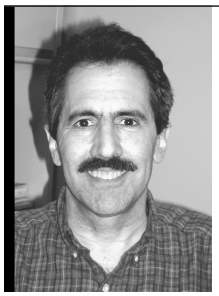
Does Lower Unemployment Reduce Poverty?

BY ROBERT H. DEFINA

Is the link between unemployment and poverty as strong as many people think it is? Possibly not. How strong the link is depends critically on how we measure poverty. And during the past two decades, researchers have identified numerous shortcomings in the government's official procedures for determining the extent of poverty. In this article, Bob DeFina presents empirical evidence that improved measures of poverty are less strongly related to changes in unemployment than the headcount rate.

The record-setting U.S. expansion of the 1990s, especially the torrid growth in the latter half of the decade, helped push the unemployment rate down to its lowest level in 30 years. By October 2000, the jobless rate had hit 3.9 percent, about 3 percentage points below its previous peak. Such a remarkable decline, when sustainable, is to be celebrated for many reasons. In part, an improving labor market signals that the economy's overall prosperity is being more widely shared. These improvements are especially welcome when they help the country's most financially vulnerable population — the poor.



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As in most countries, the extent of poverty in the United States is officially gauged using a headcount rate, which is the fraction of the population that is poor. To determine how many people are poor, government statisticians estimate the income needed for a minimally decent life; that number is called a poverty threshold. A person is considered poor if he or she lives in a household with an income less than the poverty threshold. Having counted the number of poor individuals, statisticians then divide that number by the total population, which yields the headcount rate. In 2000, about 31.1 million individuals were classified as poor. With a population of 275.9 million at the time, the headcount rate was 31.1/275.9, or 11.3 percent.

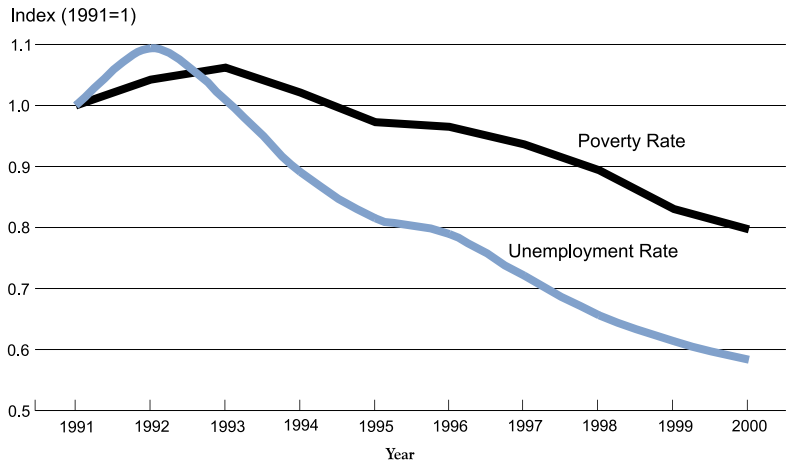
A tightening labor market, indicated by falling unemployment, potentially reduces the headcount rate in several ways. Temporary and long-lived changes in unemployment alter job availability, work hours, promotion possibilities, and real wages. These, in turn, influence families' financial positions and their likelihood of falling above or below official poverty thresholds. The impact on the headcount rate need not be immediate or, at times, even strong. Other labor market developments, perhaps specific to population sub-groups, might interfere with the benefits of a generally prosperous economy. Still, analyses of historical data, based on both national and state-level data, indicate that changes in the unemployment rate are related to significant reductions in the fraction of the population that is officially poor, especially once other factors are accounted for.[1] For example, the strong economy of the past decade coincided with a substantial decline in the headcount rate (Figure 1).

While seemingly intuitive and straightforward, the link between unemployment and poverty may not be as strong as it has traditionally been thought to be. Any conclusions about how unemployment affects poverty depend critically on the particular way in which poverty is measured. And during the past two decades, researchers have identified numerous shortcomings in the government's official procedures for determining the headcount rate. They have suggested improvements, both in the way individuals are iden-

[1]Examples can be found in the articles by Rebecca Blank (1996 and 2000) and the articles by Blank and Alan Blinder; David Cutler and William Katz; Blank and David Card; Robert Haveman and John Schwabish; and Paul Romer.

FIGURE 1

The Unemployment and Poverty Rates



tified as poor and in the characteristics of the poor population used to measure the extent of poverty.[2]

On the basis of empirical evidence presented in this article, improved measures of poverty are less strongly related to changes in unemployment than the headcount rate. The unemployment rate declines of the 1990s were not related at all to some alternative poverty indicators.

HOW IS POVERTY MEASURED IN THE UNITED STATES?

Poverty in the United States is measured by the Census Bureau, which uses an approach developed in the early 1960s.[3] The procedure begins with a benchmark income threshold meant to gauge the resources an individual needs to purchase a minimally acceptable bundle of goods and services. In 2000, the baseline threshold (for a single, nonelderly adult) was $8959.

The individual baseline threshold is then adjusted to account for different family sizes and for the number of children versus adults. The adjustments recognize that all material needs do not rise proportionately with the number of family members. Whether a family has two or three individuals, it is likely to have, say, only one refrigerator. The less-than-proportional increases in need show up in the official thresholds: for example, moving from a family with one nonelderly adult to a family with two nonelderly adults causes the official 2000 poverty line to rise from $8959 to $11,531, a 29 percent increase. The adjustment factors for different family sizes and types are known as equivalence scales because they are meant to yield an amount of income necessary to leave families of different size or composition with an equivalent standard of living.

The resulting thresholds are increased annually for consumer price inflation nationwide, with the aim of keeping the purchasing power of the poverty level unchanged over time. A lack of data prevents an accounting for differences in the cost of living in different regions of the United States. No adjustment is made for changes in real living standards, such as raising threshold levels in line with increases in the average real income of families.

To identify who is poor, the Census Bureau compares a family's actual pre-tax cash income (including cash payments from the government) with its appropriate poverty threshold. Members of families whose income is below their threshold are deemed poor. The extent of poverty is then gauged by simply summing the number of poor individuals and expressing the result as a fraction of the population, that is, the headcount rate.

The headcount rate is measured retrospectively once a year. The Census Bureau collects the needed data in its March Current Population Survey, which asks questions about the income that individuals received in the preceding year. The March survey covers about 60,000 households. Thus, the Census Bureau does not literally compare the incomes of every U.S. family to its relevant threshold. Instead, it makes the comparison for a large random sample of U.S. families, then uses the information to statistically estimate the national headcount rate.

PROBLEMS WITH THE OFFICIAL MEASURE

The official poverty measure is not without critics. Indeed, the Census Bureau's approach has widely recognized shortcomings that concern the way individuals are officially *identified* as poor and the way *the extent of poverty* is measured. Because various studies have provided comprehensive discussions of these concerns, only the most important ones are touched on here.[4]

[2] There are also variants on the way unemployment is measured. The headline unemployment rate, which measures unemployed workers aged 16 years or older as a percentage of the civilian labor force and which I use in my analysis described below, is one of several measures compiled by the Bureau of Labor Statistics.

[3] The procedure is detailed in Mollie Orshansky's article and in the article by Gary Fisher.

[4] *Measuring Poverty: A New Approach*, prepared by the Panel on Poverty and Family Assistance, contains a thorough analysis of identification issues. See the article by B. Zheng, for a discussion of aggregation concerns.

Problems Identifying Who Is Poor… Numerous researchers have argued that the baseline poverty threshold is too low. As mentioned earlier, the poverty threshold for a family of two adults is $11,531, a fairly meager sum. A more glaring example perhaps is the official threshold for a family of eight adults: $31,704, or less than $4000 a person. The official adjustments to the baseline for different family sizes and compositions have also come under fire. Critics argue that the adjustments are inconsistent and counterintuitive. Essentially, the changes in thresholds assigned to families as their size and composition change seem somewhat judgmental, with no clear, discernable pattern. These nonsystematic adjustments call into question the extent to which the resulting poverty thresholds represent equivalent standards of living for families of different size or composition.

Poverty analysts and budget experts have prepared alternative thresholds that are 30 percent to 100 percent above the official ones.[5] These suggested increases are based on updated and more complete analyses of budget data and family spending patterns.

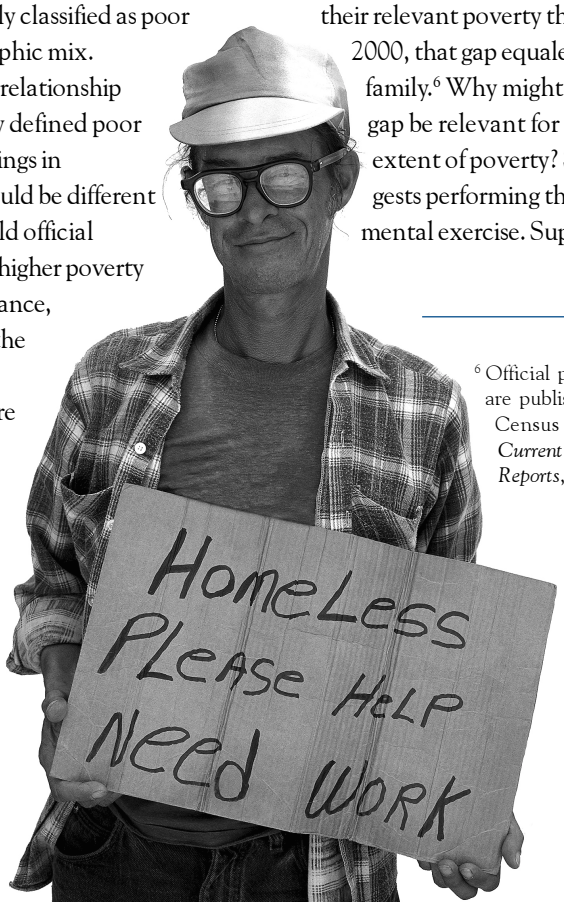
The measure of family income that is compared to poverty thresholds is also problematic. Official calculations use a concept called census income, which includes all the money income received by a family before any income taxes are deducted. Money income includes wages and salaries, interest income, government income support payments like unemployment insurance, or even a cash birthday gift.

Researchers have found the concept of census income confusing. On the one hand, it includes the portion of a family's income that may come from some government programs — the cash income support payments from unemployment insurance, Social Security, and the like. On the other hand, it excludes that part of a family's income that may come from other government programs — those providing in-kind payments like food stamps and subsidized housing — even though the in-kind payments represent real purchasing power to families. Census income also ignores the income taxes that families pay, monies obviously not available for spending. A more consistent approach would either (1) ignore all government payments and taxes in order to measure poverty before any government intervention; or (2) recognize them all in order to gauge poverty after the government's actions are taken into account. It would also deduct any work-related expenses, since these decrease a family's spendable income regardless of the government's policy actions.

Addressing these shortcomings in the way poor individuals are identified would alter both the number of individuals officially classified as poor and their demographic mix. Consequently, the relationship between the newly defined poor population and swings in unemployment could be different from that for the old official population. Using higher poverty thresholds, for instance, would mean that the poverty population would include more full-time workers, albeit ones with relatively low wages. The poverty status of such individuals would probably be less sensitive to changes in unemployment, since they would be deemed poor whether or not they work. Correcting the other problems in the official procedure would also change the sensitivity of poverty to unemployment, although the net impact of all the recommended changes is unclear.

…And Problems Determining What the Extent of Poverty Is. The official method for gauging the total degree of poverty has also been criticized, essentially because it neglects characteristics of the poor population other than the number of poor individuals. That is, the official procedure equates the extent of poverty with the headcount rate. But since publication of the landmark work of Nobel Prize-winning economist Amartya Sen, many researchers feel that the official approach is too restrictive. They argue that, at a minimum, any assessment of the degree of poverty should also take into account the *average poverty gap* and *income dispersion among poor individuals*.

The average poverty gap represents the average dollar difference between the income of poor families and their relevant poverty thresholds. In 2000, that gap equaled $6820 per family.[6] Why might the poverty gap be relevant for gauging the extent of poverty? Sen suggests performing the following mental exercise. Suppose that



[5] Many of these alternative budgets are discussed in *Measuring Poverty: A New Approach*.

[6] Official poverty data are published in the Census Bureau's *Current Population Reports*, P-60 series.

the number of poor individuals remains unchanged, but each poor family has its income cut in half. Now ask yourself, "Has poverty increased as a result?" Intuitively, many people would answer "yes" because each family now suffers greater financial hardship. Notice that the headcount rate, which is based only on the number of poor individuals, indicates that the extent of poverty has not changed.

Related logic suggests that including income dispersion among poor individuals is important in measuring the degree of poverty. To see why, perform another mental exercise. Suppose that both the number of poor individuals and the average poverty gap remain unchanged. Now, take a dollar from the poor person with the lowest income and give it to the poor person with the highest income. This monetary transfer increases income dispersion among poor individuals, since, other things being equal, poor individuals at the extremes of the income distribution move farther apart. Once again, ask yourself, "Has poverty increased as a result?"

According to Sen, the answer is "yes" because a dollar is worth more to the poorest person than to the least poor person. Essentially, Sen accords greater social weight to the financial situation of the poorest person compared to that of the least poor person. The loss to the poorest person thus outweighs the gain to the least poor person. In this view, greater inequality among the poor, other things equal, suggests a greater degree of poverty. The official headcount rate, by contrast, is unaffected.

Sen's assessment certainly can be debated. For example, one can reasonably argue that poor individuals are in sufficiently similar circumstances that a dollar in the hands of each should be given equal weight. Still, his framework cannot be dismissed out of hand and, in fact, has been championed by many prominent poverty analysts. During the past two decades, they have developed new poverty indexes that incorporate and expand upon Sen's original work.

Accounting for both the average poverty gap and income dispersion among the poor when gauging poverty conceivably could alter the perceived benefits of declines in unemployment. It is possible, for instance, that lower unemployment results in a lower average poverty gap without affecting the number of poor individuals. Such an outcome would occur if an unemployed person got a job that paid poverty-level wages. The person would remain officially poor, but the income from the job could reduce his poverty gap. Consequently, lower unemployment would reduce a broader measure of poverty but leave the headcount rate unchanged. Alternatively, lower unemployment might result in fewer poor individuals but leave the average poverty gap unchanged. This would happen, for instance, if the individuals no longer deemed poor had poverty gaps close to the average gap.

In sum, recommended improvements in the way poor individuals are identified and grouped potentially affect the relationship between changes in the unemployment rate and changes in measures of poverty. It is, of course, impossible to know in advance how the suggested changes will actually affect the relationship.

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AN EMPIRICAL ANALYSIS OF ALTERNATIVE POVERTY INDICATORS

To explore the practical importance of the suggested improvements, I conducted an empirical analysis of how the unemployment declines of the 1990s were related to the headcount rate and nine alternative poverty indicators.[7] The alternatives incorporate suggested improvements for identifying who is poor and for measuring the extent of poverty. To keep the discussion manageable, I will provide details on the results for only three of the alternatives and simply mention in passing some of the other findings. The results for these three alternatives are, however, representative of the findings for the others.

Three Alternative Indicators. The first alternative indicator is a revised headcount rate, for which poor individuals are identified using higher poverty thresholds, an improved set of equivalence scales, and a pre-tax measure of family income that excludes all government cash and in-kind payments and subtracts an estimate of work-related expenses. The new thresholds and equivalence scales are consistent with the recommendations of the Panel on Poverty and Family Assistance, a group of experts who worked on improving procedures for measuring poverty.[8]

The second alternative indicator is the average poverty gap. To make the gap calculations more meaningful, I express each family's

[7] See my working paper.

[8] The new thresholds were set 30 percent higher than the official ones. The new equivalence scales were computed using the poverty threshold of a single adult as the benchmark.

income shortfall as a fraction of its associated poverty threshold. Doing so is a standard procedure. The methods for identifying poor individuals and for measuring income are the same as for the alternative headcount rate.

The third alternative indicator is a gauge of income dispersion among the poor. I use the coefficient of variation, which equals the standard deviation of income among poor individuals divided by the average income of the poor.[9] Once again, the procedures for identifying poor individuals and for measuring income are the same as for the alternative headcount rate.

An Analysis of State-Level Data. My analysis is based on data from all 50 U.S. states (plus Washington, D.C.) covering the years 1991 to 1998. The data come from the Census Bureau's March Current Population Survey, the same information used to calculate the official headcount rate. Using state-level data, as opposed to national data, allows me to increase the number of observations used in the study. It also permits me to control for a variety of demographic influences on the poverty indicators not possible with national data. These other variables will serve as controls to better isolate the particular relationship with unemployment.

I computed state averages for all of the indicators and other variables in each of the years. Following Census Bureau guidelines for handling state-level data, I then calculated two-year averages for the years 1991/1992, 1993/1994, 1995/1996, and 1997/1998. Thus, my data set has 204 state-level values for each variable in the study: one for each of the 51 "states" in each of the four time periods.

[9] This is a standard way of measuring income dispersion, although others, such as the so-called Gini coefficient, are available. See the 1995 *Business Review* article by Martin Asher and me.

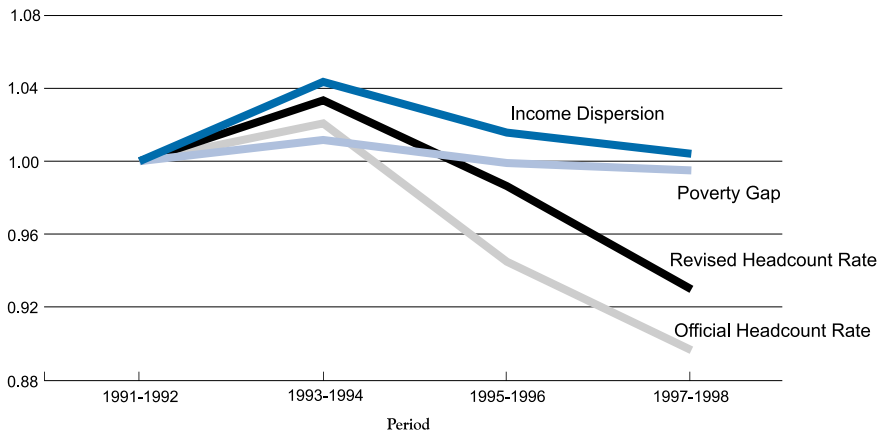
Average period values for the four poverty indicators are presented in Figure 2. As can be seen, both the official and revised headcount poverty rates initially rose and then fell substantially during the nineties. The decline in the official poverty rate was greater. By contrast the poverty income gap and the dispersion of income among the poor fell much less. Indeed, the level of income dispersion ended the study period higher than where it began. These very different profiles suggest that the relationship of each indicator to unemployment will vary.

It is also useful to examine how closely the different poverty indicators correlate with one another across states and time periods. The degree of correlation suggests whether each poverty indicator provides substantially different information. To measure the degree of correlation, I used a statistic known as a correlation coefficient, where a value of 1 indicates perfect correlation. For the official and alternative headcount rate, the value of the correlation coefficient is 0.92. That is, despite the different techniques used for identifying poor individuals, the patterns of variation in the alternative headcount rates across states and over time are quite similar. By contrast, the correlation coefficients between the poverty gap and the headcount rates and between income dispersion and the headcount rates are much lower. These range between 0.25 and 0.35. Thus, the poverty gap and income dispersion measures appear to provide a different view of the extent of poverty than the headcount rates. Finally, the poverty gap and income dispersion are themselves quite highly correlated, with a coefficient value of 0.96.

Statistical Models of the Poverty Indicators. What is the relationship between the unemployment rate and each of the indicators? To answer the question, I estimated statistical models in which the movements in each poverty indicator are related to movements in the unemployment rate and the other control variables. The control variables are ones that have been used in other studies. Two of these are meant to account for changes in wages and hours that are not correlated with the unemployment rate: median state real

FIGURE 2

Four Poverty Indicators



Average poverty indicators for 50 states + Washington, D.C., each divided by its average level in the 1991-1992 period.

per capita income and the standard deviation in state real per capita income. The others are demographic variables that have been found to vary systematically with poverty indicators: the percent of the population aged 16 years to 19 years, the percent 65 years and older, the percent in female-headed families, the percent black, the percent residing in metropolitan areas, the percent with at least a college degree, and the percent not in the labor force.[10] The model also controlled for determinants of poverty that are unique to each state and year but that are not captured by the other variables.[11]

Results of the estimations are represented in Figures 3 through 6. Each figure shows the relationship between the unemployment rate and the particular poverty indicator, after statistically controlling for the influences of all the other variables in the model, based on 51 "states" and 4 two-year periods. As mentioned before, controlling for the other influences allows the link between unemployment and each poverty indicator to be seen more clearly. In statistical terms, the figures show the partial correlation between the unemployment rate and the poverty indicators.

Figure 3 displays the relationship between the unemployment rate and the official headcount rate. The points in the scatterplot indicate a generally positive relationship: As unemployment rates rise, official headcount rates tend to rise as well, even after accounting for all other influences on the headcount rates. The upward-sloping line fitted through the points gives the average relationship: Each 1 percent increase in the unemployment rate is associated with about a 0.12 percent increase in poverty. The estimated magnitude of the response is consistent with that found by other researchers using state-level data. While there is clearly variation in this relationship — not all points lie exactly on the line — the points are clustered closely enough for the relationship to be statistically significant.

Figure 4 presents the results for the revised headcount rate. As is true for the official rate, the revised rate has a clear positive relationship with the unemployment rate, after accounting for the other influences. The points are rather closely clustered around the average response line, and the relationship is statistically significant. The size of the estimated average response is smaller, though, by about half. Further investigation revealed that the smaller response is due mainly to the use of a higher poverty threshold. As noted earlier, the higher thresholds capture more individuals who remain poor whether they work or not.

In contrast to the headcount rates, neither the poverty gap nor income dispersion among the poor is significantly related to unemployment. The relationship between the unemployment rate and the poverty gap is illustrated in Figure 5. The points in Figure 5 suggest a weakly positive relationship. Indeed, the average response line barely slopes upward. Moreover, the points are widely dispersed around the line and are noticeably less clustered than those in Figures 3 and 4. The large amount of dispersion means that both large and small poverty gaps occurred regardless of whether unemployment rates were low or high. Indeed, a formal statistical test confirms the lack of a significant link between the unemployment rate and the poverty gap.

A similar picture emerges for income dispersion among the poor (Figure 6). The average relationship between the unemployment rate and the adjusted income dispersion measure is upward sloping, but less so than that for the headcount rates. And as with the poverty gap, the points in the scatterplot are widely dispersed around the line. A formal test indicates a statistically insignificant link between unemployment and income dispersion.

The results just described appear to hold up under further study. I redid the preceding analysis using a different income definition to compute the three indicators and the conclusions were the same.[12] Namely, the revised headcount rate exhibits a significant link with the unemployment rate, but of a smaller magnitude than does the official headcount rate. Neither the recomputed poverty gap nor recomputed income dispersion among the poor had a statistically significant relationship with the unemployment rate. I also explored the relationship between the unemployment rate and a comprehensive poverty index, developed by James Foster, Joel Greer and Erik Thorbecke, that simultaneously includes the headcount rate, the average poverty gap, and income dispersion among the poor. No significant link emerged, regardless of the income definition used.

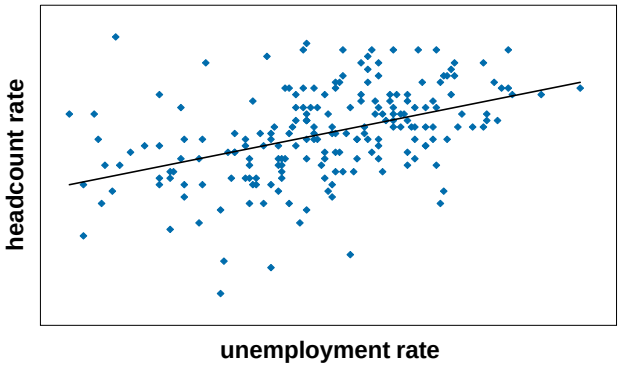
[10] In theory, the use of the demographic control variables can hinder estimation of the relationship between the unemployment rate and the poverty indicators if the variables are highly correlated with the unemployment rate. This is not an actual concern in the present study. The correlation coefficients between each of the demographic variables and the unemployment rate are small, the largest being about 0.34.

[11] The approach I have used is technically known as a fixed-effects regression. Rebecca Blank and David Card's study also used a fixed-effects regression model to study the relationship between unemployment and poverty. Also, all the nondemographic variables are expressed as natural logarithms. Expressing the variables as natural logs allows the estimated relationship between the unemployment rate and the poverty indicators to be interpreted as an elasticity – the percentage change in the poverty indicator associated with a 1 percent change in the unemployment rate.

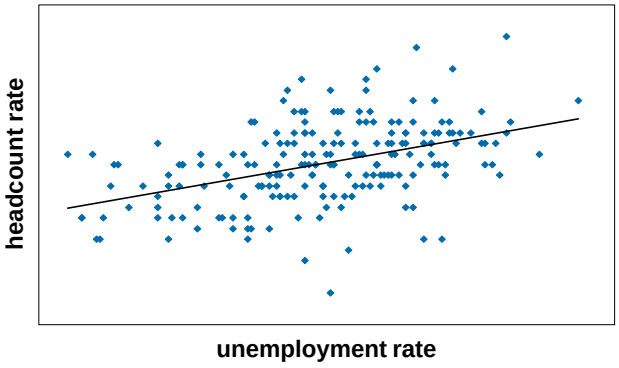
[12] The other income concept starts with all private-sector income, subtracts all income taxes paid, and adds in all government cash and in-kind payments. It also subtracts an estimate of work expenses.

FIGURES 3, 4, 5, AND 6

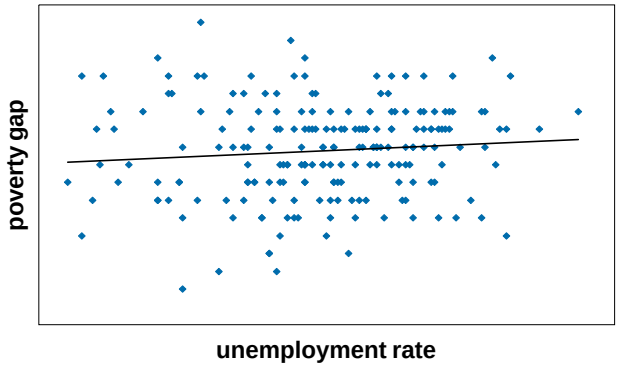
Unemployment and the Official Headcount Rate (Figure 3)



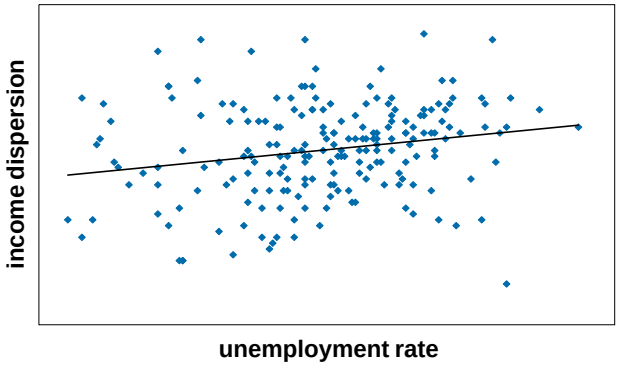
Unemployment and the Revised Headcount Rate (Figure 4)



Unemployment and the Poverty Gap (Figure 5)



Unemployment and Income Dispersion Among the Poor (Figure 6)



Note: All variables are in logarithms. The variable on each vertical axis has been adjusted to account for variables in the model other than the unemployment rate. Thus, each figure shows the partial correlation between the unemployment rate and a particular poverty indicator.

CONCLUSION

Historically, the official headcount rate has generally moved with changes in unemployment, rising as unemployment rose and vice versa. This sympathetic relationship offered one more reason to cheer a strengthening labor market — not only did the average person gain but so did society's most vulnerable.

It is widely recognized, however, that the method by which poverty is officially gauged has a variety of shortcomings. These shortcomings include the methods for identifying who is poor and for measuring the extent of poverty. During the past two decades, researchers have suggested numerous improvements in poverty measurement, including the use of higher poverty thresholds, better equivalence scales, more coherent income definitions, and additional indicators that reflect information beyond simply the number

of poor individuals. Should these improvements be implemented, it is quite possible that the measured link between poverty and unemployment could change.

Indeed, my research on the experience of the 1990s reveals that the relationship between unemployment and the revised poverty headcount rate was much weaker than that between the unemployment and the official poverty rate. The revised headcount rate did decline significantly as unemployment fell, but 40 percent less than the official headcount rate did. Moreover, the unemployment rate showed no significant statistical link to either the average poverty gap or income dispersion among the poor. Taken together, the findings caution against overreliance on lower unemployment as an anti-poverty strategy. While helpful in some regards, its impact could well be overstated.

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