

THE IMPACTS OF UNEMPLOYMENT ON ALTERNATIVE POVERTY RATES

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The analysis uses March Current Population Survey data to estimate state-level cross-section/time-series models of the effects of the unemployment rate on alternative poverty rates. The measures include the official headcount rate, and alternatives based higher thresholds, revised equivalence scales and income defined as inclusive and exclusive of taxes and cash and in-kind transfers. The estimated effects turn critically on the measurement approaches, both for the total sample population and for four population sub-groups. For several alternative poverty rate measures, the unemployment rate has no significant impact on poverty. By contrast, real per-capita median earnings have strong and consistently negative effects on the poverty rates of all groups studied. The findings thus provide important lessons for researchers exploring the links between economic conditions and poverty, and for policy makers developing poverty reduction strategies.

1. INTRODUCTION

This study reconsiders the impact of the unemployment rate on the poverty rate, a relationship with considerable practical and policy significance. The link has been examined before and extensive evidence has been brought to bear on it. Essentially, lower unemployment rates have been found to decrease the poverty headcount rate, although the impacts need not be immediate or, at times, quantitatively large.

A re-examination is warranted for several reasons. First, virtually all existing studies are based on the official poverty rate, a measure that is widely considered to be inadequate. Second, and in a related vein, previous research has made no attempt to distinguish between the influences of the unemployment rate on the poverty rate before and after policy intervention. At least in theory, the payment of taxes and the receipt of cash and in-kind transfers will affect the relationship between unemployment and an individual's poverty status. Third, the literature provides limited information on how unemployment differentially affects the poverty rates of population sub-groups. Diversity among the sub-groups in characteristics such as degree of labor force attachment and industry/occupation concentrations suggests that aggregate unemployment swings can have correspondingly disparate impacts.

The analysis uses March Current Population Survey data to estimate state-level cross-section/time-series models of six alternative poverty headcount rates. The alternatives span the official rate and a selection of others based on suggested changes in equivalence scales, poverty thresholds, and income measurements. The

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different income measures comprise Census income, market-based income, and income inclusive of cash and in-kind transfers but net of taxes. Models are estimated for the total population sample and for four population sub-groups reflecting different races, ages and family types. Regressors consist of state total unemployment rates and a variety of controls, including demographic and labor market variables, and state and year dummies.

The estimates reveal that the effects of the unemployment rate (magnitudes and significance) turn critically on the procedures for measuring the poverty rate, both for the total population and for the population sub-groups. For certain poverty rate measures and for certain groups, the unemployment rate has had much less of an impact on the poverty rate during the sample period than is suggested by the estimates when the official headcount rate is used. Indeed, two alternative versions of the poverty headcount rate were uncorrelated with unemployment, both for the total sample and three of the four population sub-groups. These findings emerge despite considerable cross-section and time-series variation in both the unemployment rate and poverty indexes during the study period.

2. DISCUSSION OF THE LITERATURE

Previous Studies

The relationship between unemployment and poverty has been studied mainly using time series data. One of the earliest studies, by Blank and Blinder (1986), demonstrated that changes in the official poverty rate for the nation were closely correlated with swings in the national unemployment rate during the 1950s, 1960s and 1970s. Subsequent research using more recent data found that declines in the unemployment rate in the 1980s had a weaker effect on the poverty rate than in earlier periods due in part to growing income dispersion that partly offset the gains that otherwise would have occurred. Still, these analyses generally concluded that variations in the unemployment rate significantly affected the poverty rate, especially once distributional changes are accounted for (Cutler and Katz, 1991; Blank, 1993, 1996, 2000; Blank and Card, 1993; Tobin, 1994; Danziger and Gottschalk, 1995; Romer, 2000; Haveman and Schwabish, 2000; Freeman, 2003).

Of the previous studies, the one most closely related to the present one is Blank and Card (1993). They used Current Population Survey data to construct a cross-section time-series data set for the nine U.S. census divisions covering the years 1967 to 1991. Their data set allowed the estimation of fixed-effects regression models of the actual poverty rate and of synthetic poverty rates that hold constant family composition weights.¹ Regressors included regional unemployment rates

¹Blank and Card (1993) review the benefits and costs of using a pooled time-series/cross-section framework relative to relying on aggregate-level data. On the positive side, it increases the size of the available sample, allowing the analysis to identify the effects of an array of variables, and it includes unrestricted year effects that will eliminate biases in estimated coefficients due to correlation between the regressors and unobserved factors that affect the poverty indexes in all states in a given year. On the negative side, the framework ignores the possible influence of other states' conditions on the poverty indexes of a particular state, and excludes the impact of purely national variables that might affect state-level poverty measures.

and different combinations of median family income in the region, median log wages in the region, regional wage dispersion measured as the standard deviation of log wages, region and year effects, and various demographic characteristics. In general, unemployment rates were found to have a significant positive effect on the official regional poverty rates, other things equal, although unemployment rates had a small and insignificant effect in specifications in which median family income is also included. Median income and median wages consistently had significant negative impacts, while wage dispersion had a positive and significant effect.

Blank and Card also report results on the effects of regional unemployment rates on the poverty rates of different family types (elderly heads, single heads and married couples). They found that unemployment has a negative and significant effect on elderly headed families, and positive and significant effects on single-headed and two-parent families. The magnitudes of the estimated coefficients were roughly proportional to the mean poverty rates of the family types.

Time-series evidence offered by Cutler and Katz (1991) indicates that the unemployment rate has significant positive influences on the poverty rates of children (up to age 17) and of adults (ages 18 to 64). Like Blank and Card (1993), they report a negative effect of unemployment on individuals aged 65 years and over, although the coefficient is statistically insignificant.

Measurement Issues

A feature common to all existing studies is their reliance on the official headcount poverty rate.² Poverty in the United States is officially indexed with an approach developed in the early 1960s (Orshansky, 1965, 1966; Fisher, 1992). The procedure identifies poor individuals by using a set of pre-tax family income thresholds, varying by family size and composition, intended to gauge the resources needed to purchase a minimally acceptable consumption level. Thresholds are indexed annually for consumer price inflation, and members of families that fail to receive their threshold income are deemed poor. Poor individuals are then aggregated into an overall index of poverty through a headcount, with the number reported both as a level and as a fraction of the total population (the headcount rate).

The official procedure has well-known shortcomings. Dissatisfaction has been expressed with: the methodologies for setting basic family income thresholds and for adjusting the thresholds for differences in family size and composition; the use of income rather than consumption as an indicator of a family's attainment of the minimal living standard; the neglect of non-cash income factors, such as taxes, non-cash government transfers, work-related expenses, and wealth in judging a family's ability to acquire the minimal living standard; and, how nominal values of income thresholds are adjusted for cost-of-living differences over time and across regions.³

²An exception is Cutler and Katz (1991) who use consumption-based measures as well as the official headcount rate.

³Comprehensive reviews of these issues are found in Ruggles (1990), Panel on Poverty and Family Assistance (1995), and Triest (1998). Suggested improvements have resulted in numerous alternative poverty level estimates. Studies generally have found that recommended changes produce broadly similar long-term trends, although the consumption-based estimates of Jorgensen and Slesnick (1989) and Slesnick (1993) are exceptions.

Measuring poverty in a way that accounts for some or all of the suggested changes will result in collections of poor individuals of different sizes and compositions than the official one. And importantly, changes in the number and composition of individuals deemed poor could significantly affect the link between the unemployment rate and the poverty rate. For example, a higher poverty threshold would encompass more individuals who work full time but remain poor. Unemployment would have a smaller effect in these circumstances since the individuals are poor regardless of whether or not they have a job. Consequently, estimates of the effects of unemployment rates on the official poverty rate can differ relative to ones based on alternative measures of the poverty rate. The significance of the issue increases as policy makers actually implement at least some of the recommended changes.⁴

The analysis presented here explores how suggested changes in poverty headcount rate measurement influences estimated relationships between the unemployment rate and the poverty rate. It focuses on three fundamental recommended improvements: the use of a higher baseline poverty threshold, of new family equivalence scales, and of alternative income definitions.

3. ALTERNATIVE MEASURES OF THE HEADCOUNT RATE

Setting poverty thresholds involves two choices. The first is the poverty level income (i.e. poverty line) for a reference family. The second is an equivalence scale that translates the reference threshold into poverty lines for families of different sizes, compositions, and other characteristics deemed relevant. These equivalence scales are designed to reflect economies of scale in family consumption. Once the thresholds are set, the amount of each family's available income must be measured and compared to its threshold.

A Higher Poverty Threshold

Discussions of the official reference level have surmised that it is at best the lower bound of a reasonable range. For example, the Panel on Poverty and Family Assistance (1995) comprehensively reviews published poverty budget studies (a selection of estimates is presented in Tables 1–3 of the Panel's study). In summarizing the studies, the Panel states (pp. 47–8), "It turns out that recently calculated thresholds for a two-adult/two child family (or in some cases a four person family) range from \$17,200 to \$21,800 (in 1992 dollars). By comparison, the official 1992 two adult/two child threshold is \$14,228 . . . These numbers indicate both that it would be appropriate to revise the level of the official thresholds and that there would be room for debate about the extent of the realignment."

Based on the range of thresholds from the literature presented in the Panel's study, an upward adjustment of the thresholds of between 21 percent (\$17,200/\$14,228) and 53 percent (\$21,800/\$14,228) is warranted. This study will use an adjustment factor of 1.25, or 25 percent above the official thresholds. The selection of any particular threshold is unavoidably arbitrary to some extent.

⁴The Census Bureau has begun to publish experimental poverty rate measures that adopt some of the changes recommended by Panel on Poverty and Family Assistance (1995).

However, some choice must be made and the present study's reliance on a range of published estimates for guidance is arguably reasonable. The adjustment used here falls within the range, and is conservative given that it is close to the lower end of the range.⁵

A New Equivalence Scale

Doubts have also arisen about the official equivalence scale because it fails to consistently reflect household economies of scale (Panel on Poverty and Family Assistance, 1995; Triest, 1998). Alternative equivalence scale methods can be derived from analytical representations guaranteeing household economies of scale. One approach used in several studies bases equivalence scales on the number of adults and children in a family (Buhmann *et al.*, 1988; Cutler and Katz, 1992; Panel on Poverty and Family Assistance, 1995; Johnson, 1996; Triest, 1998).⁶ Using the poverty threshold of a single adult as a baseline, a family comprised of N adults and K children is assumed to need $(N + pK)^f$ times the amount needed by a single adult.

In this study, I adopt this approach to generate an alternative to the official equivalence scale. Specifically, the official poverty line of a single adult under age 65 is multiplied by $(N + pK)^f$, where both p and f are each set to 0.7 consistent with the recommendations of the Panel on Poverty and Family Assistance (1995).⁷

Alternative Income Definitions

The final issue regards the income concept to be compared with chosen poverty thresholds. The preferred concept is disposable income, that is, monies available to meet consumption needs. How the concept is implemented, however, depends on the purpose of the measurement. Is the object to gauge poverty before or after government intervention? Both questions have value.

For pre-policy poverty, disposable income equals private money income, from market activity and private transfers, less money expended to obtain the income (e.g. transportation expenses). Neither taxes paid nor public transfers received figure in the calculation, as together they represent the net effect of policy intervention. For post-poverty policy, disposable income equals pre-policy income less direct tax paid plus all public transfers, including money and in-kind payments. Official calculations use "Census Income" defined as all money income, including government cash, but not in-kind, payments, before taxes. It thus falls short of the

⁵The Panel ultimately chose a measurement procedure that resulted in an implied adjustment factor that was less than the lower end of the range of estimates surveyed. This does not make other approaches, such as the choice of 25 percent here, any less reasonable given the literature on poverty budget measurement. Indeed, the Panel's report included a dissent by John F. Cogan (Appendix A of the Panel volume) which criticizes the Panel's preferred range of thresholds.

⁶Other studies have employed equivalence scales that vary over additional family characteristics. See, for example, van der Gaag and Smolensky (1982), Jorgensen and Slesnick (1987), and Slesnick (1993).

⁷The Panel recommended a value of 0.7 for p and a value between 0.65 and 0.75 for f . Cutler and Katz (1992) present regression-based evidence that a value of 0.61 for f and a value of 0.76 for p approximate the official thresholds, although see Johnson (1996) for a critique. Buhmann *et al.* (1988) assign a value of 1 to p and freely estimate a value for f . Resulting f values have ranged from about 0.25 to about 0.75 (Triest, 1998).

preferred concepts on several counts. For comparative purposes, the poverty head-count rate is calculated using the alternative concepts of Census income, pre-policy income, and post-policy income. The impact of the unemployment rate on each is then explored.

4. METHODOLOGY AND DATA

Conceptual Framework

The unemployment rate potentially affects the poverty rate through its impact on income flows to those in the lower tail of the earnings distribution. Given an initial distribution, changes in unemployment affect total hours worked of individuals on both sides of pre-determined poverty lines, moving them to new positions in the distribution. Exactly how unemployment affects a person's poverty status depends on numerous factors. These include, among others: the individual's labor force attachment; the sensitivity of a person's job to shifts in the aggregate economy; the presence or absence of additional family workers; how these family members adjust their work and earnings to the person's unemployment; whether jobs available to the person pay above-poverty wages; and the person's access to social insurance and means-tested income transfers. Because these factors can vary systematically by population sub-group, the extent of poverty in different demographic cross-sections could respond uniquely to changes in the unemployment rate.

Empirical models of the poverty rate thus require variables that capture movements in these income flows. We rely here on three types of variables. The first is the total state unemployment rate, given the focus of the study. To be consistent with previous studies, total state unemployment rates are used in all regressions, even those for population subgroups. Total unemployment has been emphasized in time series and cross-section studies because policy discussions usually center on the aggregate unemployment rate and its various implications.

The second set includes two variables which account for other changes in a population's wages and hours apart from the unemployment rate. One is a population's median real per capita earnings, and the other, following Blank and Card (1993), is the standard deviation in a population's real per capita earnings.⁸ The standard deviation of per capita earnings is included to capture changes in the shape of the income distribution that arise for reasons other than fluctuations in unemployment. That is, the poverty rate might rise or fall even if median earnings and the unemployment rate remain unchanged because the tails of the earnings distribution become fatter or thinner. The persistence of poverty during the 1980s in the face of relatively strong economic growth is an example of how changing income dispersion affects the poverty rate (see, e.g. Blank and Card, 1993; Blank, 1993, 1996). Together, these variables capture shifts in a group's income flows, and shifts in the dispersion of these flows.

The last set of variables measures changes in a group's demographic structure, given that the incidence of poverty historically has varied systematically by

⁸Earnings are used as opposed to income in order tie the analysis of poverty rates more closely to labor market developments.

demographic characteristics. Characteristics used include: the percent of a population residing in metropolitan areas; the percent with at least a college degree; and the percent not in the labor force.⁹

The poverty headcount rates are modeled using a pooled time-series/cross-section framework, similar to that of Blank and Card (1993). Following Blank and Card (1993), the model is estimated using levels, as opposed to log levels, of the variables. The formulation is used both for the overall sample population and for population sub-groups. The empirical model is formally expressed as:

$$(1) \quad P_{i,t} = \alpha_i + \delta_t + \sum_c \beta_c X_{c,i,t} + \eta_i U_{i,t} + \epsilon_{i,t}$$

where: i and t index states and time, respectively; P is the state-level poverty rate for the total population or for a population subgroup; U is total state unemployment rate (the total rate is used even in the subgroup regressions); the X_c are the additional state-level control variables; ϵ is a random error term; and, α and δ are state and time-period dummies to control for fixed effects.

Data

The empirical analysis uses March Current Population Surveys (CPS) that provide data for the years 1991 to 2001. The annual March CPS contain detailed income and demographic information for individuals, families and households, and are used to generate official U.S. poverty rate estimates. All variables, including the poverty rates and the unemployment rates, are computed from the individual survey responses. Real values are computed by deflating nominal ones using a national Consumer Price Index (the CPI-U). The 1991 to 2001 time period is chosen because it is the longest for which March CPS data on income, taxes and transfers are consistently measured and publicly available. As will be discussed, the data exhibit considerable time-series and cross-section variation during the sample period.

The data are used to construct a time-series panel of state-level cross sections. Panels are constructed for the entire population sample, and four population sub-groups highlighting differences in age, race and family type. These are: mature white individuals; mature black individuals; individuals aged 16 years to 24 years;

⁹Other possible controls, such as percent of the population that is female or the percent black, are inappropriate for the analysis of population sub-groups. They are excluded from the model for the total sample to maintain comparability across estimates. Some previous studies have also included the inflation rate as one possible macro economic determinant of poverty (Blank and Blinder, 1986; Cutler and Katz, 1991; Romer, 2000). A measure of inflation is excluded here because reliable state-level inflation estimates are lacking. Similarly, some researchers have added the ratio of the poverty line to mean or median income as a control variable to account for changes in the density of the income distribution in the tail below the poverty line (e.g. Cutler and Katz, 1991; Tobin, 1994; Blank, 2000). Given that real median earnings are included in the regression, and the poverty line is constant in real terms over time, the ratio is unnecessary. The models do not include an indicator of the generosity of income transfers for two reasons. First, Blank and Card's study did not include such a measure, and it is desirable to keep the empirical specification consistent with theirs for comparative purposes. Second, the regressions model the behavior of both before-policy and after-policy poverty rates, and it facilitates the comparison of results to keep the regression models the same in all cases. The logic of including the generosity of income transfers in an equation explaining after-policy poverty rates does not hold for before-policy poverty rates.

and individuals in female-headed families. “Mature” refers to ages 35 years to 64 years. The sample of 16–24 year olds excludes individuals in female-headed families.

The data are used to compute headcount rates for each alternative poverty indicator. Pre-poverty policy income is calculated as total private cash income less work costs. The March CPS contains no information on private transfers, so these must be omitted. Work costs are estimated following suggestions of the Panel on Poverty and Family Assistance (1995, p. 243), whereby costs are set equal to \$14.40 (1992 dollars) per week worked. Post-policy income equals pre-policy income plus money and in-kind transfers, less direct tax paid. The March CPS contains data on five different direct tax variables: federal income tax liability, state income tax liability, social security retirement payroll deduction, federal retirement payroll deduction, and the earned income tax credit. Data on government transfer payments include: social security benefits, supplemental security benefits, unemployment compensation, public assistance or welfare, veterans benefits, workers’ compensation payments, and the market values of food stamps, school lunches, and housing subsidies, and the fungible values of Medicare and Medicaid.¹⁰

Each family’s income is divided equally among family members. The resulting income for each member is then compared to its alternative poverty thresholds (i.e. the official and revised ones) divided by the number of family members. The approach leaves the same number of people poor as when net family income is compared to the adjusted family poverty threshold. It has the added advantage of allowing the use of individual population weights, which Smeeding (1991) argues are preferred to family weights for poverty analysis.

Summary Statistics

Both unemployment rates and the alternative poverty rates varied considerably in the sample period, both over time and across states in each year. Figure 1 displays total state unemployment rates for all states in each year of the sample period. The large dispersion in unemployment rates across states in each year suggests there is considerable information added by analyzing the state cross-sections relative to relying on national aggregate data. Furthermore, the data include periods during which the average unemployment rate decreased (1991 to 1999) and increased (2000 and 2001). The data can thus help to illuminate how the poverty rate responds to the unemployment rate over different phases of the business cycle.

Summary data for the alternative poverty rates by sample population group are presented in Table 1 (the 30 headcount rate/sub-group pairs make graphical representation cumbersome). The table contains average poverty rates and percent changes for the entire sample period. “Official” refers to the poverty rate calculated using the official thresholds and equivalence scale, while “Revised” refers to the poverty rates calculated using the higher baseline threshold and new equivalence scale.

¹⁰The study follows U.S. Census Bureau conventions and treats government pensions as market income, analogous to private pensions. Danziger and Weinberg (1994) treat government pensions as cash social insurance transfers, akin to Social Security benefits, as do Plotnick and Skidmore (1975). See Smeeding (1982) and U.S. Census Bureau (1992) for discussions of methods used to value in-kind transfers.



Figure 1. Total State Unemployment Rates
Source: Author's calculations from March CPS data.

TABLE 1
 PERIOD AVERAGES AND PERCENT CHANGES IN POVERTY RATES (SAMPLE PERIOD: 1991 TO 2001)

Population Group	Official			Revised		
	Census	Pre-policy	Post-policy	Census	Pre-policy	Post-policy
Total						
Mean	0.124	0.204	0.109	0.214	0.287	0.209
Percent change	-0.179	-0.102	-0.215	-0.142	-0.098	-0.233
Mature White ^a						
Mean	0.086	0.155	0.079	0.165	0.233	0.169
Percent change	-0.120	-0.058	-0.180	-0.127	-0.080	-0.233
Mature Black ^a						
Mean	0.237	0.314	0.199	0.352	0.416	0.334
Percent change	-0.329	-0.234	-0.320	-0.14	-0.130	-0.227
Female-headed families						
Mean	0.298	0.430	0.258	0.424	0.525	0.388
Percent change	-0.104	-0.039	-0.103	-0.076	-0.018	-0.085
16-24 years ^b						
Mean	0.073	0.138	0.066	0.153	0.219	0.158
Percent change	-0.216	-0.082	-0.216	-0.178	-0.097	-0.213

Source: Author's calculations based on March CPS data.

Notes:

^aMature refers to ages 35-64 years.

^bExcludes female-headed families.

The estimates reveal familiar variations in mean levels across sample population groups. For example, the poverty rates for mature whites are substantially below those for female-headed families. The estimates also indicate that the different computation methods produce large level differences. When the headcount rate is gauged using a revised threshold and equivalence scale, each group's rate increases relative to official rate (due mainly to the higher baseline threshold).¹¹ It increases further when computed on a pre-policy basis because individuals' incomes are net of all cash transfers and a greater fraction falls below the revised thresholds. The post-policy headcount rates could either be above or below the other headcount rates for a given group, because the concept adds in-kind transfers but also subtracts direct taxes. The outcome depends on the amount and distribution of the taxes and transfers. In fact, the net effect of policy is a lower poverty headcount rate in eight of the ten cases.

The estimates also evidence marked variation in percent changes across groups for a given measure of the poverty rate, suggesting diversity in the factors underlying the changes. This is not surprising in light of the historically different labor market experiences of each group. Finally, the percent changes across different measures for a given group differ considerably. In sum, the data suggest that observed changes in the unemployment rate have possibly produced different responses for alternative poverty rate measures and for distinct population sub-groups.

5. REGRESSION ESTIMATES

Unemployment Rate Coefficients

The estimates of the total state unemployment rate coefficients for equation 1, expressed as elasticities, are presented in Table 2. The actual estimated coefficients are converted to elasticities using the sample means of the relevant variables. The first column contains the poverty concept regressand, and the remaining columns contain the elasticities for each group.¹² Standard errors for the actual estimated coefficients are directly below the elasticities, in parenthesis.

The discussion is usefully divided into four parts. The first is variation in the effects of total state unemployment rates on the official poverty rate across the different groups. Official poverty rates for four of the five groups respond positively and significantly to the total state unemployment rates (first row of Table 2). Consistent with existing time-series and cross-section findings, the total sample population is one of the groups. The others are mature whites, the young, and

¹¹In Panel on Poverty and Family Assistance (1995), the official 1992 poverty rate is reported as 14.5 percent, and rises to 19 percent after a set of suggested changes is implemented (p. 262). Thus the implemented changes cause the rate to rise 4.5 percentage points, or 31 percent. Table 1 shows an average period official poverty rate of 12.4 percent and a revised poverty rate of 21.4 percent, or a 72 percent increase. The different impact of revisions is due mainly to the different revised poverty threshold adjustments used in each case. Panel on Poverty and Family Assistance (1995) uses a revised baseline that is only 4 percent above the official baseline threshold (\$14,800 revised for a two-adult, two-child family compared to the official threshold of \$14,228.) This adjustment is remarkably small given the literature on appropriate thresholds discussed earlier.

¹²Summary statistics from the regressions (not shown) indicate that the models generally fit the data well. Adjusted R²s for the equations range from 0.8 to 0.95.

TABLE 2
ESTIMATED UNEMPLOYMENT RATE COEFFICIENTS^a (EXPRESSED AS ELASTICITIES EVALUATED AT SAMPLE MEANS)

Poverty Concept	Sample Group				
	Total	Mature White	Mature Black	16–24 years	Female-headed Families
<i>Official</i>					
Census income	0.131** (4.06)	0.338** (7.63)	0.081 (0.68)	0.164** (3.30)	0.074** (2.72)
Pre-policy income	0.057** (2.80)	0.189** (6.79)	0.046 (0.51)	0.085** (2.92)	0.014 (0.80)
Post-policy income	0.063 (1.82)	0.254** (5.74)	0.088 (0.65)	0.131** (2.63)	0.040 (1.23)
<i>Revised</i>					
Census income	0.048* (2.09)	0.224** (6.77)	–0.003 (–0.04)	0.070* (2.20)	0.020 (1.07)
Pre-policy income	0.021 (1.36)	0.139** (5.59)	0.073 (1.14)	0.042 (1.94)	0.005 (0.40)
Post-policy income	–0.010 (0.67)	0.158** (4.49)	0.009 (0.11)	0.046 (1.42)	0.031 (1.40)

Notes:

^aAll regressions contain year and state dummy variables, real median per-capita income, the standard deviation of real per-capita income, and demographic controls. T-statistics are in parenthesis.

* and ** indicate significance at the 5% and 1% levels, respectively.

female-headed families. The estimated elasticities with respect to total state unemployment are relatively small, in the 0.07 to 0.35 range, with that for female-headed families being the smallest. The poverty rate of the mature black group is found to be unresponsive to the unemployment rate changes during the study period, despite the relatively large changes in its actual official poverty rate (see Table 1).

A logical source of these inter-group differences for the official rate is the varying degree to which each group's own unemployment rate correlates with the total state unemployment rate. That is, the total state unemployment rates might better proxy the specific labor market conditions facing certain groups than those of others. To examine the possibility, a set of auxiliary equations is estimated in which the each group's state-level unemployment rate is regressed on the total state unemployment rate. The results are displayed in Table 3, and appear broadly consistent with the interpretation.

The state-level unemployment rate for each group is significantly and positively correlated with total state unemployment. The elasticities are of roughly similar size, ranging from a high of 1.03 for young individuals to a low of 0.811 for female-headed families. However, the adjusted R² for the mature black equation is small and substantially below that of the other groups' equations.¹³ Thus, variations in the job prospects facing mature blacks are not as well captured by the total state unemployment rate as are those for the other groups. This aspect of the labor market experience of mature blacks likely contributes to the insig-

¹³The four group unemployment regressions were also estimated after including the year and state dummies used in the poverty regressions. The results were the same. Adjusted R²s for the mature black equation was 0.127, five to eight times less than those of other groups' equations.

TABLE 3
REGRESSIONS OF GROUP STATE UNEMPLOYMENT RATES ON TOTAL
STATE UNEMPLOYMENT RATE (EXPRESSED AS ELASTICITIES EVALUATED
AT SAMPLE MEANS)

Group	Unemployment Coefficient	Adjusted R ²
Mature Whites	0.911** 0.024	0.667
Mature Blacks	0.930** 0.237	0.101
16–24 years	0.811** 0.051	0.512
Female-headed families	1.030** 0.014	0.884

Note: **indicates significance at the 1% level.

nificant relationship between total state unemployment and state-level poverty rate for mature blacks.

A second aspect of the results in Table 2 is the difference in the estimated coefficients for a given poverty rate measure for the “official” versus “revised” thresholds. Comparing the Census income poverty rates for a given group reveals that use of the revised thresholds causes the coefficients to decline substantially in magnitude, and even to become insignificant. In the case of the total sample, for example, the estimated elasticity falls to 0.048 (revised thresholds) from 0.131 (official thresholds). The same pattern occurs regardless of the group and regardless of the income concept. Thus, the elasticity for the mature white post-policy poverty rate is 0.245 based on the official thresholds and 0.139 based on the revised thresholds.

This pattern has a reasonable interpretation. When the poverty headcount is measured using the revised thresholds, the number of individuals counted as poor grows relative to the number under the official thresholds due mainly to the higher baseline. This is evident in Table 1. As the poverty thresholds are increased, the group of individuals classified as poor increasingly comprises people who either are in the labor force or who work. To formally examine this interpretation, I used the 1997 March CPS to compute the fractions of individuals who are poor and are either in the labor force or who work, based on multiples of the official poverty thresholds. Without exception, the fractions rise as the poverty threshold is increased. Thus, using the revised poverty threshold (here, 1.25 times the official) causes the poverty status of more individuals to become independent of the unemployment rate, as they are poor with or without jobs. This shows up econometrically as smaller unemployment elasticities for the revised poverty rates.

A third aspect of the results concerns the differences in estimated coefficients that occur due solely to the use of alternative income definitions. Consider first the use of pre-policy income instead of Census income. Doing so results in offsetting effects on the sensitivity of the poverty rate to the unemployment rate. Pre-policy income subtracts from Census income all cash transfers. Intuitively, this makes each group’s income more volatile because, on the margin, transfers act as

income stabilizers that are sensitive to the unemployment rate.¹⁴ Consequently, a given change in the unemployment rate will be associated with wider swings in income and, hence, in the poverty rate. However, subtracting cash income transfers has a second effect. By decreasing Census income, the subtraction of transfers pulls additional individuals below the poverty line. Some of these additional individuals are workers, meaning that they will be poor whether they are employed or unemployed. As with the higher poverty threshold, a group's poverty rate thus can become less sensitive to the total unemployment rate, to the extent such transfers matter for the group. Whether the poverty rate becomes more or less sensitive to the unemployment rate once cash transfers are subtracted from income is thus theoretically ambiguous. In fact, the results indicate that the estimated elasticities for pre-policy poverty are lower than for post-policy poverty for all groups, regardless of whether the official or revised thresholds are used.

Using post-policy income instead of Census income also produces offsetting effects on the sensitivity of the poverty rate to the unemployment rate. Post-policy income adds in-kind transfers and subtracts taxes, compared to Census income. Firstly, these adjustments can either increase or decrease a group's poverty population, depending on the amount and distribution of the taxes and transfers. The period-average poverty rates in Table 1 reveal that, depending on the choice of poverty thresholds, most groups' poverty rates fell as a result of policy intervention, but in two cases rates rose. They can also alter the group's composition. The resulting net effect of these changes on the unemployment coefficient is ambiguous. Secondly, the inclusion of taxes and additional transfers that are sensitive to unemployment also will stabilize income and, as a result, diminish the impact of unemployment on poverty. The estimates reveal that the elasticities decline for all groups (Census versus post-policy income) regardless of whether the official or revised thresholds are used.

A final aspect of the results centers on their policy implications. If one were to rely on the revised baseline thresholds and equivalence scale used in this study, the results indicate that lower unemployment is not a particularly effective means of reducing poverty, especially for groups considered most vulnerable (e.g. female-headed and black families). Based on either pre-policy income or post-policy income, only poverty among mature whites is consistently and significantly reduced by lower unemployment. If one views post-policy income as the most relevant measure, since it among the others best approximates the actual income status of families, then only mature white poverty is affected, and by a relatively small amount. For example, based on the estimated elasticity of 0.158, a 33 percent decline in state unemployment from 6 percent to the low of 4 percent that occurred in the 1990s would reduce the mature white poverty rate by less than 5.2 percent, or about one percentage point.

Real Per Capita Median Earnings Coefficients

The results for the level of real per-capita median earnings are quite different. Table 4 contains the estimated elasticities for median real per capita earnings.

¹⁴Cohen and Follette (2000) assess the quantitative importance of automatic stabilizers.

TABLE 4
ESTIMATED REAL PER CAPITA MEDIAN EARNINGS COEFFICIENTS^a (EXPRESSED AS ELASTICITIES
EVALUATED AT SAMPLE MEANS)

Poverty Concept	Sample Group				
	Total	Mature White	Mature Black	16–24 years	Female-headed Families
<i>Official</i>					
Census	-0.963** (-19.73)	-1.638** (-15.60)	-0.606** (-9.75)	-0.376** (-2.90)	-0.335** (-14.06)
Pre-policy	-0.587** (-18.89)	-1.818** (-15.61)	-0.465** (-13.06)	-0.199** (-3.06)	-0.232** (-16.62)
Post-policy	-1.096** (-19.16)	-1.782** (-15.38)	-0.364** (-7.83)	-0.418** (-3.44)	-0.387** (-10.63)
<i>Revised</i>					
Census	-1.116** (-24.32)	-1.709** (-19.14)	-0.420** (-12.06)	-0.899** (-4.46)	-0.236** (-15.46)
Pre-policy	-0.831** (-25.39)	-1.120** (-19.99)	-0.540** (-17.66)	-0.630** (-6.41)	-0.190** (-17.32)
Post-policy	-1.141** (-25.34)	-1.665** (-19.56)	-0.449** (-10.84)	-0.350** (-3.97)	-0.257** (-12.68)

Notes: ^aAll regressions contain year and state dummy variables, real median per-capita income, the standard deviation of real per-capita income, and demographic controls. T-statistics in parenthesis below estimates.

* and ** indicate significance at the 5% and 1% levels, respectively.

The variable was found to have noticeably larger and consistently negative effects on poverty rates however measured. Furthermore, the relationships are highly significant across all groups and poverty measures. Poverty rates for mature whites are clearly most responsive to real median earnings, while the elasticities for the other groups cluster around lower elasticity values.

The elasticities follow no particular pattern as the poverty concept changes from official to revised, or as the income concept changes from Census to pre-policy to post-policy. This is not surprising. The extent to which changes in each group's hours and wages have affected its poverty rate depends on the size and distribution of the changes within the group. A detailed examination of the particular reasons for the estimated pattern of elasticities is well beyond the scope of the present study.

Recall that real median earnings are included in the regressions to account for labor market developments relevant to each group that are not captured by total state unemployment. These include variations in the hours worked and wages of individuals experienced directly by members of each group. To confirm that each group's real earnings provides important information independent of the state unemployment rate, auxiliary regressions of each population group's median real per capita income on the total state unemployment were estimated. In each regression, the elasticity with respect to state unemployment is negative and highly significant as expected, but small (not reported). In addition, the adjusted R²s are all small, with none exceeding 0.2. This is so even for the total population sample. Thus, group-specific median per capita earnings are not simply proxies for total state unemployment.

In sum, changes in the real per-capita earnings of each group had more powerful and beneficial effects on poverty during the sample period than did changes in the unemployment rate. The effects remain regardless of which method is used to measure the headcount rate.¹⁵

6. SUMMARY AND CONCLUSIONS

The effect of unemployment on poverty has long been a research and policy concern. Previous studies have focused mainly on the relationship between the unemployment rate and the official poverty headcount rate, and generally have found a significant negative link. This study has reevaluated that relationship in light of widely acknowledged shortcomings in how the official poverty rate is measured.

The analysis used March CPS data covering the years 1991 to 2001 to estimate state-level fixed effects models of six alternative poverty rates, one of which is the official headcount rate. The alternatives reflected suggestions found in the literature on poverty rate measurement, and were computed using three different income definitions and two different sets of poverty thresholds and equivalence scales. The main findings are as follows:

- The total state unemployment rate significantly affects the official poverty headcount rate of the total sample population and three of the four sub-groups—mature whites, individuals aged 16 years to 24 years, and female-headed families. The mature black poverty rate was unaffected. In all cases, the estimated elasticities are small.
- The use of pre-policy income or post-policy income for poverty calculations reduces the impact of the unemployment rate compared to the use of official Census income. This occurs for all of the population groups studied.
- Use of a higher baseline poverty threshold and revised equivalence scales reduces the measured impact of the unemployment rate compared to that based on official thresholds and equivalence scales. In the large majority of cases, revised thresholds and equivalence scales render the unemployment rate's impact insignificant. The poverty rate for mature whites is an exception.
- Each group's median real per capita earnings has large and significant effects on all of the alternative poverty headcount rates.

In sum, conclusions about whether and how the unemployment rate affects the poverty rate depend critically on how the poverty rate is measured. Reasonable alternative methods for classifying individuals as poor were found to diminish the sensitivity of the poverty rate to the unemployment rate. Indeed, if the higher thresholds, revised equivalence scales, and post-policy income better identify who is actually poor, then a lower unemployment rate appears to reduce the poverty rate only in narrow sectors of the economy. This is not to say that labor

¹⁵Variations in the dispersion of group real per-capita earnings affected the poverty rates of the total population, of mature whites and of individuals aged 16–24 years. For these groups, the coefficients were positive (greater dispersion increased poverty) regardless of the poverty measure used. Dispersion affected none of the poverty rate for mature blacks and female-headed families.

market conditions are unimportant for the extent of poverty. Rather, it appears that variations in each group's hours and wages apart from those associated with changes in total unemployment are most essential.

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