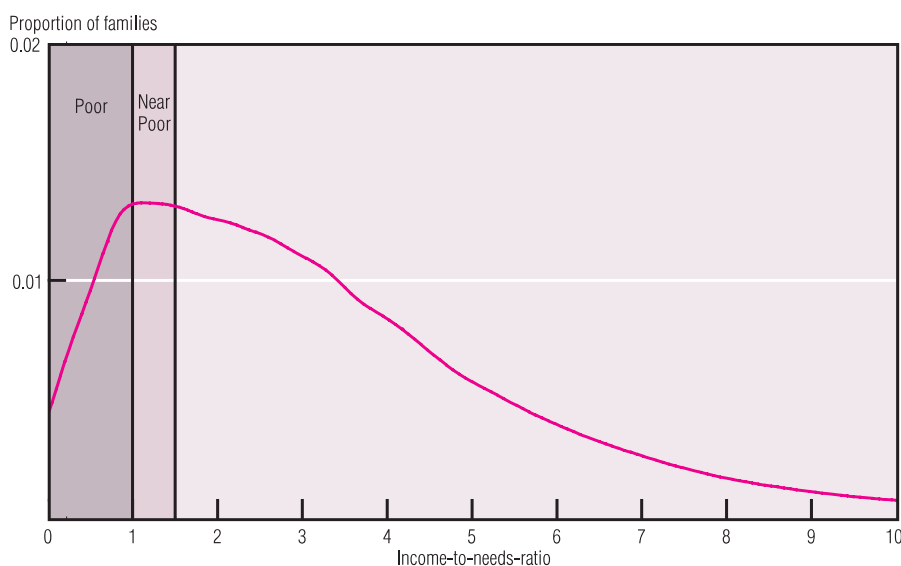
**TABLE 1 WAGES OF 16–24-YEAR-OLDS, 1995**

| Wage             | Number of workers (thousands) | Percent of workforce | Average percent wage change |
|------------------|-------------------------------|----------------------|-----------------------------|
| Less than \$4.25 | 817                           | 4.3                  | 0                           |
| \$4.25           | 1,161                         | 6.2                  | 21.2                        |
| \$4.26–\$5.14    | 2,850                         | 15.1                 | 6.6                         |
| \$5.15 or more   | 14,034                        | 74.4                 | 0                           |
| Total            | 18,862                        | 100.0                | 2.3                         |
| Affected workers | 4,011                         | 21.3                 | 10.8                        |

NOTE: Estimates are based on Outgoing Rotation Group files of 1995 CPS. The figures in the fourth column are based on the assumption that all workers between the old and the new minimum are topped off to the new minimum.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Survey*; and authors' calculations.

**FIGURE 1 INCOME-TO-NEEDS DENSITY**



SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Survey*; and authors' calculations.

already earning more than the old minimum wage (although less than the new minimum). Because the calculation underlying the  $-0.1$  elasticity is based on the legislated minimum wage increase rather than the *average* increase received by the affected workers, it overstates the actual wage increase associated with the measured change in employment.

Calculating a more relevant measure to assess the effect of the minimum wage

on low-wage workers' earnings—the ratio of the employment decline among low-wage workers to the wage increase among this group—requires an adjustment to both the numerator and denominator of the conventional employment elasticity. In particular, the numerator will be adjusted upward in absolute value to better represent the employment losses among low-wage workers, while the denominator will be adjusted downward to reflect the fact that the actual

wage increase for low-wage workers will be smaller than implied by the legislated change in the minimum wage.

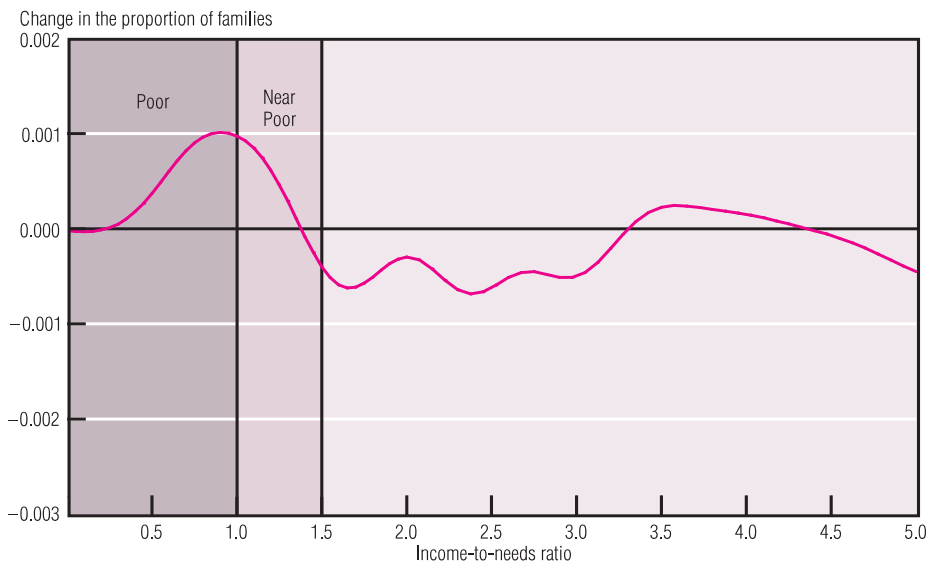
To illustrate these adjustments, consider the full implementation of the 1996–1997 minimum wage increase to \$5.15 per hour, a 21.2 percent increase. As table 1 shows, 6.2 percent of workers aged 16 to 24 were paid a wage exactly equal to the old minimum wage in 1995, and another 15.1 percent were paid wages between the old and new minimums, so that a total of 21.3 percent of the youth workforce was directly affected by the minimum wage increase. This group should be the focus of estimates of the impact of minimum wage increases.

Assuming that everyone in this group who kept their job saw their wage rise to exactly \$5.15 per hour as a result of the increase, the average wage increase received by a worker in this affected group would be 10.8 percent; thus, the average wage increase is likely equal to about one-half the legislated minimum wage increase. Suppose further that all of the job loss resulting from the minimum wage increase occurred among these affected workers; the percent change in employment for this group would be approximately five times larger ( $1/0.213$ ). Using an elasticity of  $-0.1$  for the age group as a whole, the demand elasticity for young minimum-wage workers would be close to  $-1.0$ , the point at which minimum wages actually *reduce* the total income of low-wage workers.<sup>9</sup> This demonstrates that even relatively favorable estimates of the employment effects can yield less-than-pleasant outcomes—but this is only part of the answer when the policy is motivated by a concern for low-income families.

**Minimum Wages and Family Incomes**

Even with disemployment effects, minimum wages might benefit poor families if the wage gains were concentrated among low-wage workers in low-income families and the job losses among low-wage workers in affluent families. However, this rosy scenario is only hypothetical. If job

**FIGURE 2 SUMMARY EFFECTS ON INCOME-TO-NEEDS RATIO**



SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Survey*; and authors' calculations.

**TABLE 2 ESTIMATED EFFECTS OF MINIMUM WAGE INCREASES ON PROPORTIONS IN INCOME-TO-NEEDS RANGES**

|   | Income-to-Needs Ratio |         |        |         |        |         |         |         |
|---|-----------------------|---------|--------|---------|--------|---------|---------|---------|
|   | 0-0.5                 | 0.5-1.0 | 0-1.0  | 1.0-1.5 | 0-1.5  | 1.5-2.0 | 2.0-3.0 | 1.5-3.0 |
| Absolute change in proportion of families | 0.0005                | 0.0078  | 0.0083 | 0.0046  | 0.0130 | -0.0049 | -0.0071 | -0.0120 |
| Percent change                            | 0.7                   | 6.6     | 4.5    | 3.6     | 4.1    | -3.9    | -3.0    | -3.4    |

NOTE: The top panel reports the change in the absolute proportion in the income-to-needs category implied by the density estimates, and the bottom panel reports the implied percent change in the proportion, relative to the sample mean over all observations.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Survey*; and authors' calculations.

losses were concentrated among low-wage workers in low-income families, poor families would be especially hurt by minimum wage increases. Which families gain from minimum wages? Economic theory offers little guidance, as it tells us nothing about how the disemployment effects or the earnings gains of minimum wages are spread over the income distribution. The only way to answer this question is to look directly at the effects of minimum wages on family incomes.<sup>10</sup>

In research undertaken over the past two years, we have studied this question using data on family incomes for the years 1986 to 1995.<sup>11</sup> In particular, we use data collected for individual families over two consecutive years, allowing us to observe transitions into and out of poverty, or between other parts of the income distribution.<sup>12</sup> Each family is classified in terms of its income-to-needs ratio (the ratio of total family income to the poverty line) in each year. For example, a family with an income-to-needs ratio of 1.0 is just

at the poverty line (\$16,530 in 1998 for a family of four with two children); families below this line are classified as “poor,” and families with income-to-needs ratios between 1.0 and 1.5 are considered “near poor.” We appended to each family-year observation the minimum wage level prevailing in the state in the year family income was measured, as well as the previous year, since minimum wage effects appear to take a year or more to fully work their way through the labor market. Because a state minimum wage law cannot exempt employers of workers covered by the federal law from the federal minimum wage, and because coverage by the federal law is nearly complete, we use the higher of the federal minimum wage and the state minimum wage for each state and year.

Our basic strategy focuses on the empirical distribution of family income relative to needs—that is, the observed proportion of families at each value of the income-to-needs ratio. Figure 1 reports this distribution for all observations in our data set.<sup>13</sup> It exhibits some well-known features: The right-hand tail becomes quite thin at high levels of income-to-needs, reflecting the relatively small number of families with very high income. On the other hand, there is a concentration of families between the poverty line (where income-to-needs equals one) and about twice the poverty line.

To look for minimum wage effects, we examine how the income-to-needs distribution changes when the minimum wage is raised in a specific state and year. This requires an experimental design with a control group of states in years when minimum wages did not rise. We use this control group to provide a baseline of how the income-to-needs distribution changes over the sample period for reasons *unrelated* to minimum wage increases. We can then estimate the effect of minimum wages on the income-to-needs distribution as the difference between changes in the distribution for states and years with minimum wage increases, and changes in the distribution for states and years without minimum wage

increases. For example, if the proportion of families below the poverty line (income-to-needs below 1.0) rose by 0.02 in states and years with minimum wage increases, and by 0.01 in the set of states and years without minimum wage increases, then the estimated effect of raising the minimum wage on this proportion would be 0.01 (0.02 – 0.01).

Figure 2 displays the estimated difference between the income-to-needs distributions attributable to minimum wage increases over the 1986 to 1995 sample period. To better understand this figure, suppose that minimum wages had no effect on the income-to-needs distribution. In this case, the figure would display a horizontal line at zero because the change in the proportion of families at any level of income-to-needs would be the same in both states and years, regardless of minimum wage increases. In contrast, values for the income-to-needs ratio that are above the horizontal line at zero indicate that the minimum wage is estimated to increase the proportion of families at this income-to-needs level; a negative value points to a negative minimum wage effect on that part of income-to-needs distribution.

What does figure 2 show? Contrary to its intended effect, the estimated impact of an increase in the minimum wage is to raise the proportion of families at the lower end of the income-to-needs distribution—both below the poverty line and between 1.0 and 1.5 times the poverty line. Conversely, our results suggest that the minimum wage reduces the proportion of families with incomes between 1.5 and three times the poverty line—families that might be best characterized as “lower-middle-class.” Moreover, there is essentially no effect on families above three times the poverty line, as would be expected because in such families low-wage workers contribute (at most) a modest share of family income. These results are summarized in table 2, which shows the effects of minimum wages in absolute and percentage terms on the proportions of families in various income-to-needs categories. Expressed as percentages of families in various income-to-needs categories, the estimated changes in the

proportions translate into a 4.5 percent increase in the number of families below the poverty line, a 4.1 percent increase in the number of near-poor families, and a decline of 3.4 percent in the number of families between 1.5 and three times the poverty line.<sup>14</sup>

## Conclusion

Legislators who support increasing the minimum wage believe that this policy will benefit poor families; however, our research indicates that past experience with minimum wage increases in the U.S. is at odds with this view. Minimum wages do, no doubt, help some families escape poverty; but the employment losses associated with a higher minimum also appear to cause some families to fall into poverty. On balance, our estimates suggest that the latter effect outweighs the former, and therefore the net effect of minimum wages is an increase in the proportion of poor families.

## Footnotes

1. The relevant legislation is H.R. 325 in the House of Representatives and S. 192 in the Senate.

2. See Jacob Mincer, “Unemployment Effects of Minimum Wages,” *Journal of Political Economy*, vol. 84, no. 4, pt. 2 (August 1976), pp. S87–S105; and Charles Brown, Curtis Gilroy, and Andrew Kohen, “The Effect of the Minimum Wage on Employment and Unemployment,” *Journal of Economic Literature*, vol. 20, no. 2 (June 1982), pp. 487–528.

3. See Brown, Gilroy, and Kohen.

4. See David Neumark and William Wascher, “Employment Effects of Minimum and Subminimum Wages: Panel Data on State Minimum Wage Laws,” *Industrial and Labor Relations Review*, vol. 46, no. 1 (October 1992), pp. 55–81.

5. See David Card and Alan B. Krueger, *Myth and Measurement: The New Economics of the Minimum Wage*. Princeton, NJ: Princeton University Press, 1995; and David Card and Alan B. Krueger, “Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania,” *American Economic Review*, vol. 84, no. 4 (September 1994), pp. 772–793.

6. See David Neumark and William Wascher, “The New Jersey–Pennsylvania Minimum

Wage Experiment: A Re-Evaluation Using Payroll Records,” Michigan State University, unpublished manuscript, 1998; and David Neumark and William Wascher, “Reconciling the Evidence on Employment Effects of Minimum Wages—A Review of Our Research Findings,” in Marvin Kosters, ed., *The Effects of the Minimum Wage on Employment*. Washington, D.C.: American Enterprise Institute, 1996, pp. 55–86.

7. Victor R. Fuchs, Alan B. Krueger, and James M. Poterba, “Economists’ Views About Parameters, Values, and Policies: Survey Results in Labor and Public Economics,” *Journal of Economic Literature*, vol. 36, no. 3 (September 1998), pp. 1387–1425.

8. See Richard B. Freeman, “The Minimum Wage as a Redistributive Tool,” *Economic Journal*, vol. 106, no. 436 (May 1996), pp. 639–649.

9. The exact calculation using these assumptions yields an elasticity of –0.92. These and other illustrative calculations are developed more fully in David Neumark, Mark Schweitzer, and William Wascher, “The Effects of Minimum Wages on the Distribution of Family Incomes: A Non-Parametric Approach,” NBER Working Paper No. 6536, May 1998. Alternative reasonable assumptions can yield adjusted elasticities closer to zero, or between –1 and –2.

10. Earlier papers did not study actual changes in family income, but instead merely simulated them. See Edward M. Gramlich, “Impact of Minimum Wages on Other Wages, Employment, and Family Incomes,” *Brookings Papers on Economic Activity*, vol. 2, no. 76 (1976), pp. 409–451; and Michael W. Horrigan and Ronald B. Mincy, “The Minimum Wage and Earnings and Income Inequality,” in Sheldon Danziger and Peter Gottschalk, eds., *Uneven Tides: Rising Inequality in America*. New York: Russell Sage Foundation, 1993, pp. 251–275.

11. See Neumark et al. (1998).

12. These data are collected by the Census Bureau as part of the *Current Population Survey*.

13. This and all distributions reported in this *Commentary* are estimated by non-parametric methods described in Neumark et al. (1998).

14. Each of these results is statistically significant. See Neumark et al. (1998) for statistical tests and other related analyses.

## 1998–99 Economic Commentary

---

*David Neumark is professor of economics at Michigan State University and a research associate at the National Bureau for Economic Research; Mark Schweitzer is an economist at the Federal Reserve Bank of Cleveland; and William Wascher is an economist at the Federal Reserve Board of Governors.*

*The views stated herein are those of the authors and not necessarily those of the Federal Reserve Bank of Cleveland or the Board of Governors of the Federal Reserve System.*

*Economic Commentary is available electronically through the Cleveland Fed's site on the World Wide Web: <http://www.clev.frb.org>. We also offer a free on-line subscription service to notify readers of additions to our Web site. To subscribe, please send an e-mail message to [econpubs-on@clev.frb.org](mailto:econpubs-on@clev.frb.org).*

### **Productivity Gains During Business-Cycles: What's Normal**

by Mark E. Schweitzer  
July 1998

### **Measuring Pricing Bias in Mortgages**

by Stanley D. Longhofer  
August 1, 1998

### **Global ATM Banking:**

#### **Casting the Net**

by John D. Hueter and Ben R. Craig  
August 15, 1998

### **Bank Notes and Stored-Value Cards:**

#### **Stepping Lightly into the Past**

by William P. Osterberg  
and James B. Thomson  
September 1, 1998

### **What Fiscal Surplus?**

by Jagadeesh Gokhale  
September 15, 1998

### **Currency: Time for Change?**

by Paul W. Bauer  
October 1, 1998

### **Is the Current-Account Deficit Sustainable?**

by Owen F. Humpage  
October 15, 1998

### **Social Security's Treatment of Postwar Generations**

by Jagadeesh Gokhale  
November 1998

### **Subordinated Debt: Tough Love for Banks?**

by Joseph G. Haubrich  
December 1998

### **The Euro**

by Ed Stevens  
January 1, 1999

### **Bringing the Unbanked Onboard**

by Barbara A. Good  
January 15, 1999

**Federal Reserve Bank of Cleveland  
Research Department  
P.O. Box 6387  
Cleveland, OH 44101**

#### **Return Service Requested:**

Please send corrected mailing label to the above address.

Material may be reprinted if the source is credited. Please send copies of reprinted material to the editor.

**BULK RATE  
U.S. Postage Paid  
Cleveland, OH  
Permit No. 385**