The Causes of Regional Variations in U.S. Poverty: A Cross-County Analysis

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by

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Abstract: The persistence of poverty in the modern American economy, with rates of poverty in some areas approaching those of less industrialized nations, remains a central concern among policy makers. Therefore, this study uses U.S. county-level data to explore potential explanations for the observed regional variation in the rates of poverty. The use of counties allows examination of both rural and urban poverty, with rural poverty being a relatively unexplored topic. Factors considered include those that relate to both area economic performance and the demographic makeup of the area. Specific economic factors examined include employment growth, industry restructuring, migration and spatial mismatch.

I. INTRODUCTION

Despite long periods of U.S. economic growth in the 1980s and 1990s, the relative economic position of low-income families has deteriorated. For example, the historical link between economic growth and reduced poverty appeared to weaken in the 1980s (Blank and Card, 1993) as family poverty rates rose above their levels of the late 1970s (*U.S. Bureau of the Census*). Moreover, there are still significant differences in poverty across areas within the United States (Triest, 1997) despite more than 30 years of federal efforts to reduce poverty. These facts, along with recent federal attempts to reform welfare, have heightened interest in the underlying causes of poverty.

Numerous reasons have been suggested for recent poverty trends. For example, many studies focus on the causes of the decline in the low-skilled wage rate. Demand-side explanations include: the loss of manufacturing jobs (Bluestone, 1990); a shift in labor demand towards high-skilled occupations (Cutler and Katz, 1991); and the decline of unions (Freeman, 1993). Similarly, increased supply of low-skilled labor through immigration and increased labor market competition associated with increased female-labor force participation have been found to reduce low-skilled male wages (Topel, 1994).

Other studies emphasize demographic components of poverty. For example, an increased number of families headed by females is associated with increased poverty (Blank and Hanratty, 1992). Poverty among blacks in central cities has also worsened. Reasons suggested for poverty among inner city blacks include: discrimination (Kirschenman and Neckerman, 1991); spatial mismatches between residence and job location (Holzer, 1991); and negative neighborhood effects associated with inner cities (Corcoran et al., 1992; Cutler and Glaeser, 1995). Yet, other studies suggest that the lack of generosity of U.S. transfer payments such as welfare underlie higher U.S. poverty (Blank and Hanratty, 1992).

To shed further light on national poverty trends and regional patterns in poverty, this study examines differences in 1990 family poverty rates across all counties and independent cities in the lower 48 states, resulting in over 3,000 observations. The use of county data allows us to examine the causes of both rural and urban poverty. To be sure, even though the rural poverty rate is higher than that of urban areas, rural poverty has received considerably less attention in the literature. With county-level data, unmeasurable state fixed effects can be accounted for, leaving variation across counties within states to be explained.

In what follows, we examine to what extent differences in regional poverty rates can be explained by various economic and demographic factors. Of particular interest, we explore whether counties that experienced recent employment growth have lower poverty. In addition to assessing the role of industry composition in influencing area poverty, we explore whether counties that underwent recent structural change have higher poverty. We also attempt to find out if higher

poverty in central cities and rural areas is related to spatial mismatch effects. Moreover, we address whether these economic factors interact with county-type, education, and race.

II. MODEL OF REGIONAL POVERTY

Conceptual Model

Poverty rates can vary across geographic areas because of differences in both person-specific and place-specific characteristics. For example, an area may have a higher rate of poverty simply because it contains disproportionately high shares of demographic groups associated with greater poverty. Alternatively, area poverty may be more related to place-specific factors such as its economic performance. A strong area economy may sufficiently reduce the poverty rate among all groups such that the overall poverty rate is lower. Moreover, relative poverty rates of particular demographic groups may be interrelated with area economic conditions.

Regarding person-specific characteristics, poverty rates are relatively higher nationally for most minority groups. One factor suggested to underlie higher minority poverty is discrimination or racial preferences in hiring (Kirschenman and Neckerman, 1991; Ihlanfeldt and Young, 1996). Alternatively, it has been argued that the key to reducing poverty among minorities is to improve their quality of education and to increase their education completion rates (e.g., Smith and Welch, 1986). Also focussing on the supply side, Mead (1992) argues that reservation wages of blacks lead them to not accept available jobs, in which Viscusi (1986) suggests that relatively higher rates of return to crime may be one reason.

Poverty rates also are higher for female-headed families across all racial groups (Blank and Hanratty, 1992). Besides being the sole potential wage earner for the family, female family heads are disproportionately young, lesser educated and less skilled. Moreover, child care constraints can further hinder job performance. Thus, female heads receive lower wage rates and are less likely to participate in the labor force. Indeed, Blank and Hanratty (1992) suggest that some of the relative increase in U.S. poverty in the 1980s compared to Canada was the relative increase in U.S. female-headed households.

Low-skilled workers in general are more likely to experience poverty. One suggested primary cause for the relative decline of low-skilled wages is a hypothesized relative demand shift that has favored high-skilled occupations (Juhn, et al., 1993). Along with technological change, a prominent explanation for the skill shift is the decline in manufacturing and "good" paying jobs for those with lesser job skills (e.g., Cutler and Katz, 1991). Correspondingly, a declining union influence may have contributed to the reduction in the low-skilled wage rate (Freeman, 1993). Also, labor force participation fell for those whose wage rates dropped (Topel, 1993). As an example of the interrelationship between demographic patterns of poverty and economic performance, Wilson (1987) argues that structural changes and demand shifts particularly hurt blacks, who are relatively

lesser skilled and lesser educated.

Declining low-skilled wages also have been argued to be caused by supply shifts. For example, increased immigration of disproportionately low-skilled workers has been linked to increased male wage inequality (Topel, 1994). At the regional level, however, less-skilled natives may out-migrate in response to the arrival of immigrants (Frey, 1995), which may mute regional wage effects of immigration (e.g., Borjas et al., 1996). Furthermore, immigrants may have, or be perceived to have, stronger commitments to work, leading to higher employment rates among less-skilled immigrants relative to less-skilled natives (Kirschenman and Neckerman, 1991). Increased labor supply resulting from increased female labor force participation in recent decades also has been linked to increased male wage inequality (Topel, 1994), indirectly increasing poverty among families of low-skilled males. Nevertheless, increased labor force participation by wives in low-income families somewhat offset the earnings losses of husbands (Cancian, et al., 1993). Therefore, the net effects of immigration and female labor force participation for family poverty are conceptually ambiguous.

Much of the work on the link between area economic performance and poverty has been done at the metropolitan level. On one hand, total MSA employment growth and tight labor markets have been reported to benefit low-income individuals more than high-income individuals, particularly young black workers (Freeman, 1991; Bartik, 1996). For example, strong labor demand may provide employment opportunities for low-skilled individuals that otherwise would not exist. On the other hand, in-migration of low-skilled workers that have more experience, or are more educated, can mitigate the potential benefits of employment growth for low-skilled natives (Larson, 1989; Sawicki and Moody, 1997). Moreover, accompanying shifts in skill level demand can offset the beneficial effects of increased aggregate job availability (Cutler and Katz, 1991). Consequently, the historical positive link between growth and reduced poverty may have been weakened in the 1980s (e.g., Blank and Card, 1993).

A relatively unexplored aspect of the relationship between local economic conditions and poverty is the degree to which changes in industry structure affect area poverty. That is, if there are adjustment costs associated with changing sectors, longer-term unemployment may result (Partridge and Rickman, forthcoming). In addition, post-displacement earnings are typically lower than pre-displacement earning (Carrington and Zaman, 1994), where a likely causal factor is job-specific training. Therefore, areas that experience significant industrial restructuring (aside from any losses of manufacturing jobs), are expected to have increased poverty. That is, the actual process of switching sectors-- say from services to manufacturing (or vice versa)-- can reduce income and increase poverty.

Related to area economic performance, a substantial literature exists on the contribution to

poverty rates of "spatial mismatch" factors in central cities. For example, besides the general decline in jobs, another trend is the relocation of manufacturing jobs from central cities to their suburbs. This relocation may increase the locational imbalance between the demand for low-skilled workers in suburbs, and the supply of low-skilled workers in inner cities. Regarding racial aspects of spatial mismatch, blacks, who are disproportionately concentrated in inner cities, have been observed to be less likely to increase their commutes to offset the relocation of inner city jobs to suburban areas (Holzer et al., 1994). Also, housing discrimination (Turner, 1992) and suburban zoning practices (O'Regan and Quigley, 1991) may prevent inner city residents from moving closer to the jobs, where in-migrants to a metro area may be more likely to locate near the newly created jobs than inner city residents (Sawicki and Moody, 1997). As a weaker form of spatial mismatch, the importance of neighborhood effects such as, peer pressure, poor role models, and scarce information about jobs may explain inner-city poverty (Corcoran et al., 1992; O'Regan and Quigley, 1996). Cutler and Glaeser (1995) argue that broader social problems that affect youths growing up in poverty-stricken areas determine neighborhood effects, not proximity to jobs. However, the role of spatial mismatch in its various forms remains unsettled (Holzer, 1991).

For many possible reasons, rural areas possess higher poverty rates than their urban counterparts (RSSTFPRP, 1993). Some of the higher rural poverty may be related to lower cost-of-living, reliance on agricultural and other extractive industries, demographic characteristics, and less human capital in the labor force (Brown and Warner, 1991). An unexplored question, however, is whether employment growth and human capital have differential effects on rural poverty versus urban poverty. Nevertheless, after controlling for these effects on poverty, other aspects of rural areas may contribute to higher poverty. For example, geographic isolation of rural residents and their unwillingness to migrate to nearby growth centers may contribute to spatial mismatch problems that may be more severe than those in urban areas (Brown and Warner, 1991; RSSTFPRP, 1993). Yet, with poverty more diffused in rural areas than central cities (RSSTFPRP, 1993), fewer negative neighborhood effects may exist and "middle-class" values among low-income households may be more prevalent.

Empirical Model

To assess the importance of the above factors in explaining area differences in poverty, the following empirical model is formulated. The poverty rate (POV) in county i in state s is regressed on several independent variables that are intended to capture the effect of person-specific and place-specific county characteristics discussed above and their interrelationships:

(1) $POV_i = \alpha 1 + \beta 1\ CTY\_TYPE_i + \gamma 1\ DEMOG_i + \varphi 1\ ECON_i + \delta 1\ INC_i + \theta 1\ MOB_i + \sigma_s + \varepsilon_i$,

where CTY_TYPE represents the type of metro or nonmetro county; DEMOG denotes demographic characteristics of the population; ECON contains variables related to area economic performance;

INC is county per capita income; MOB denotes residential and work mobility characteristics; σ_s denotes state fixed effects; $\alpha 1$, $\beta 1$, $\gamma 1$, $\varphi 1$, $\delta 1$, and $\theta 1$ are coefficient vectors; and ε is the error term with the usual assumptions.[1] State fixed effects account for the poverty effects of omitted variables that may be correlated with the included independent variables. Thus, their inclusion eliminates this source of potential bias in the coefficients. However, the inclusion of state fixed effects means that the slope coefficients only reflect variation across counties *within* states, as the state fixed effects absorb differences in area poverty across the nation that occur at the state level.

CTY_TYPE includes dummy variables for: (1) whether a county contained the central city of an MSA; (2) whether the county was a suburb in a large MSA; (3) whether the county was a suburb in a small MSA; and (4) whether the county was a single county MSA. To avoid perfect collinearity, the omitted category is nonmetropolitan counties. We chose a MSA population of 350,000 as the division between large and small MSAs. All else equal, poverty should be higher in central city counties relative to suburban counties if spatial mismatch and neighborhood effects exist. For similar reasons, poverty is expected to be higher in nonmetro counties than suburban counties. However, whether the poverty rate differs between nonmetro counties and central city counties may depend on differences in strong and weak forms of spatial mismatch. Also, population size of metropolitan areas and nonmetro counties is included. Population may be related to factors such as agglomeration and spatial mismatches. Increased population may reduce spatial mismatches, though the potential to reduce spatial mismatches may depend on how increased population size is correlated with distances between residence and employment. Agglomeration economies associated with population would increase average income, possibly reducing poverty by proportionately more than the increase in income.

Demographic variables (DEMOG) include age and racial categories, the percent of families headed by single females, the percent of the population that immigrated between 1985-1990, and education attainment levels. Poverty is expected to be lower for counties with higher education attainment levels, while the percent of families headed by single females is expected to be positively related to poverty. The effect of the population share of recent immigrants is ambiguous. Inclusion of race variables allows for examination of whether poverty differences across racial groups remain after controlling for the potential effects on poverty of other variables correlated with race.

Economic factors (ECON) include county-level measures of the 1988-1990 employment growth rate, one-digit industry shares (minus one), and a measure of recent structural adjustment. A negative sign for employment growth would support the hypothesis that tight labor markets reduce poverty. One-digit industry shares capture the influence of manufacturing (or other sectors) on area poverty with a lower than average coefficient expected for manufacturing. Also included in ECON is recent industrial structural change (ISC), which is measured as the sum of absolute changes in the

share of one-digit industry employment between two periods, divided by two (see Allen and Freeman, 1995). The 1988-1990 ISC measures what share of the labor force would have to shift one-digit sectors such that 1988 and 1990 would have the same one-digit sectoral composition. A positive coefficient would suggest adjustment costs in the reallocation of labor across sectors that worsens the economic outcomes at the lower end, through some combination of increased unemployment and lower wage rates. Labor force participation rates by gender are included in ECON to account for both male and female labor-force participation rates effects.

The reasons for including income (INC) are twofold. First, its resulting coefficient indicates whether higher mean income is associated with lower poverty. Second, and perhaps most importantly, since a large potential source of both poverty rate and income differences across areas may be attributable to differences in local prices, inclusion of area income controls for cost-of-living differences.

III. EMPIRICAL RESULTS

Column (1) in Table 1 presents the unweighted descriptive statistics for the entire sample of 3,023 counties in the 48 contiguous states. Columns (2) and (3) present these statistics separately for nonmetro counties and metropolitan area counties (MSAs), where only about one-fourth of U.S. counties are in MSAs. Columns (4) and (5) present *within metropolitan area* statistics for central city counties (and single county MSAs) and suburban counties.

The unweighted average family poverty rate is 13.0% for the entire sample, but there is significant dispersion across county type.[2] Metro counties had poverty rates that were less than two-thirds of nonmetro poverty rates. Suburban family poverty rates were just one-half that of nonmetro counties and even central city counties and single county MSAs had poverty rates that were about 4 percentage points below nonmetro areas (where central city county and single county MSAs had poverty rates of 10.8% and 10.0% respectively). That is, despite the concerns of policy makers regarding urban and central city poverty (e.g., Bradbury et al., 1996), poverty rates are highest in nonmetro counties.

A comparison of columns (2) and (3) shows that relative to nonmetro counties, MSA counties have higher average income, faster employment growth in the late 1980s, and higher male and female labor force participation. In addition, metro counties experienced smaller sectoral reallocations (1988-90 ISC). For example, it would require 2.8% of the typical MSA's labor-force to change one-digit sectors in 1988 and 1990 to equate industry composition across the two periods, compared to 3.6% for nonmetro counties. Nonmetro counties have relatively higher employment shares in agriculture and lower shares in FIRE and services. Metro counties have higher shares of college graduates, female-headed families, recent foreign immigrants, and workers who commute outside the county, while nonmetro counties have disproportionately more senior citizens (over 65)

and fewer minorities.

Columns (4) and (5) show that *within* metropolitan areas, suburban counties experienced more employment growth and more structural change than central city counties. Yet, central city counties experienced less industrial structural change and the same level of employment growth as nonmetro counties. Suburban counties have a higher employment share in the goods producing sector, but lower shares in trade and services. Male and female labor-force participation rates are higher in suburban areas, while the share of adults with college degrees is higher in central city counties. Central city counties also have higher minority population shares and recent foreign immigrants.

Regarding how these characteristics explain differences in poverty rates across counties, we turn to the regression analysis of equation (1). We use the full sample of counties for the contiguous 48 states, less 86 counties because of sectoral employment nondisclosure problems in constructing the ISC variables (in data appendix available from authors). Table 2 shows the results for various formulations of equation (1), beginning with a very parsimonious specification and then moving towards more complete specifications. The purpose of presenting the alternative specifications is that they help disentangle several closely related effects. For example, many demographic factors affect the poverty rate both directly, and indirectly by influencing labor market outcomes. That is, by considering demographic factors prior to including other variables, the direct effects of the demographic variables versus their indirect effects can be assessed.

Column (1) of Table 1 shows the regression results of the parsimonious specification that only includes county type dummies, MSA population, nonmetro county population, and state fixed effects.[3] MSA population is insignificant while nonmetro county population is negative and statistically significant, suggesting that modest increases in urbanization lower rural poverty. Suburban counties in large MSAs have about 3% lower poverty rates than central city counties and single county MSAs, ceteris paribus.

Comparing MSA poverty to nonmetro poverty is complicated by the positive nonmetro population coefficient. Even so, the average central city county's family poverty rate remains below a nonmetro county's poverty rate up until the nonmetro county's population reaches 85,384 (which rules out all but 65 nonmetro counties). One implication of the county-type dummy coefficients in this simple specification is that the differences in mean poverty rates across county types in Table 1 cannot be simply explained by state fixed-effects or by population.

The specification in column (2) adds demographic variables to the specification in column (1). The R^2 statistic increases roughly from .47 to .83 with the addition of demographic characteristics, illustrating their importance (especially since column (1) had already included state fixed effects). As expected, greater educational attainment reduces poverty. For example, reducing

the high school dropout share of the population by one percentage point while increasing the share of high school graduates by one percentage point implies a 0.4 percentage point reduction in the poverty rate.

Not surprisingly, more female-headed families is positively associated with family poverty rates, where a one-percentage point rise in the share of female-headed families increases the poverty rate by over 0.5%. More children per family, a greater share of the population that are young adults, and an older population (over 60) are all positively related to family poverty rates. After controlling for state fixed effects (which may account for current and residual effects of discrimination at the state level), there is no statistically significant association between the African-American population share and poverty rates, while there is a positive association between non-African-American minority share and the poverty rate. The recent immigrant share is negatively related to poverty rates, suggesting that after controlling for education and ethnic composition, immigration does not further increase poverty.

Column (3)'s specification adds measures of industrial structural change, employment growth, and industry composition to examine how area economic performance influences the poverty rate. In particular, using county level data should provide a much better assessment of the link between area economic performance and the poverty rate than that provided by studies which used data at the multi-state regional level (e.g., Blank and Card, 1993; Triest, 1997). For example, aggregation bias can wash-out important labor market effects in large regions.

As shown in column (3), employment growth is insignificantly related to poverty.[4] These results support claims that an improving macroeconomic climate (e.g., through declining national or regional unemployment rates) is insufficient to reduce poverty rates (Cutler and Katz, 1991; Blank and Card, 1993).[5] As expected, the labor market structural change variable is positive and significantly related to poverty rates. One interpretation is that industrial structural change at the regional level, regardless of its net impact on overall employment growth, creates obstacles for the less-skilled that shifts many families below the poverty threshold. In sensitivity analysis, we also experimented with long-term measures of structural change over the 1985-1990 and 1980-1990 periods, but these variables were insignificant. The insignificance of the longer-term structural change measures suggests that the poverty impact of structural change is not persistent. Finally, counties with above average employment shares in agriculture and services have greater poverty rates, while above average employment shares in goods producing industries and FIRE are associated with lower poverty rates (where the industry composition coefficients are measured relative to public administration, the omitted sector).

Adding the local labor market controls to the specification *increases* the magnitude of the education coefficients, but the magnitudes of the age coefficients decrease. This suggests that the

age variables are correlated with the labor market conditions, with labor market effects ultimately being the causal factor that changes poverty rates.

Column (4)'s specification includes the labor-force participation variables. As expected, both male and female labor-force participation variables are negative and statistically significant. The female coefficient is approximately three times greater in magnitude than the male coefficient, suggesting that reducing barriers for women to enter the labor market would be particularly effective in reducing poverty. To be sure, a one-standard deviation increase in female labor-force participation reduces poverty by about 2.2 percentage points, which is approximately the amount that national family poverty rates increased between 1989-1993, a period of sluggish economic growth. Also, the female-headed family coefficient was unaffected by including female labor-force participation. Hence, we infer that female-headed families face additional constraints beyond just labor force participation.

The magnitude of the education coefficients declined with the addition of the labor-force participation variables. This implies that one avenue through which education reduces poverty is by inducing greater labor-force participation. Also, the age coefficients are now negative and significant, further suggesting that the labor market variables are correlated with county age structure.

The specification in column (5) adds the natural log of average family income. Clearly, counties with higher average incomes should mechanically have lower poverty rates (unless their distribution of income is dramatically different). Yet, by including average income, the effects of some of the other variables will be diluted. For example, one direct avenue that education reduces poverty is by increasing income, where education is the causal factor.

The average family income coefficient is negative and significant, where a one-standard deviation increase in average income is associated with a 3.7 percentage point reduction in poverty. As expected, many of the other coefficients were affected by including income. The effects of labor-force participation were reduced. All of the industry share coefficients are now statistically greater than the share in public administration. Counties with greater shares of employment in the service sectors are associated with higher poverty rates (especially FIRE), while counties with greater shares of employment in goods production and public administration are associated with below average levels of poverty (where these two sectors have the smallest coefficients with the public administration coefficient implicitly equalling zero). Similarly, the magnitude of the education and female-headed share coefficients are reduced in this specification indicating that some of their effects are through their influence on average income. One interesting finding is that the influence of high school/some college is still (very) negatively related to poverty rates (i.e., a one standard deviation increase in the high school graduate share reduces the family poverty rate by 1.8 percentage points).

That is, modest increases in average levels of education have independent effects that reduce poverty even after average income effects are considered. However, the college graduate share is now positive and significantly related to poverty rates. This indicates that after the effects of income are taken into account, there are no further reductions in poverty rates that result from having a greater share of college graduates.[6] These results do not mean that there are no positive virtues of increasing college graduation rates, just that greater education for already "highly-educated" workers is ineffective in reducing poverty because such workers are already above the poverty threshold.

The average family income t-statistic is almost 25, which suggests that income has independent effects beyond those correlated with the other variables. One likely cause is cost-of-living, where a higher cost-of-living is reflected in higher incomes and (mechanically) lower poverty rates.[7]

As before, the MSA population variable slightly complicates interpretation of the county-type coefficients. Specifically, the negative central-city coefficient and the positive MSA population coefficient suggests that central city counties in MSAs of less than 4.2 million people have less poverty than nonmetro counties. Similarly, regardless of population, suburban counties in MSAs of less than 350,000 have less poverty than nonmetro counties. However, the insignificant coefficient for large MSA suburban counties suggests that suburban counties in large metro areas have more poverty than nonmetro counties after all of the other characteristics are accounted for. Overall, these results indicate that except for the very largest MSAs, poverty is not inherently worse in central cities than rural areas. Moreover, central city counties are not predisposed to have more poverty than suburban counties once other factors are considered. Finally, the reduction in the magnitude in the county-type dummy coefficients from columns (1) to (5) indicates that the large differences in the raw averages between metro/nonmetro and central city/suburban counties in Table 1 are mostly explained by differences in their respective characteristics. For example, the results suggest that reducing single-female family headship and increasing high school completion will reduce poverty more than policies designed to offset potential spatial mismatches.

The specification in column (6) considers the issue of regional mobility by adding two measures of mobility: the percent of the 1990 population that lived in the county in 1985 (or 100 minus the percent of residents that migrated to the county in the previous five years), and the percent of the labor force that worked in another county. The results suggest that a greater share of the population that works outside of the county does not reduce poverty. That is, policies that improve public transportation for lower income workers (to reduce spatial mismatch) may not be as effective as policies that improve human capital. The positive percent in the same-county coefficient indicates that counties with greater gross migration rates have *less* poverty. Thus, families moving their residence to where there is greater job availability and better labor market matches can reduce

poverty, implying that policies that reduce household relocation costs and provide better geographic labor-market information merit more attention.

The results in Table 2 suggest that county employment growth on average does not reduce the poverty rate. However, this may be misleading if these effects do not apply equally across county-types or demographic groups. Similar statements can be made about the impact of structural change and education. To explore these possibilities, Table 3 shows the results from several different regressions that were conducted by adding various interaction variables to the specification shown in column (6). Unless otherwise stated, the findings for the other control variables were not changed in this analysis.

The right-hand-side of Panel A in Table 3 shows the influence of adding two race-employment growth interactions to the model. The F-statistic indicates that these two interaction variables are jointly statistically significant. The African-American-employment growth interaction is negative, which implies that despite employment growth having little impact on average, it appears to relatively reduce African-American poverty rates. Hence, it may be possible that targeted economic development efforts focussed on African-Americans may succeed in reducing poverty. Conversely, the non-African-American minority-employment growth interaction variable is positive, suggesting that this population group benefits less from employment growth than whites. (Note that adding this interaction coefficient to the main employment growth coefficient still suggests that the employment point estimate for the Non-African-American minority group is negative: -0.26= -0.34+0.08.)

The left-hand-side of Panel A shows the results of adding employment growth interacted with the county-type variables. The F-statistic indicates that these interaction variables are jointly insignificant. Thus, the impact of employment growth does not appear to vary across metro and nonmetro areas or across suburbs and central cities *within* MSAs, suggesting that economic development policies should not be targeted to particular types of counties. For example, an enterprise zone policy aimed to increase employment in central cities or in rural areas may be ineffective in helping those at the bottom of the income distribution (on average).

Panel B shows how the impact of education varies across race and county type. The left-hand side of Panel B shows that both race-education interaction coefficients are negative, where the t-statistics and F-statistics indicate that the interactions are jointly significant.[8] This suggests that increasing educational attainment is especially beneficial in reducing minority poverty rates. The left-hand side of Panel B shows the education-county type interactions, where the F-statistic indicates that these interactions are jointly significant. The positive coefficients (with one exception) indicate that greater education ameliorates nonmetro poverty more than MSA poverty, particularly relative to central city counties. Overall, Panel B implies that poverty rates can be reduced through

more educational attainment in nonmetro areas and for minorities-- but this policy would be less effective for whites residing in MSAs.

Panel C shows how education, racial composition, and county type interact with industrial structural change. The upper right-hand-side shows that the high school-ISC interaction coefficient is negative and significant. That is, counties with modestly higher educational attainment (fewer high school dropouts and more high school graduates) suffer smaller increases in poverty rates as a result of structural change. The college graduate interaction was insignificant. This does not imply that college graduates are not negatively affected by structural change, just that such families are rarely pushed below the poverty threshold. The lower right-hand-side shows the interaction between racial composition and structural change. As is the case for employment growth, African-American family poverty rates appear to be more negatively influenced by labor market structural change than are whites and other minorities. Conversely, the non-African-American minority interaction is statistically insignificant. Finally, the left-hand side of Panel C indicates that the impact of structural change does not vary either across MSAs or *within* MSAs, which is consistent with the employment growth-county-type findings.

IV. SUMMARY AND CONCLUSION

Using data for all counties in the contiguous 48 states, this paper attempted to ascertain the reasons for differences in area poverty across the United States. Specifically, the roles of both person-specific and place-specific characteristics in influencing area poverty were assessed.

Higher area poverty was found to be associated with single-female family headship and lower educational attainment levels. After controlling for these and other factors, poverty was found to be higher for non-African-American minorities, but not for African-Americans. Regarding area economic performance, recent employment growth on average did not reduce the poverty rate; however, employment growth did relatively (and absolutely) reduce poverty among African-Americans. Structural change increased poverty in the short run, with its effects disappearing within five years. Nevertheless, structural change relatively hurt African-Americans and those without high school degrees. Greater employment in goods producing sectors also was associated with lower poverty. Higher labor-force participation, particularly among females, was associated with lower poverty rates.

The results did not support the existence of spatial mismatch effects in central cities. If anything, the results suggest the existence of spatial mismatches in the form of geographic isolation of residents in nonmetro areas. Also, recent structural change increased poverty more in nonmetro areas. On the other hand, educational attainment reduced poverty more in nonmetro counties than in metro area counties.

Regarding policy conclusions, the results point to increasing education as key to reducing

poverty, particularly for minorities and residents of nonmetro counties. Along with educational attainment, central city poverty appears more related to female family headship and the number of children in the family than to strong forms of spatial mismatches. Nevertheless, targeted economic development and assistance for displaced workers are suggested by the results to reduce poverty among African-Americans. Similarly, policies that increase labor force participation among females would appear warranted. More research is needed into whether spatial mismatch effects in nonmetropolitan areas are related to a lack of labor market information, less transferable job skills, or rational choices by nonmetro residents.

ENDNOTES

[1]All of the variables in equation (1) are from the 1990 *Census of Population* with the exception of the 1988-1990 employment growth and 1988-1990 structural change (ISC) variables in the ECON vector. These two variables are respectively from U.S. Department of Labor, USA Counties CD-ROM and U.S. Department of Commerce, Regional Economic Information System.

[2]For comparison, family poverty rates were 10.3% nationally in 1989. Since 1960, national family poverty rates have ranged from 18.1% in 1960 to 8.8% in 1973-74, and were 10.8% in 1995 (*U.S. Department of Commerce, Bureau of the Census*).

[3]Including MSA population for MSA counties and nonmetro county population for nonmetro counties is the equivalent of interacting one of the MSA county type dummies with MSA population and a nonmetro county dummy with nonmetro population (where the nonmetro county dummy reflects the omitted county type).

[4]Employment growth between 1985-1990 and 1980-1990 were also added to the model as alternative measures of employment growth. Nonetheless, these measures tended to be positively related to poverty rates, suggesting that *long-run* employment growth does not reduce poverty rates, perhaps because in-migrants fill many of the new jobs.

[5]These results are inconsistent with Bartik's (1996) conclusions for overall MSA poverty rates. However, Bartik used a much different methodology with a different measure of poverty (125% of the poverty line), and used different geographic units of observation-- entire *MSAs* versus metro and nonmetro *counties*). More consistent with our findings is Madden (1996), who found an insignificant relationship between ten year changes in overall MSA employment growth and MSA poverty rates.

[6]The positive college education coefficient can reflect a labor demand shift away from less-skilled workers in counties with greater shares of college graduates, which would raise poverty rates.

[7]For example, housing prices and cost of living (income) are generally positively related to population. In column (4), such an effect appears to be reflected by the negative and statistically significant MSA and nonmetro county population coefficients. In column (5), when income is added

to the model, the MSA population coefficient becomes positive and significant, while the nonmetro population coefficient's magnitude is only about 4% as large as in column (4). Similarly, the magnitudes of the MSA county-type coefficients are greatly reduced when average income is included, which is also consistent with a cost-of-living hypothesis.

[8]The main African American coefficient (not shown) is now positive and significant (t=5.61).

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Table 1
Descriptive Statistics[a]

Variable	(1) Full Sample	(2) Nonmetro Counties	(3) Metro Counties	(4) Central City Counties	(5) Suburban Counties
Dependent Variable:					
Family Poverty Rate	13.04 (7.00)	14.35 (7.12)	8.97 (4.65)	10.42 (4.59)	7.89 (4.40)
Metro/Nonmetro:					
Single County MSA	0.053 (0.22)	na	0.22 (0.41)	0.51 (0.50)	na
Small MSA Suburban County[b]	0.03 (0.17)	na	0.12 (0.33)	na	0.21 (0.41)
Large MSA Suburban County[c]	0.11 (0.31)	na	0.45 (0.50)	na	0.79 (0.41)
Central City County[d]	0.05 (0.22)	na	0.21 (0.41)	0.49 (0.50)	na
MSA Population	na	na	1,067,578 (1,369,440)	692234 (1,332,789)	1,350,654 (1,329,534)
Nonmetro County Population	na	23,586 (22,972)	na	na	na
Economic Development:					
1988-90 ISC	0.034 (0.018)	0.036 (0.019)	0.028 (0.013)	0.022 (0.009)	0.032 (0.015)
Log Avg Family Income	10.40 (0.22)	10.33 (0.16)	10.63 (0.21)	10.61 (0.16)	10.64 (0.23)
1988-90 Employ Growth[e]	0.07 (0.12)	0.07 (0.13)	0.09 (0.09)	0.07 (0.06)	0.10 (0.11)
%Civ. Fem. LF Participation	51.94 (7.14)	50.22 (6.56)	57.29 (6.17)	56.72 (5.30)	57.7 (6.7)
%Civ. Male LF Participation	70.35 (7.19)	68.97 (7.05)	74.64 (5.82)	73.35 (4.74)	75.6 (6.4)
Industry Composition:					
%Agric., Forest, Fisheries	8.6 (8.8)	10.6 (9.2)	2.6 (2.2)	2.2 (2.2)	2.9 (2.3)
%Goods Producing	27.2 (10.3)	27.5 (10.9)	26.0 (8.0)	23.4 (7.0)	28.0 (8.1)
%Transportation, Public Utilities	6.5 (2.0)	6.3 (2.0)	7.1 (2.1)	6.7 (1.7)	7.4 (2.3)
%Trade	19.7 (3.5)	19.1 (3.5)	21.5 (2.5)	22.3 (2.3)	21.0 (2.5)
%FIRE	4.4 (1.8)	3.8 (1.3)	6.1 (2.2)	6.4 (2.2)	5.9 (2.1)
%Services	29.1 (5.9)	28.3 (5.7)	31.7 (5.9)	34.3 (5.1)	29.7 (5.6)

%Public Admin.	4.8 (3.0)	4.7 (2.8)	5.1 (3.3)	4.9 (2.9)	5.2 (3.6)
Human K/Demographic:					
%High Sch. Grad./Some Coll.	56.0 (7.6)	55.8 (8.0)	56.7 (6.1)	56.0 (5.8)	57.2 (6.4)
%4 Yr. College Grad.	13.5 (6.6)	11.8 (4.9)	18.8 (8.3)	20.3 (6.7)	17.7 (9.2)
%Female Headed Family	12.8 (5.4)	12.3 (5.4)	14.3 (4.8)	16.7 (5.0)	12.6 (3.8)
%18-24 yrs old	9.2 (3.7)	8.7 (3.6)	10.7 (3.5)	11.5 (3.8)	10.0 (3.2)
%60-64 yrs old	4.7 (1.0)	4.9 (1.0)	4.2 (0.8)	4.2 (0.8)	4.1 (0.9)
%65 and over	15.0 (4.4)	15.9 (4.2)	11.9 (3.4)	12.5 (3.4)	11.5 (3.4)
Avg. Children per fam.	0.91 (0.14)	0.91 (0.15)	0.90 (0.13)	0.90 (0.12)	0.89 (0.13)
%African American	8.58 (14.25)	8.16 (14.95)	9.89 (11.76)	12.00 (12.23)	8.31 (11.15)
%Non Afr. Amer. Min.	3.90 (7.66)	3.85 (8.25)	4.03 (5.43)	5.73 (6.75)	2.75 (3.69)
%1985-90 For. Immigrants	0.48 (0.97)	0.34 (0.72)	0.93 (1.42)	1.32 (1.69)	0.63 (1.09)
Mobility Measures:					
%Same County in 1985	79.78 (8.28)	80.90 (7.64)	76.30 (9.19)	78.46 (7.95)	74.67 (9.72)
%Work Outside County	27.89 (17.36)	25.92 (15.45)	34.05 (21.14)	14.58 (10.72)	48.73 (13.97)
N	3023	2288	735	316	419

a. The total sample originally had 3109 counties, but 86 counties were omitted due to data availability as described in the Appendix.

b. Suburban MSA counties are defined as all counties in a multiple county MSA that do **not** contain the largest city in the metropolitan area. A small MSA is defined as a total MSA population of less than 350,000.

c. Suburban MSA counties are defined as all counties in a multiple county MSA that do **not** contain the largest city in the metropolitan area. A large MSA is defined as a total MSA population of greater than 350,000.

d. A central city MSA county is defined as the county containing the largest city in a multi-county MSA.

e. Change in employment during the time span divided by the beginning of the period level of employment, or the employment growth ratio.

Table 2
Poverty Regression Results[a]

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Metro/Nonmetro:						
Single County MSA	-4.63 (11.42)	-2.81 (11.28)	-1.84 (7.06)	-1.31 (5.57)	0.04 (0.20)	-0.08 (0.37)
Small MSA Suburban County[b]	-5.74 (11.05)	-2.10 (7.38)	-1.75 (6.29)	-1.39 (5.85)	-0.51 (2.25)	-0.58 (2.55)
Large MSA Suburban County[c]	-7.82 (19.17)	-2.44 (9.60)	-1.99 (7.91)	-1.39 (6.23)	-0.19 (0.91)	-0.23 (1.10)
Central City County[d]	-4.44 (12.18)	-3.34 (11.83)	-2.71 (9.30)	-1.98 (7.97)	-0.76 (3.45)	-0.88 (3.87)
MSA Population	7.3E-8 (0.44)	-2.2E-7 (2.66)	-5.3E-8 (0.67)	-1.3E-7 (1.76)	1.8E-7 (2.32)	1.7E-7 (2.20)
Nonmetro County Population	-5.2E-5 (11.11)	-3.3E-5 (9.56)	-2.0E-5 (6.43)	-1.5E-5 (5.41)	-6.3E-7 (0.27)	-7.7E-7 (0.32)
Economic Development:						
1988-90 ISC			14.24 (4.58)	8.02 (2.92)	4.80 (2.16)	5.99 (2.66)
Log Avg Family Income					-16.97 (24.68)	-17.24 (25.00)
1988-90 Employ Growth[e]			-0.71 (1.21)	-0.38 (0.73)	-0.26 (0.57)	-0.14 (0.32)
%Civ. Fem. LF Participation				-0.31 (16.44)	-0.23 (14.73)	-0.22 (14.16)
%Civ. Male LF Participation				-0.12 (6.78)	-0.06 (4.57)	-0.07 (5.49)
Industry Composition:						
%Agric., Forest, Fisheries			0.05 (1.47)	0.16 (5.87)	0.18 (8.02)	0.17 (7.74)
%Goods Producing			-0.14 (5.68)	-0.03 (1.78)	0.04 (2.68)	0.03 (1.91)
%Transportation, Public Utilities			0.02 (0.58)	0.01 (0.44)	0.12 (4.54)	0.11 (4.21)
%Trade			-0.03 (0.79)	0.07 (2.85)	0.10 (4.55)	0.10 (4.61)
%FIRE			-0.24 (4.38)	-0.07 (1.58)	0.19 (4.93)	0.19 (4.98)
%Services			0.06 (1.75)	0.06 (2.68)	0.08 (4.43)	0.07 (4.09)
%Public Admin.			na	na	na	na
Human K/Demographic:						
%High Sch. Grad./Some Coll.		-0.42 (21.80)	-0.43 (22.72)	-0.32 (19.62)	-0.24 (18.48)	-0.22 (16.84)

%4 Yr. College Grad.		-0.27 (21.47)	-0.36 (19.42)	-0.17 (9.52)	0.10 (5.98)	0.13 (7.38)
%Female Headed Family		0.54 (17.81)	0.56 (18.14)	0.56 (21.01)	0.42 (17.41)	0.40 (16.20)
%18-24 yrs old		0.14 (6.08)	0.05 (1.73)	-0.12 (4.19)	-0.19 (9.15)	-0.16 (7.55)
%60-64 yrs old		0.64 (4.50)	0.34 (2.45)	-0.37 (3.06)	-0.28 (2.76)	-0.28 (2.71)
%65 and over		0.14 (4.39)	0.01 (0.35)	-0.27 (8.49)	-0.30 (10.92)	-0.32 (11.42)
Avg. Children per fam.		11.26 (10.50)	7.48 (7.19)	3.39 (3.62)	3.12 (3.92)	2.94 (3.74)
%African American		-0.01 (1.02)	-0.03 (3.29)	-0.03 (3.28)	0.01 (1.05)	0.01 (1.15)
%Non Afr. Amer. Min.		0.12 (8.50)	0.10 (6.79)	0.10 (7.97)	0.10 (9.38)	0.10 (9.47)
%1985-90 For. Immigrants		-0.37 (3.01)	-0.49 (4.17)	-0.30 (2.61)	-0.22 (2.32)	-0.18 (1.90)
Mobility Measures:						
%Same County in 1985						0.05 (4.83)
%Work Outside County						0.006 (1.74)
State Fixed Effects	Y	Y	Y	Y	Y	Y
R^2	0.468	0.831	0.855	0.892	0.923	0.924
N	3023	3023	3023	3023	3023	3023

a. The t-statistics use the White heteroskedasticity correction.
b. Suburban MSA counties are defined as all counties in a multiple county MSA that do **not** contain the largest city in the metropolitan area. A small MSA is defined as a total MSA population of less than 350,000.
c. Suburban MSA counties are defined as all counties in a multiple county MSA that do **not** contain the largest city in the metropolitan area. A large MSA is defined as a total MSA population of greater than 350,000.
d. A central city MSA county is defined as the county containing the largest city in a multi-county MSA.
e. Change in employment during the time span divided by the beginning of the period level of employment, or the employment growth ratio.

Table 3
Alternative Employment, Education, Race, and Structural Change Interactions[a]

Panel A
Employment Interactions

Employ Growth x Race		Employ Growth x County Type	
1988-1990 Emp. Growth x %African American	-0.04 (1.77)	1988-1990 Emp. Growth x Single Cty MSA	1.81 (1.03)
1988-1990 Emp. Growth x %Non Afr. Amer. Min.	0.08 (3.43)	1988-1990 Emp. Growth x Small MSA Suburb	-0.78 (0.45)
1988-1990 Emp. Growth	-0.34 (0.88)	1988-1990 Emp. Growth x Large MSA Suburb	0.57 (0.59)
F-Interactions (p-value)	8.53 (p=.0003)	1988-1990 Emp. Growth x Central City Cty	2.99 (0.85)
		1988-1990 Emp. Growth	-0.21 (0.41)
		F-Interactions (p-value)	0.47 (p=.761)

Panel B
Education Interactions

Education x Race		Education x County Type	
%HS-Some College x %African American	-0.002 (4.49)	%HS-Some College x Single Cty MSA	0.02 (0.80)
%HS-Some College x %Non Afr. Amer. Min.	-0.004 (5.98)	%HS-Some College x Small MSA Suburb	0.08 (2.29)
%College Grad. x %African American	-0.002 (3.72)	%HS-Some College x Large MSA Suburb	0.09 (4.56)
%College Grad. x %Non Afr. Amer. Min.	-0.004 (4.16)	%HS-Some College x Central City Cty	0.18 (5.22)
%High School/Some College	-0.18 (15.95)	%College Graduate x Single Cty MSA	0.02 (0.65)
%College Graduate	0.15 (8.93)	%College Graduate x Small MSA Suburb	-0.004 (0.11)
F-Interactions (p-value)	21.0 (p=.0001)	%College Graduate x Large MSA Suburb	0.06 (3.81)
		%College Graduate x Central City Cty	0.07 (2.27)
		%HS-Some College	-0.22 (21.30)
		%College Graduate	0.11 (6.08)
		F-Interactions (p-value)	7.56 (p=.0001)

Panel C
Structural Change Interactions

ISC x Education		ISC x County Type	
1988-90 ISC x HS-Some College	-1.11 (4.65)	1988-90 ISC x Single Cty MSA	1.25 (0.08)
1988-90 ISC x College Graduate	0.15 (0.35)	1988-90 ISC x Small MSA Suburb	4.40 (0.40)
1988-90 ISC	63.67 (5.20)	1988-90 ISC x Large MSA Suburb	-10.24 (1.15)
F-Interactions (p-value)	11.60 (p=.0001)	1988-90 ISC x Central City Cty	11.26 (0.46)
		1988-90 ISC	6.32 (2.68)
ISC x Race		F-Interactions (p-value)	0.45 (p=.776)
1988-90 ISC x %African American	0.37 (2.79)		
1988-90 ISC x %Non Afr. Amer. Min.	-0.42 (1.14)		
1988-90 ISC	3.46 (1.19)		
F-Interactions (p-value)	5.14 (p=.006)		

a. The coefficients reflect the estimates when the interaction variables are added to the model shown in

column 6 of Table 2.