Does a Rising Tide Lift All Metropolitan Boats? Assessing Poverty Dynamics by Metropolitan Size and County Type*

by

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Abstract. This paper empirically examines the relationship between U.S. metropolitan county employment growth and poverty in the 1990s. In particular, the growth-poverty link is examined across metropolitan size, and across metropolitan county type. Differential effects are found which are consistent with the existence of spatial mismatch in large metropolitan areas. Own-county employment growth significantly reduces central county poverty in large metropolitan areas relative to suburban county poverty. There are not distinct central-county effects in medium and small metropolitan areas. Only in small metropolitan areas does suburban employment growth reduce poverty. Employment growth has stronger antipoverty effects in all large metropolitan counties with a larger black population share, in which there is not a differential central-county response with the black share of the population.

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1. Introduction

The red-hot labor market in the latter 1990s produced a sharp decline in the U.S. poverty rate. This episode apparently re-established the favorable link between growth and poverty-rate reduction that had seemingly been nonexistent from the 1970s through the early 1990s (Blank and Card, 1993; Freeman, 2001). It has yet to be established though whether strong growth reduced metropolitan area poverty, particularly for high-poverty pockets in large metro areas. A finding of a strong link between growth and reduced poverty in high-poverty pockets would suggest the need for place-based economic development policies within metropolitan areas.

Metropolitan poverty rates have historically been highest in central cities, though poverty rates are now also alarmingly high in many inner-suburbs (Jargowsky, 2003). It might be expected that the extremely tight labor markets of the late 1990s especially reduced poverty in central counties since employers may have been forced to hire the least skilled as the available labor pool shrank.[1] However, the spatial mismatch hypothesis suggests that the poor in central cities face residential mobility, transportation, and information barriers that keep them from the job-rich suburbs (Zax and Kain, 1996; Glaeser et al., 2000; Glaeser and Kahn, 2003). Thus, rapid metropolitan job growth may not impact high-poverty pockets in and near the central urban core.

Possible discrimination by suburban employers may also reduce the benefits of the robust economy for poor central-city residents and those in poverty pockets (Holzer and Reaser, 2000). Likewise, neighborhood effects in which peer pressure, the lack of employed role models, and deficient labor-market information networks may further limit the gains (Weinberg, 2004; Weinberg et al., 2004). In addition, there may increasingly be a mismatch between skills required in newly created metro jobs and those possessed by existing residents (Bauder and Perle, 1999). Thus, despite the national antipoverty benefits of strong labor market performance, poverty reductions may have been spread unevenly across and within metropolitan areas.

To illustrate these patterns, Panel A of Table 1 provides descriptive statistics for 1989 and

[1]For supporting evidence that positive labor demand shocks disproportionately favor less-skilled workers, or workers in economic lagging areas, see Katz and Krueger (1999); Bound and Holzer (2000); Dworak-Fisher (2004); and Weinberg et al. (2004).

1999 county poverty rates and 1995-2000 job growth.[2] Overcoming sluggish conditions early in the decade, the average county poverty rate across the nation declined approximately 0.6 percentage points during the 1990s. Yet, despite having faster than average job growth in the latter 1990s, poverty rates in metropolitan areas on average barely budged, slightly increasing in central city counties.

Part of the explanation for increased poverty in central cities, despite their near national average job growth, may rest on a mismatch between the low skills of many urban-core residents, and the relatively high-skill demands of nearby central-county employers (Andersson et al., 2003), the so-called spatial-skills mismatch hypothesis (Holzer, 1991), in which geographic distance reduces labor market matching. To be sure, it would be expected that the problem of spatial mismatch is most pressing in the larger metropolitan areas (Bartik, 2001). The results in Panel B of Table 1 support this notion as poverty rates increased in the largest metropolitan areas (MAs) (above 1.5 million), despite having considerably faster job growth than medium MAs and especially small MAs. By contrast, consistent with a lack of spatial labor-market barriers, the smallest MAs (less than 350,000) had sharper declines in poverty rates, while medium MAs also had a decline in average poverty-rates. This pattern suggests that labor-market accessibility tempers the antipoverty benefits of a strong labor market on the urban poor, especially in large MAs.

Therefore, this study assesses how the strong labor-markets of the late 1990s affected 1999 metropolitan-area poverty. In assessing this issue, we take advantage of the diverse outcomes across small, medium, and large metropolitan areas (MAs). Use of small MAs is valuable because they are understudied in general, and their inclusion provides somewhat of a natural experiment because they should have fewer problems associated with spatial mismatch than larger MAs. For example, although smaller MAs may not experience problems of spatial mismatch, they could still suffer from neighborhood effects and overall skill mismatches. In addition, by examining data at the county level rather than the MA level, we are able to take

[2] Single-county MAs are also reported in Table 1 because they contain a mixture of suburban and central-city characteristics. Yet, it will be apparent that these counties are primarily located in small metropolitan areas and their characteristics much more closely resemble central counties than suburban counties.

advantage of the wide range of heterogeneity between central and suburban counties that exists both generally and across different MA-size categories. Finally, this approach also allows us to assess whether there is a need for a place-based emphasis in formulating policy based on the underlying community and neighborhood attributes of the region (e.g., Blank, 2004).

In what follows, the next section briefly highlights existing explanations regarding the link between metropolitan employment growth and poverty. Section 3 develops and implements an empirical model of metropolitan area poverty, while empirical results follow in section 4. The paper concludes by summarizing the primary findings and discussing the policy implications.

2. Metropolitan Employment Growth and Poverty

Metropolitan area employment growth reduces poverty to the extent that employment growth represents increased labor demand that creates jobs and increases wages for its original residents below the poverty line (Bartik, 2001). However, the poverty impact will be mitigated to the extent that in-migrants take the new jobs (Levernier et al., 2000). This likely depends on the racial and skills composition of the metropolitan area labor force, the labor force attachment of metropolitan residents, and the spatial-skills distribution of jobs and residents.

Perhaps the most prominent explanation for higher inner city poverty is what has become known as the spatial-skills mismatch, or spatial-mismatch, hypothesis.[3] A characteristic of modern North American economies is the decentralization of employment and population in MAs (Ingram, 1998). Suburbanization has been characterized by the emergence of suburban job centers (McMillen and McDonald, 1998) and development of edge cities (Henderson and Mitra, 1996). According to Glaeser and Kahn (2001), in 1996 the median metro resident lived farther than nine miles from the city center and only 16 percent of jobs were located within a three-mile radius of the city's geographic center. Potential explanations for suburbanization include innovations in transportation, higher inner-city crime and taxes, land-price differentials, suburban proximity to consumer markets, and a desire to avoid interactions with minorities (Mieszkowski and Mills, 1993; Raphael et al., 2000).

[3] Surveys of the spatial mismatch hypothesis can be found in Holzer (1991), Kain (1992), Ihlanfeldt and Sjoquist (1998), and Gobillon, Selod, and Zenou (2003).

Metropolitan decentralization increased geographic distance between jobs and residence for many, particularly for minorities residing in the inner city of large MAs. For example, the shift in jobs has particularly been away from certain groups such as blacks (Brueckner and Zenou, 2003; Dworak-Fisher, 2004), in which there has been more decentralization of low-skilled jobs than high-skilled jobs (Stoll, 1998). Incomplete adjustment in terms of intra-metropolitan commuting and migration of central city residents lead to a permanent increase in distance between location of jobs and residence, particularly for low-skilled minority populations. The excess labor supply pool in central cities manifests itself in lower employment rates, lower wage rates, and higher poverty rates. In-migrants to the MA are more likely to take the newly created suburban jobs than are central-city residents (Sawicki and Moody, 1997).

Many hypotheses have been put forth to explain the incomplete commuting and migration adjustment process. Inaccessible public transportation (Stoll et al., 2000) and a lack of automobile ownership (Raphael and Rice, 2002; Holzer et al., 2003) limit the commuting response of central-city residents to the shift in jobs to the suburbs. Even when transportation is available, the wage rate may be too low to justify the higher commuting costs. The lesser-educated and low-skilled are not only most likely to be adversely affected by suburbanization, they are most likely to face transportation constraints that limit their adjustment (Dworak-Fisher, 2004). Relocation to the suburbs by central city minorities is hindered to the extent that housing discrimination against minorities (Brueckner and Martin, 1997; Brueckner and Zenou, 2003) and land-use restrictions (Holzer et al., 2003) exists in the suburbs.

In addition, information about jobs decays with distance (Wasmer and Zenou, 2002). For one, suburban firms may only advertise locally (Turner, 1997). Transportation constraints and housing discrimination also may cause minorities to search less intensively in suburban labor markets (Stoll and Raphael, 2000; Gobillon et al., 2003). In fact, Stoll and Raphael (2000) report that blacks and Latinos often search where employment growth is low, while whites search where employment opportunities are more abundant. Consistent with this outcome, Smith and Zenou (2003) suggest that the short-run gains of low land rent and large housing consumption outweigh the long-run gains of moving closer to where jobs are plentiful, in which central-city

residents then rationally choose a lower search intensity.

Job discrimination is another potential source of lower employment, lower wages, and higher poverty among central city minorities. In a study of the Atlanta, Boston, Detroit, and Los Angeles MAs, Stoll et al., (2000) found that blacks had more difficulty in obtaining employment in integrated and white suburbs. As a potential component of spatial mismatch, suburban employers also may perceive commuters as less productive (Zenou, 2002), view central city residents in general as more unproductive or criminal (Zenou and Boccard, 2000), or discriminate against minorities (Holzer and Reaser, 2000). Minorities then may not search in such hostile environments (Sjoquist, 2001). Yet, Raphael et al. (2000) report that the probability of discrimination against blacks by firms with whites in charge of hiring is no greater in suburbs than central cities.

Immergluck (1998) found that race and occupation barriers reduced black employment rates more than spatial mismatch. Similarly, Bauder and Perle (1999) suggest that in addition to spatial mismatch, the growing demand for skills in urban labor markets over time creates a skills mismatch for blacks, which as a group lag other population subgroups in their job skills and educational attainment. In a study of Houston and Boston, Cohn and Fosset (1996) found little evidence that blacks were disadvantaged in spatial proximity to jobs. Instead, they argue that lower employment rates of blacks were attributable to discrimination or changes in occupational mix that require more human capital.

Other studies contend that social isolation and racial segregation underlie inner city poverty more than spatial isolation. Cutler and Glaeser (1997) report that blacks are worse off in segregated neighborhoods than in integrated neighborhoods, in which they surmise part of the explanation may be attributable to a lack of positive role models for segregated neighborhood youth. Similarly, Weinberg et al. (2004) report large effects of neighborhood social characteristics on labor market attachment, with large nonlinear effects found for the worst neighborhoods. Social isolation of central city residents can affect their employment outcomes through the lack of personal connections to those employed, lack of role models and mentors, and lack of information on jobs (Kasinitz and Rosenberg, 1996).

To the extent the above factors exist, overall metropolitan area job growth is less likely to reduce poverty, with new in-migrants more likely taking newly created jobs, rather than the poor residents. In particular, we expect spatial mismatch to be more prevalent in larger MAs. Social isolation and racial segregation, which may produce low labor market attachment through neighborhood effects, also may be more prevalent in larger areas. Thus, residents living in the core of large MAs may be more dependent upon nearby employment growth, than overall metropolitan employment growth. Yet, a more general (non-spatial) mismatch between the skill requirements of newly created jobs and skills possessed by subgroups, such as blacks, may weaken the general inverse growth-poverty link both across and within *all* MAs.

3. Empirical Model and Implementation

The determination of metropolitan poverty rates can be conceptualized as either an equilibrium process, in which poverty rates respond quickly to exogenous socioeconomic shocks and trends, or as a slower, disequilibrium adjustment process. Disequilibrium adjustment implies that poverty rates not only relate to current (or very recent) factors, but they also depend on their history. To allow for both possibilities, we nest the equilibrium-adjustment process within the disequilibrium approach and test for the appropriate specification.

Allowing for disequilibrium adjustment is important because of the potential existence of self-perpetuating effects in high- (and low-) poverty areas. The poverty status of a household in any given year tends to persist, while there also is persistence for workers who have low-wage jobs.[4] There also could be enduring neighborhood effects at the community level that affect adjustment to changing conditions (Aaronson, 2001; Weinberg et al., 2004).[5] For example, migration is inversely related to human capital, which implies that disadvantaged households will be less likely to leave their current location (Bound and Holzer, 2000; Yankow, 2003).

[4]Andersson et al. (2003) found that 54 percent of low-wage workers persistently remained in low-wage employment when comparing 1996-1998 to 1999-2001. Stevens (1999) also finds about 30 percent of white households and 50 percent of black households that fall into poverty one year remain in poverty for at least 5 of the following 10 years.

[5]Even under conditions of declining preferences for racial discrimination and convergence in racial income levels, Sethi and Somanathan (2004) provide a theoretical explanation for the continuing high levels of residential segregation that underlie much of the neighborhood effects and spatial-mismatch literatures. Nonetheless, Page and Solon (2003) argue that neighborhood effects are mostly spurious, and relate more to urban-wage advantages and the high propensity to live in an urban area if that is where someone spent their childhood.

Another consideration is that while rapid economic growth may attract new migrants, it likely only occurs after a delay due to moving costs and imperfect information across regions. Yet, the eventual increase in labor supply reduces wages and increases the competition for new jobs faced by the original-poor residents. In the interim period, many of the underclass may gain needed work experience, which *permanently* lifts them out of poverty, indicating that only including measures of current employment growth may be inadequate.

The disequilibrium process we use is the partial-adjustment model (Greene, 1997), which has been used in the welfare recipient and other regional poverty studies (e.g., Gundersen and Ziliak, 2004). Given the region's socioeconomic characteristics, X_t, the model assumes that in year t, region i has an "equilibrium" or expected poverty rate, POV_t^*. That is, there are forces that push the poverty rate to POV_t^* as shown in equation (1):

(1) $POV_{it}^* = \beta X_{it}$,

where β represents the coefficients. Dropping the subscript i, sluggish adjustment means that the *actual* poverty rate in year t (POV_t) only partially adjusts from the previous period some fraction, α ($0 \leq \alpha \leq 1$), towards the equilibrium rate:

(2) $POV_t - POV_{t-1} = \alpha(POV_t^* - POV_{t-1})$.

Combining equations (1) and (2), the actual poverty rate in year t can be written as:

(3) $POV_t = (1-\alpha)POV_{t-1} + \alpha\beta X_t$.

The short-run poverty response to a change in the X variables is αβ, which are coefficients for the explanatory variables when regressing the poverty rate in year t on the lagged poverty rate and X_t.[6] A larger coefficient on POV_{t-1} signals more sluggish adjustment to socioeconomic shocks and trends.[7] Statistical significance of the lagged poverty-rate would indicate a disequilibrium process, and a rejection of the equilibrium hypothesis (which we find and report

[6]Note that by definition, in long-run equilibrium, POV_t equals POV_{t-1}. Hence, the long-run equilibrium response to a change in an explanatory variable is αβ/α, with (1-α) being the regression coefficient on the lagged-poverty rate. We calculated the long-run equilibrium responses for variables of most interest and tested their significance (see Kmenta, 1986, p. 487) and found that their absolute and relative significance essentially matched that for the short run. For those who prefer examining the *change in poverty rates,* equation (3) can be interpreted in that fashion by simply subtracting POV_{t-1} from both sides:

$POV_t - POV_{t-1} = \alpha POV_{t-1} + \alpha\beta X_t$.

[7]Another advantage of controlling for the lagged poverty rate is it also helps control for county "fixed effects" that persistently lead to high or low county poverty, *ceteris paribus*.

in the next section).

We examine the 824 MA counties as defined for the 2000 Census for the lower 48 states. By using counties, we assess areas that are large enough to reflect *intra-metropolitan* labor markets, which is consistent with Dworak-Fisher's (2004) finding of incomplete mobility and adjustment of less-skilled workers across metropolitan counties (also see Weinberg, 2004). Using entire metropolitan areas would obscure the tremendous within-MA heterogeneity we are trying to uncover. Because the transportation costs that help create spatial mismatch rise with population, we separately examine poverty rates in large MAs with a year-2000 population greater than 1.5 million, in medium MAs with a population between 350,000 and 1.5 million, and small MAs with a population less than 350,000. For example, Bartik (2001) notes that congestion costs begin to limit *intra*-metropolitan labor markets at a population of about 800,000, while Weinberg (2004) finds that spatial mismatch effects are not so apparent when MA population falls below 500,000 to 1 million. Thus, we anticipate that large and small metropolitan models will display very different patterns, with intermediate effects for medium-sized MAs.

Table 2 lists the variables used in the empirical specification.[8] The causal variables are standard socioeconomic and county-type measures, which are fairly self-explanatory. Most of our attention is on the role of economic variables, in particular the job growth measures. The following model is estimated separately for each of the MA size categories (county i in state s):

$$(4)\ POV_{is1999} = \alpha 1 POV_{is1989} + \theta 1 AVGNEIGBORPOV_{is1989} + \boldsymbol{\varphi 1}\ \mathbf{ECON}_{is} + \boldsymbol{\beta 1 CTY\_TYPE}_{is} + \boldsymbol{\gamma 1}\ \mathbf{DEMOG}_{is} + \sigma_s + \varepsilon_{is}.$$

The dependent variable is the overall 1999 county person poverty rate. The regression coefficients are represented by $\alpha 1$, $\theta 1$, $\boldsymbol{\beta 1}$, $\boldsymbol{\gamma 1}$, and $\boldsymbol{\varphi 1}$, whereas, σ_s denotes the state-fixed effect and ε is the error term. AVGNEIGHBOR is the average 1989 poverty rate in contiguous counties, which picks up spillover/clustering effects.

The **ECON** vector contains county economic measures, which include job growth,

[8] All of the variables are from the 1990 or 2000 Census of Population (www.census.gov) with the exception of the employment growth and structural change variables which are derived from Bureau of Economic Analysis, Regional Economic Information System data (CD-Rom, 2001).

employment-population and unemployment rates, the degree of industry restructuring, and the percent of workers employed full-time.[9] We are primarily interested in the effects of economic development, which is generally perceived to be employment growth by policymakers (Bartik, 2001). Thus, to fully identify job growth's complete direct and indirect effects on poverty, our base model includes job growth as the primary measure of employment conditions along with job growth interacted with a central-county indicator. In other models, we also include interactions of job growth with racial composition to assess differential responses. Other economic measures and interactions with job growth are added to the base model to help trace employment growth's indirect effects (e.g., by reducing unemployment and increasing full-time work). Yet, when these economic measures are included, economic development's net impact will be harder to identify as the growth effects will be dispersed through the other economic variables (versus considering job growth in isolation).

A primary factor modifying the impact of economic growth is employment accessibility for the county's disadvantaged population. Foremost, within-county job growth should reflect the most accessible employment opportunities. Yet we also include *overall* MA employment growth to consider whether economic conditions in the entire metropolitan area are more relevant. The extent that MA employment growth is more important implies accessibility is not a major constraint to disadvantaged households.

A key element of the spatial mismatch hypothesis is that job growth is occurring in locations that differ from the residences of the disadvantaged workforce. Thus, we include a year-2000 spatial mismatch indicator (SMI) variable that measures the share of the population that must relocate such that the distribution of the population and jobs are equal across MA's counties (Martin, 2004). Alternatively, it may not be the current distribution of jobs within the MA that is driving employment accessibility, but rather it may have more to do with whether the workforce has had sufficient time to adjust. Thus, the model also includes the change in the SMI between 1990-2000 to test whether information lags and transportation shifts (e.g., with public transit) have

[9]As noted above, theory does not provide guidance as to the timing of the linkage between job growth and poverty. Experimentation with various time periods revealed that five-year (1995-2000) measures were superior to those from other periods, which were often highly insignificant.

impeded labor adjustments.

The percent of persons employed in county of residence is also included as a measure of employment accessibility. Not only does a high share working in a different county indicate that the labor force can access neighboring areas, it also indicates these neighboring areas had employment opportunities. We assess several other measures of work accessibility by including the percent of MA employment in the central city, and in sensitivity analysis by using weighted SMI measures based on black and Hispanic population shares.

The **CTY_TYPE** vector has county-type and population measures. First, single-county MAs are categorized separately. For multiple-county MAs, the central-county indicator includes the county/counties of the named central-city/cities in the MA definition.[10] Suburban counties are all non-central counties, while outlying counties are a subset of the suburban counties that are not part of the urbanized core and are only tied to the metropolitan area through commuting linkages.[11] Generally, the central counties include the central core of the metropolitan area and often include the older inner-ring suburbs that generally lag newer suburbs (Hudnut, 2003; Jargowsky, 2003; Katz, 2003).

The **DEMOG** vector includes demographic traits of the population such as racial composition and average educational attainment. State fixed effects (σ_s) reflect specific factors common across counties in each state including tax, expenditure, and welfare policies. With state fixed effects, the regression coefficients reflect within-state variation in the explanatory variables.

4. Empirical Results

Descriptive Statistics

Panels A and B of Table 1 show that despite having above-average employment growth in the late 1990s, the average MA county poverty rate barely budged during the decade. Across types of counties, the average poverty rate increased in central-city counties, and decreased in suburban and single-county MA counties. Similarly, despite large MA job growth being well

[10]Outlying counties are never included as a central county.

[11]The source of the named MA city counties is U.S. Bureau of the Census, 2002 *City and County Data Book* accessed from http://www.census.gov/prod/2002pubs/00ccdb/cc00_tabD1.pdf, while the source of outlying counties is U.S. Census Bureau, "Metropolitan Areas and Components, 1999, With FIPS Codes," accessed from http://www.census.gov/population/estimates/metro-city/99mfips.txt.

above that of small and medium-sized MAs, poverty rates declined much more in small and medium size MAs, in which they hardly declined in the largest MAs.

Panels C, D, and E further decompose changes in poverty rates and economic conditions by MA size and county type. Again, despite experiencing the strongest job growth during the latter 1990s, the largest MAs suffered significantly worse poverty-rate outcomes across all county-types. Conversely, the smallest MAs had the weakest job growth across all county types and the strongest poverty-rate reductions. Suburban counties experienced significantly stronger job growth and greater poverty-rate reductions across all metro sizes. The poverty rate gap between central and suburban counties is greatest in large MAs.

Table 2 reports (unweighted) descriptive statistics for all variables across MA size categories. The statistics confirm the notion of stronger labor-market conditions in large-MA counties. Regardless of gender, or whether the measure is the unemployment rate, employment/population ratio, or the share of fulltime employment, there is a direct relationship between MA size and labor-market strength. Yet, job accessibility may have inhibited the disadvantaged from fully taking advantage of the stronger labor markets in large MAs. For example, the place of residence/place of work spatial-mismatch measure (SMI) is higher in large MAs than medium and small MAs. Also consistent with spatial mismatch, a much smaller share of large-MA employment was located in the central city compared to small and medium MAs. Yet, the SMI indicator declined in large-MA counties during the 1990s. However, given the heterogeneity of labor market outcomes and demographic composition, regression analysis is needed to draw more definitive conclusions.

Base Model Population/Location Results

Columns (1), (4), and (6) of Table 3 contain the base model regression results. Before discussing the labor market effects, we first investigate persistence and location effects. The coefficient on the lagged 1989 poverty rate ranges from 0.44 to 0.59 with t-statistics above 7.0.[12] The high persistence is consistent with neighborhood effects and sluggish migration and

[12]A Chow test strongly supported the hypothesis that the small, medium, and large MAs have different poverty-generating mechanisms (χ^2=309.2, p=.0000).

commuting patterns slowing adjustment. The coefficient on the surrounding-county poverty rate is insignificant in all three cases, suggesting no clear pattern of poverty clustering across counties. One possible explanation is that in some cases such as central-city counties and some inner-ring counties, high poverty spreads out to an adjacent county when poor households relocate there, consistent with a positive clustering effect. Yet, the strain on public finances induces wealthier families to relocate to outlying counties. The county that is the destination of the high-income households would have lower poverty rates, consistent with an offsetting negative relationship between its poverty rate and those in neighboring counties.

Only in large MAs do central counties have a statistically significant higher poverty rate than suburban counties, *ceteris paribus,* in which the results in column (1) indicate they are about 0.9 percentage points greater. This finding could relate to many explanations including greater neighborhood effects, as well as transportation and commuting constraints being more pervasive in large MAs. The results are generally insignificant for the other categories though single-county MAs have significantly lower poverty rates in medium-sized MAs.

Regarding own-county and overall MA population, it is not clear whether it should have a positive or negative *net* effect. On one hand, greater population (especially MA population) is consistent with less overall employment accessibility, which would increase poverty rates. Yet, agglomeration effects associated with greater population scale and denser population would also lift productivity and wages (Glaeser and Maré, 2001; Adamson et al., 2004), which would reduce poverty rates. Consistent with the two effects offsetting one another, own-county population is insignificant across all three models. However, overall MA population is significantly related to poverty rates in large MAs, consistent with greater access and information barriers, while it is negatively related to medium-MA poverty rates, consistent with higher wages and productivity effects dominating. It is not surprising that MA population is insignificant for small MAs because neither accessibility nor agglomeration effects would be as strong.

Base Model Labor-Market Conditions Results

In the base model, the 1995-2000 employment-growth measure is interacted with a dummy variable reflecting whether a county was in the central city or was a single-county MA. Thus, the

coefficient on the 1995-2000 employment-growth variable represents the poverty impact of suburban-county job growth.

The only statistically significant employment effects on poverty for suburban counties are in the small-MA model. This suggests that greater own-county employment growth does not statistically affect suburban poverty rates in medium and large MAs.[13] This result could be explained by greater migration into suburbs, either within or between metropolitan areas, large flows of *intra-MA* commuting, and the possibility that suburban firms racially discriminate (against suburban minorities) in hiring (Holzer and Reaser, 2000).

Since accessibility may be more challenging for the poor in central counties (Glaeser et al., 2000; Raphael et al., 2000), it could be expected that job growth would have a larger impact on poverty rates in central counties, *ceteris paribus*. A given labor demand shift has a larger impact when the labor supply curve is less elastic. Labor supply is inelastic if suburban low-skilled residents face high commuting costs to the central counties, or lack information about the central-county labor market. Likewise, the same constraints may limit less-skilled central-county residents from obtaining suburban employment, which also makes central-county poverty more dependent on within-county employment growth.

As expected, the point estimate for the employment growth-central county interaction variable suggests that job growth has a greater poverty-reducing effect in central counties, though the interaction term is imprecisely estimated. At the bottom of Table 3, the F-statistics are reported for the null hypothesis of whether the sum of the coefficients for direct employment growth and its central-county interaction equal zero. The null hypothesis can be rejected at the 10% level for large MAs and at the 1% level for small MAs, but it cannot be rejected at the 10% level for medium MAs.

Thus, own-county employment growth appears to reduce central-county poverty rates in large MAs. A 1-percentage point greater annual job growth rate (or 5 points over five years) reduces the poverty rate by about 0.2 percentage points in the short run (about double in the long run, see footnote 6). In fact, it appears that only in central city counties does own-county

[13]Recall that outlying suburbs are a subset of the all suburb category.

employment growth reduce large-MA poverty rates (in a statistical sense). In small-MA central counties, a 1 percentage point greater annual own-county employment growth rate would be expected to reduce their poverty rate by 0.3 percentage points in the short run.

Overall MA employment growth is only statistically significant for medium-sized MAs, in which a 1 percentage point greater annual MA job growth rate (of 5 points over 5 years) reduces the poverty rate by about 0.3 points in the short-run and by about 0.5 percentage points in the long run. This result is consistent with the prior results that suggested the poor have relatively accessible employment in medium-sized MAs such that own-county opportunities are not as essential. By contrast, the lack of overall MA employment accessibility likely underlies the lack of significance of overall MA employment growth for large MAs. Small MAs are generally composed of a single county or are composed of a single dominant central county, which makes overall MA employment growth more likely to coincide with own-county employment growth.

To summarize, the job growth results are consistent with various spatial mismatch hypotheses. For large MAs, job growth only (significantly) reduces poverty rates when concentrated in central counties, suggesting that place-based development strategies such as downtown redevelopment or new-job tax credits would have antipoverty benefits in these central counties. In addition, the possibility of neighborhood effects suggests further positive externalities, since enhanced labor-market information and employed role models could spur additional employment over time. Yet, in medium MAs, employment growth across the entire MA reduces poverty rates, while there is no statistically significant evidence that growth concentrated in a particular county has an additional effect. Conversely, own-county growth in small MAs appears to reduce poverty in both central and suburban counties. Therefore, unlike the descriptive patterns in Table 1, the regression analysis indicates that job growth reduces poverty rates across all three size categories, though its effects appear to be most dispersed in medium MAs, and concentrated in central counties in large MAs.

One possible concern with interpreting the central county result as a spatial mismatch phenomenon is that firms may be reluctant to locate in counties of a metropolitan area that have higher poverty due to possible concerns about fiscal capacity or labor-force quality, suggesting

that 1995-2000 employment growth is endogenous. This possibility was examined using a Hausman test in which the 1995-2000-industry mix growth rate from shift-share analysis was used as the exogenous instrument.[14] Nonetheless, the null hypothesis that potential endogeneity of employment growth was not biasing the coefficients failed to be rejected at the 10% level.

Spatial Mismatch Indicator Results

The spatial mismatch variable (SMI) suggests that across all three specifications, there is no clear relationship between the location of employment and residents within the MA and poverty. Conversely, the 1990 to 2000 change in the spatial mismatch measure is positively related to large-MA poverty rates, while it is negatively related to medium-MA poverty rates (both significant at the 10% level). Thus, there is very weak evidence that if job growth is occurring away from population centers in large MAs, accessibility becomes an increasing concern in which a one standard deviation greater *change* in the SMI increases the expected poverty rate by about one-quarter of percentage point. This also weakly suggests that sprawling large MAs are slightly prone to more poverty. Conversely, the negative regression term suggests that the 1990-2000 change in the spatial mismatch measure may be picking up some growth effects in medium MAs that are not being accounted for by the other controls. Nevertheless, regardless of what is occurring in the rest of the MA, it appears that own-county or overall MA job growth is more clearly related to poverty rates and is more relevant in measuring job accessibility across MAs.

The two spatial mismatch measures, however, may not be conceptually correct, as the literature has focused more on residential segregation of minority populations away from areas with rapid job growth. Thus, the model was re-estimated by replacing the two spatial mismatch measures by four corresponding spatial mismatch measures: two for blacks and two for Hispanics. Specifically, each county's share of the mismatch between population and employment was weighted by either the black or the Hispanic population shares to give greater

[14]The county industry-mix growth rate is calculated by taking the initial 1995 industry employment shares multiplied by the 1995-2000 national employment growth rate for that sector and then summing across all sectors (using 11 one-digit industries from the U.S. BEA REIS data series). The industry mix measure is commonly used as an instrument for employment growth (e.g., Bound and Holzer, 2000; Dworak-Fisher, 2004; Weinberg, 2004). The first-stage model included all of the explanatory variables except 1995-2000 employment growth and its central-county interaction. In the first-stage model, the industry-mix variable was significant at the 1% level or smaller with F-statistics ranging from 6.8 in the medium-MA model to 23.0 in the small-MA model.

weight to counties with higher minority population shares. Nonetheless, only in the case of the Hispanic population-share weighted 1990 to 2000 change in the SMI were any of these terms significant across the three-size class MA models (not shown).

Regarding the other measures of employment accessibility, the percent of employed residents working in the county of residence should be an inverse measure of accessibility. With county type and county/MA labor market conditions controlled for, the percent working outside of the county of residence should be related to how easy it is to obtain employment in a different county. As expected, in the medium- and large-MA counties, the measure is statistically significant at the 7 percent level or better, and a one standard deviation change in percent working in county of residence respectively increases the poverty rates about 0.3 and 0.2 percentage points. Likely because of smaller accessibility concerns, this variable is insignificant for small MAs.

The share of MA employment working in the central city is consistently insignificant across all three MA size specifications. Likewise, we re-estimated the models including a relative "labor supply/labor demand" variable measured as the ratio of the number of employed residents in the county to the number of workers employed within the county (not shown). Yet, this measure also was consistently insignificant. Thus, job growth in the county appears more important for poverty reduction than centralization of employment in levels.

Employment Growth and Racial Composition

A key element of the spatial mismatch and related urban labor-market literature is that there are not just generic impediments to employment accessibility, but rather there is a specific *intra*-MA racial impediment. Thus, we added two sets of race (ethnic)/employment growth interactions to the base model. The first set is three interactions of employment growth with the population shares that are black, Hispanic, and other minority. Then to account for differences in central counties, we also added a set of three variables that interact these three variables with a central-county indicator. For the large and small MA models, these results are reported in columns (2) and (7). For brevity, these interactions are not reported for medium MAs because

both sets of interactions were very insignificant.[15]

The bottom of Table 2 reports F-statistics for the three joint null hypotheses for both large and small MAs: (1) the three-employment growth *x* race-share interactions; (2) the 3 central county *x* employment-growth *x* race-share interactions; and (3) all 6 tested jointly. In all cases, the null hypothesis can be rejected at the 1-percent level, except for the job growth *x* race hypothesis for large MAs, which is rejected at the 7% level. Thus, the impact of job growth on MA poverty rates appears to vary by racial composition in small and large MAs, in which the racial effect varies by county type.

Regarding coefficient signs, we expect counties containing larger black population shares (especially low-skilled blacks) to be more affected by changes in employment growth because their long-run labor supply curves should be more inelastic. Central city blacks likely possess smaller migration propensities and are more limited by public transit access (Bound and Holzer, 2000; Spilimbergo and Ubeda, 2004). By contrast, it is less clear how greater Hispanic and other minority population shares would affect how job growth influences poverty rates because of possible enclave effects, immigration, and differing residential segregation and discrimination effects (e.g., Stoll, 1999; Holzer and Reaser, 2000; Raphael and Stoll, 2002).

In both the large and small MA models, the main 1995-2000-employment growth effect is now insignificant, while the magnitude of employment growth in central counties almost tripled (and both are significant at the 1% level). Also as expected, job growth has a much stronger impact in reducing black poverty rates in all large-MA county types (significant at the 1% level). For example, when evaluating the black population share at the unweighted 10% large-MA county average, a one percent greater annual employment growth rate (5 percent over five years) reduces the expected poverty rate in any given large-MA county by about 0.2 percent beyond the main effects. The black population central-county/job growth interaction variable is insignificant in the large-MA model, suggesting no further central-county effects. For a small MA, there is also a stronger employment-growth effect in counties with high black population shares, though

[15]In the medium MA model, for the three race *x* job growth interactions, the p-value for the joint test of their significance equaled 0.29, while the p-value for the three central cty *x* race *x* jobgrth interactions was 0.61.

the effect is moderated in central counties.

While there is no statistically significant employment-growth interaction effect for the other-minority population share, the Hispanic population-share interaction is significant in a couple of cases. In large-MAs, employment growth in central counties had a smaller influence when there was a greater Hispanic population share (significant at the 1% level), which suggests central-county Hispanics are not as tied to nearby job opportunities (e.g., Stoll, 1999; Holzer and Reaser, 2000). In small MAs, the main Hispanic-job growth interaction effect suggests that a greater population share would lead to a greater poverty-rate reduction, though this is mostly offset in central counties.[16]

Other Employment and Labor Market Effects

Employment growth may have differing effects for particularly low-skilled sectors. For example, Wilson (1987) argued that manufacturing jobs in the urban core were particularly important, while others suggested that retail trade might be a key labor-market entry point for the less skilled (Raphael and Stoll, 2002; Andersson et al., 2003). By contrast, employment in the broadly defined service sector is about equally representative in low-wage jobs as it is for medium- and high-wage jobs (Andersson et al., 2003). To examine the relative importance of greater manufacturing and retail employment, using the base models from columns, (1), (4), and (6), we estimated two separate specifications (not shown) for each model. We separately replaced own-county total employment growth with own-county manufacturing employment growth and own-county retail employment growth over the same period. Only for manufacturing job growth in central counties of medium MAs, and retail job growth in small MAs (not shown), was there a significant negative relationship with county poverty rates (at the 5% level). Thus, targeting particular sectors for job growth does not appear to be necessary in reducing poverty.

Employment growth directly reduces poverty rates by increasing work experience, training, and wages for the poor. It also indirectly reduces poverty rates by increasing labor-supply tightness such as increasing employment rates, reducing unemployment rates, and raising the

[16]In the medium MA model, we experimented with interacting the race population shares with overall MA growth, but the three interactions were jointly insignificant (p=0.28). However, there was some evidence that greater MA job growth had stronger poverty reducing impacts when the county had a higher Hispanic population share.

share of the workforce that is working full time. Thus, to trace out the relative role of the direct and indirect impacts of employment growth, the models in columns (3), (5), and (8) include labor-tightness indicators: employment-population rates, unemployment rates, and the share of workers employed full-time, all measured by gender. In these models, employment growth's regression coefficient should be smaller as its impacts are dispersed through the other variables.

These results continue to suggest that own-county employment growth reduces poverty in central counties of large MAs (significant at the 5% level) and for suburbs and central counties in small MAs (significant at the 1% level). Yet, overall MA job growth no longer has separate effects on poverty rates in medium-sized MAs, suggesting that most antipoverty effects of job growth can be traced to how it affects labor-supply tightness. In small MAs, the insignificant labor-tightness variables (with one exception) suggest that the direct effects of greater job growth on increasing the disadvantage's work experience, human capital, and wages appear to be the most important factors.

Regarding the specific labor-supply effects, a greater female-employment ratio especially reduces poverty rates in large MAs and to a smaller extent in medium MAs, but *ceteris paribus,* the female-employment rate is insignificant in small MAs. A one-standard deviation increase in the female employment rate reduces poverty by about 1 percentage point in large MAs and by about 0.5 points in medium MAs. With employment growth controlled for, increasing work supports for women would be particularly beneficial in large MAs and to a lesser extent in medium MAs. The male unemployment-rate coefficient is about the same size across the three MA models, while the male employment-population ratio is only statistically significant in the medium-MA model. Together, these results suggest that improving the prospects of jobless men is relatively more important in medium-sized MAs. Finally, the share of fulltime employment was insignificant in all three models, suggesting that part-time employment, likely in conjunction with the earned income tax credit, is sufficient to lift many households out of poverty.

Most of the results for the other control variables are as expected, though there were a couple of notable findings. First, the share of the population that had immigrated to the U.S. between 1995-2000 is significant at the 10% level in the large-MA case and at the 1% level in

medium-MA case. For medium MAs, the size of the coefficient was large, suggesting that a one-percentage point higher share of recent foreign immigrants increased the typical medium MA's poverty rate by 0.56 points, which is about twice the size of the expected impact in large MAs. It is not clear whether this differential is due to differing skilled compositions of foreign immigrants, or whether there are differing offsetting domestic migration propensities of native less-skilled workers (i.e., where less-skilled native workers out-migrate in response to the supply shock). For example, blacks may leave central counties in large MAs in response to immigration (Partridge and Rickman, 2004). Likewise, *after* controlling for labor market conditions, historic poverty rates, and other demographic conditions, there appears to be some evidence that poverty rates are inversely related to other minority population shares in large MAs, though the relationships are less clear in the small and medium-MA models.

The results also indicate that greater education—especially high school completion—reduces poverty rates. Yet, it is interesting how stable the education results are across the models. In addition, the stability of education coefficients when the labor-supply measures are added to the model suggests that education's poverty-reducing effects act more through increasing wages than through reducing unemployment and increasing labor-force participation.

5. Conclusion

This paper examined the relationship between metropolitan county employment growth and poverty in the 1990s. The employment growth-poverty link was found to vary both across metropolitan size and county type. The results were suggestive of potential antipoverty benefits of improved employment accessibility for central-county residents in large metropolitan areas, in which some results were consistent with predictions of urban-spatial mismatch theory.

Consistent with spatial-mismatch predictions, poverty rates increased with population size among large MAs, while population size decreased poverty in medium-sized MAs, consistent with agglomeration economies being the dominant factor. Population size had no effect in small MAs. After accounting for county economic and demographic characteristics, poverty rates were significantly higher in large-MA central counties. Moreover, for large MAs, county job growth reduced poverty more in central counties than in suburban counties. To be sure, county

employment growth only significantly reduced suburban poverty in small MAs, while the central-county effect was only significant in large MAs, and overall metropolitan area employment growth only reduced poverty in medium-sized MAs.

Other traditional measures of spatial mismatch produced mixed results, which is suggestive of the need for multiple measures of economic conditions and employment accessibility to fully assess the complex inter-relationships behind spatial mismatch. For example, the share of the population that must relocate to equalize the population and employment shares across a large metropolitan area's counties (SMI) was only positive and significant in differences, not levels. The share of metropolitan employment located in central counties was uniformly insignificant. Job growth reduced poverty more in counties with larger black shares, for both small and large metropolitan areas, in which there was not an additional central-county effect in large MAs. This finding is more consistent with job discrimination across the entire metropolitan area (e.g., Raphael et al., 2000) or a general lack of skills and education among blacks relative to the demand required by new jobs. Yet, consistent with spatial mismatch, the percent of residents working in the county, an inverse measure of nearby employment availability and accessibility was only positive and significant for large and medium MAs. Similarly, poverty reductions from job growth in small MAs more likely occurred through wage effects than increased employment, whereas the opposite applied for large MAs, which are more likely to suffer from spatial mismatch.

Some antipoverty remedies may include those traditionally suggested to reduce spatial mismatch such as improved transportation and increased suburban housing access for inner city minorities. Yet, our results are also suggestive of the potential for place-based economic development policies to reduce poverty in large-MA central counties and all counties with larger shares of blacks. Improved anti-discrimination policies may be warranted across metropolitan size and county type, as well as policies to increase skills and education among blacks. Because of likely interaction between traditional spatial-skills mismatch, neighborhood effects, and discrimination in hiring, effective antipoverty solutions likely require a place-based combination of policies to simultaneously address these underlying factors.

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Table 1: Metropolitan-Area Person-Poverty Rates and Employment Growth by County[a]
(standard deviation)

County Type	*N*	*1989 Poverty Rate*	*1999 Poverty Rate*	*1995-2000 Job Growth*
Panel A. All U.S. Counties and all MA Counties				
All U.S. Counties (incl. MAs)	3072	13.0	12.4	12.6
		(6.3)	(5.6)	(8.8)
All MA Counties	824	12.0	11.9	13.7
		(5.5)	(5.2)	(8.5)
Central County[b]	252	13.1	13.2	12.4
		(4.8)	(4.8)	(7.8)
Suburb[b]	433	8.4	7.8	16.5
		(4.7)	(3.5)	(10.8)
Single County MA[b]	139	13.7	13.3	13.7
		(6.5)	(5.6)	(6.2)
Panel B. MAs by Size[c]				
Large MA Counties[c]	251	11.3	11.6	15.0
		(5.3)	(5.4)	(9.0)
Medium MA Counties[c]	304	12.4	11.8	12.3
		(5.7)	(4.9)	(7.7)
Small MA Counties[c]	269	14.5	13.2	11.0
		(5.5)	(4.8)	(6.8)
Panel C. Central County[b]				
Large MA Counties[c]	66	13.3	13.8	13.8
		(4.9)	(5.1)	(8.2)
Medium MA Counties[c]	109	12.3	11.8	10.4
		(4.8)	(4.1)	(6.5)
Small MA Counties[c]	77	14.4	13.4	9.1
		(3.9)	(3.6)	(5.3)
Panel D. Suburban County[b]				
Large MA Counties[c]	181	7.0	6.8	17.2
		(3.4)	(2.6)	(10.9)
Medium MA Counties[c]	169	11.1	9.5	15.6
		(5.4)	(4.2)	(10.2)
Small MA Counties[c]	83	14.0	12.0	12.1
		(5.2)	(4.1)	(10.1)
Panel E. Single County MAs				
Large MA Counties[c]	4	11.1	12.0	16.6
		(4.2)	(3.8)	(3.3)
Medium MA Counties[c]	26	14.0	13.8	14.4
		(7.6)	(6.5)	(6.4)
Small MA Counties[c]	109	14.6	13.4	11.8
		(6.3)	(5.5)	(6.4)

a. Population-weighted metropolitan-county poverty rates and employment growth using the 2000 Census MA boundaries. Alaska and Hawaii are excluded. In Virginia, BEA functional groupings were used that combine independent cities with surrounding counties. In five additional cases, we combined independent cities with their surrounding counties to make more coherent functional economic areas: (1) York and Poquoson, (FIPS 51958) with Hampton (FIPS 51650) and New Port News (FIPS 51700); (2) Halifax County (FIPS 51083) and South Boston (FIPS 51780); (3) Fairfax, Fairfax City, and Falls Church, Virginia (FIPS 51919) and Alexandria (FIPS 51510); (4) Norfolk Independent City (FIPS 51710) and Portsmith (FIPS 51740); and (5) Roanoke and Salem (FIPS 51944) and Roanoke Independent City (FIPS 51770).
b. See section 3 and the notes to Table 2 for details of how central and suburban counties are defined.
c. Large MAs have a 2000 population greater than 1.5 million, medium MAs have a population between 350,000 and 1.5 million, and small MAs have a population less than 350,000.
Source: U.S. Census Bureau, 1990 and 2000 Census and Bureau of Economic Analysis, REIS.

Table 2: 1999 Descriptive Statistics for Large, Medium and Small Metropolitan Areas[a]

Group	(1) Large MAs	(2) Medium MAs	(3) Small MAs
1999 Poverty Rate	8.7	11.1	12.9
	(4.5)	(4.6)	(4.6)
Lagged 1989 Poverty Rate	9.6	12.5	14.5
	(4.8)	(5.7)	(5.2)
Weighted Surrounding Cty 1989 Poverty	10.9	14.1	16.0
	(3.5)	(5.6)	(5.3)
Single-County MAs[b]	0.02	0.09	0.41
	(0.13)	(0.28)	(0.49)
Central County[c]	0.26	0.36	0.29
	(0.44)	(0.48)	(0.45)
Suburban County[c]	0.72	0.56	0.31
	(0.45)	(0.50)	(0.46)
Outlying County[c]	0.45	0.47	0.26
	(0.50)	(0.50)	(0.44)
Population	506,479	218,242	116,978
	(877,456)	(217,895)	(74,926)
MA Population	3,355,401	776,086	192,997
	(2,003,982)	(330,264)	(77,813)
1995-2000 Emp Growth	18.0	12.9	10.8
	(13.6)	(9.3)	(7.8)
1995-00 MA Emp Grth (#MA counties≥ 2)	13.9	10.0	5.3
	(6.1)	(5.8)	(5.9)
SMI Spatial Mismatch[d]	0.11	0.08	0.05
	(0.06)	(0.05)	(0.05)
1990-2000ΔSMI[d]	-0.0009	-0.002	0.002
	(0.014)	(0.014)	(0.013)
%of workers employed in county of residence	54.5	62.2	72.5
	(16.5)	(19.6)	(21.0)
% of workers employed in MA central city	28.3	37.4	49.5
	(22.2)	(21.5)	(22.4)
1995-2000 Structural Change[e]	0.047	0.049	0.047
	(0.027)	(0.023)	(0.021)
%Male Emp./Population	70.6	67.8	65.8
	(7.1)	(5.8)	(6.0)
%Female Emp/Population	57.4	55.0	54.1
	(6.1)	(5.5)	(6.2)
%Civilian Male Unemployment Rate	4.6	5.2	5.8
	(2.0)	(1.8)	(1.9)
%Civilian Female Unemployment Rate	4.8	5.4	5.8
	(2.1)	(2.0)	(2.2)
%Male workers employed fulltime	87.2	86.4	85.1
	(2.1)	(2.6)	(3.7)
%Female workers employed fulltime	71.5	71.1	69.3
	(4.6)	(5.0)	(5.5)
%Residential employment in agric.-forestry-fisheries	1.0	1.5	2.0
	(1.0)	(1.9)	(2.0)
% Residential employment in goods	22.1	24.6	23.0
	(6.7)	(7.3)	(7.6)
% Residential employment in transport/public utilities	5.8	5.3	5.0
	(2.1)	(1.6)	(1.5)
% Residential employment in trade&entertainment	22.8	23.0	23.7
	(3.4)	(3.1)	(3.1)
% Residential employment in information	3.3	2.4	2.2
	(1.5)	(1.0)	(0.8)
% Residential employment in fin., insur., & real estate	7.1	6.2	5.4
	(2.1)	(2.3)	(1.9)
% Residential employment in services	32.9	32.1	33.5
	(4.8)	(4.6)	(5.2)
% Residential employment in public administration	5.0	4.8	5.3
	(2.9)	(2.2)	(3.8)
%Education < High School Grad.	16.9	19.6	19.2

(age≥ 25yrs)	(6.2)	(6.7)	(6.8)
%High School Graduate	30.0	32.1	32.2
(age≥ 25)	(7.4)	(6.6)	(6.9)
%Some College, no degree (age≥	21.7	21.0	21.5
25)	(3.8)	(3.6)	(3.8)
%Associate College Degree (age≥	6.3	6.4	6.5
25)	(1.4)	(1.7)	(1.7)
%Bachelors Degree or more (age≥	25.1	21.0	20.7
25)	(10.4)	(8.2)	(8.4)
% of HHs female-headed with	6.3	6.7	6.8
children	(2.1)	(1.8)	(1.7)
% of HHs male-headed with	2.1	2.1	2.1
children	(0.5)	(0.5)	(0.5)
%Pop Foreign Immigrants between	2.0	1.3	1.2
1995-2000	(2.1)	(1.4)	(1.2)
%Pop Foreign Immigrants between	1.4	0.8	0.7
1990-1994	(1.7)	(1.0)	(0.9)
%Pop White[f]	81.5	82.3	83.6
	(15.7)	(13.8)	(12.9)
%Pop African American[f]	9.9	10.9	9.6
	(12.1)	(12.6)	(12.2)
%Pop Other Race[f]	8.6	6.9	6.8
	(8.3)	(7.5)	(6.9)
%Pop Hispanic[f]	7.8	6.7	6.5
	(9.9)	(11.6)	(12.0)
%Pop Children<7 yrs old	9.8	9.5	9.3
	(1.2)	(1.2)	(1.3)
%Pop Children 7-17 yrs old	16.5	16.3	16.0
	(1.8)	(1.8)	(1.8)
%Pop Adults 18-24 yrs old	8.5	9.4	10.9
	(2.0)	(2.5)	(4.5)
%Pop Adults 25-59 yrs old	50.0	48.5	46.9
	(2.9)	(2.6)	(2.7)
%Pop Adults 60-64 yrs old	3.8	4.0	4.0
	(0.8)	(0.7)	(0.8)
%Pop over 65 yrs old	11.4	12.4	12.9
	(3.4)	(3.3)	(3.4)
%Lived in same house 5yrs before	53.9	56.0	54.0
	(6.9)	(6.3)	(7.9)
%Lived in same county but diff.	20.9	22.4	23.3
house 5yrs before	(5.2)	(5.2)	(4.9)
%Lived in same MA but different	30.7	28.2	26.0
house 5yrs before if current	(4.1)	(3.6)	(3.9)
resident of MA			
N	251	304	269

a. Unweighted descriptive statistics. Standard deviations are in parentheses. A metropolitan county is defined using 2000 Bureau of Economic Analysis REIS county definitions. Large, medium, and small MAs are respectively defined as having a population of greater than 1.5 million, 350,000-1.5 million, and less than 350,000. See note *a* to Table 1 for more details as to how some Virginia counties are treated.

b. Single county MSA/PMSA with the exception of Los Angeles and San Diego, which are included as a central-county MA.

c. Central county includes the county/counties of the named central-city/cities in the MA definition in a multiple-county MA, net of any outlying counties. Suburban counties do not include any of the central-city/cities. Outlying counties are defined by the Census Bureau as suburban counties that do not include any of part of the densely-populated urbanized core and are only "officially" attached to the MA through commuting linkages.

d.Spatial mismatch for a given metropolitan area is defined as $1/(2*\text{MA population})*[\sum | (\text{total employment}_j/\text{MA total employment})*(\text{MA population}) - \text{Population}_j) |]$, where the summation is defined over all of the j component counties in the MA. See Martin (2004) for further details.

e. The structural-change index is the share of the county's employment that would have to change sectors in each year so that there would be an equivalent industry structure in the two years. It is a similarity index defined as one-half the sum of the absolute value of the difference in one-digit industry employment shares between the two years.

f. Hispanics is an ethnic category and Hispanics are included in White, African American, and other racial group. In the 2000 Census, individuals classified as two or more racial categories are classified in the other group.

Table 3: 1999 Poverty Rate Regressions for Large, Medium and Small Metropolitan Areas[a]

Group	(1) Large MAs Base	(2) Large MAs	(3) Large MAs	(4) Medium MAs Base	(5) Medium MAs	(6) Small MAs Base	(7) Small MAs	(8) Small MAs
Lagged Poverty Rate	0.52	0.53	0.42	0.44	0.34	0.59	0.57	0.54
	(10.91)	(10.96)	(8.51)	(7.16)	(5.86)	(16.99)	(15.65)	(14.51)
Weighted Surrounding Cty	0.04	0.02	0.02	-0.005	3.4e-04	0.02	0.03	0.02
Poverty	(1.03)	(0.71)	(0.46)	(0.16)	(0.01)	(0.67)	(1.16)	(0.82)
Single-County MAs[b]	0.47	-0.63	0.42	-1.61	-0.97	0.76	0.49	0.71
	(0.58)	(0.66)	(0.56)	(2.71)	(1.98)	(1.35)	(0.81)	(1.20)
Central County[c]	0.87	0.76	0.66	0.26	0.14	0.43	0.04	0.34
	(2.33)	(1.88)	(1.94)	(0.74)	(0.40)	(0.93)	(0.07)	(0.71)
Suburban County[c]								
Outlying County[c]	0.29	0.16	0.15	0.02	-0.04	0.11	-0.23	0.17
	(1.48)	(0.79)	(0.74)	(0.06)	(0.18)	(0.29)	(0.48)	(0.41)
Population	-2.3e-7	1.5e-7	2.5e-7	6.7e-8	7.3e-7	-5.2e-7	2.3e-7	-1.6e-7
	(1.45)	(0.85)	(1.62)	(0.08)	(0.86)	(0.16)	(0.77)	(0.05)
MA Population	1.4e-7	1.5e-7	1.2e-7	-7.8e-7	-6.5e-7	6.8e-7	-1.1e-6	-1.6e-7
	(2.29)	(2.61)	(1.93)	(2.10)	(1.82)	(0.38)	(0.70)	(0.10)
1995-2000 Emp Growth	-0.007	0.002	-0.012	-0.005	-0.002	-0.034	0.009	-0.045
	(0.74)	(0.16)	(1.40)	(0.36)	(0.16)	(2.11)	(0.43)	(2.55)
Emp.Grth x (Cen. Cnty. or	-0.030	-0.079	-0.023	-0.020	-0.007	-0.027	-0.076	-0.016
single cnty MA) [c]	(1.61)	(3.50)	(1.59)	(1.07)	(0.43)	(1.37)	(2.87)	(0.87)
1995-00 MA Emp Grth	0.036	0.009	0.027	-0.058	-0.013	0.004	0.020	0.014
(#MA counties≥ 2)	(1.02)	(0.29)	(0.96)	(2.15)	(0.54)	(0.17)	(0.84)	(0.60)
SMI Spatial Mismatch[d]	-2.6	-3.3	-1.4	-2.3	-0.6	2.7	2.0	2.0
	(1.53)	(2.01)	(0.81)	(0.92)	(0.24)	(1.26)	(0.95)	(0.94)
1990-2000ΔSMI.[d]	17.6	15.5	15.4	-12.4	-17.2	4.4	3.9	4.2
	(1.76)	(1.58)	(1.73)	(1.85)	(2.82)	(0.59)	(0.55)	(0.61)
%of workers employed in	0.012	0.014	0.018	0.017	-0.004	0.009	0.012	0.006
county of residence	(1.85)	(2.30)	(1.90)	(2.04)	(0.37)	(1.26)	(1.86)	(0.68)
% of workers employed in	0.005	0.005	0.006	0.004	0.004	-2.2e-4	-4.4e-5	-1.9e-4
MA central city	(0.95)	(0.77)	(1.11)	(0.80)	(0.81)	(0.04)	(0.01)	(0.03)
1995-2000 Structural	2.9	1.74	3.2	-1.9	0.4	-5.8	-6.7	-5.4
Change[e]	(0.69)	(0.39)	(0.82)	(0.42)	(0.10)	(0.93)	(0.98)	(0.80)
Pop.x Structural Change[e]	-8.0e-6	-9.2e-6	-7.2e-6	1.7e-05	-1.4e-6	7.4e-5	7.3e-5	6.4e-5
	(1.68)	(1.77)	(1.42)	(0.78)	(0.07)	(1.16)	(1.11)	(1.02)
Afr Amer X Emp Grth		-0.002					-0.004	
		(2.39)					(3.04)	
Non AA Minority X Emp		-0.001					0.006	
Grth		(0.39)					(1.39)	
Hispanic X Emp Grth		-5.9e-04					-0.011	
		(0.33)					(2.51)	
Cen Cnty X Afr Amer X		3.6e-04					0.003	
Emp Grth[c]		(0.35)					(2.15)	
Cen Cnty X Non AA		4.5e-04					-0.002	
Minority X Emp Grth[c]		(0.27)					(0.78)	
Cen Cnty X Hispanic X		0.004					0.008	
Emp Grth[c]		(2.71)					(2.48)	
%Male Emp./Population			0.04		-0.08			-0.04
			(1.30)		(2.64)			(0.83)
%Female Emp/Population			-0.17		-0.09			-0.007
			(3.11)		(2.31)			(0.13)
%Civilian Male			0.23		0.21			0.20
Unemployment Rate			(1.65)		(1.91)			(2.33)
%Civilian Female			-0.10		0.08			-0.02
Unemployment Rate			(0.80)		(0.86)			(0.19)
%Male workers employed			0.06		-0.10			-0.10
fulltime			(0.85)		(1.29)			(1.39)
%Female workers			0.03		-0.04			-0.03
employed fulltime			(0.54)		(0.85)			(0.68)
%High School Graduate	-0.23	-0.18	-0.24	-0.20	-0.17	-0.09	-0.09	-0.09
(age≥ 25)	(4.38)	(3.79)	(4.44)	(3.13)	(2.80)	(2.14)	(2.25)	(2.09)

%Some College, no degree (age≥ 25)	-0.12 (2.31)	-0.11 (2.22)	-0.15 (2.50)	-0.22 (3.25)	-0.20 (3.19)	-0.18 (3.35)	-0.15 (2.93)	-0.20 (3.20)
%Associate College Degree (age≥ 25)	-0.26 (2.57)	-0.23 (2.33)	-0.16 (1.62)	-0.21 (2.20)	-0.08 (0.92)	0.05 (0.69)	0.04 (0.54)	0.03 (0.45)
%Bachelors Degree or more (age≥ 25)	-0.18 (4.91)	-0.14 (4.08)	-0.21 (5.00)	-0.22 (4.53)	-0.13 (2.75)	-0.08 (2.15)	-0.08 (2.52)	-0.08 (2.01)
% of HHs female-headed with children	0.48 (5.01)	0.50 (5.06)	0.50 (4.79)	0.44 (3.39)	0.43 (3.41)	0.51 (4.02)	0.57 (4.96)	0.36 (2.67)
% of HHs male-headed with children	-0.03 (0.11)	0.13 (0.54)	-0.07 (0.27)	0.07 (0.24)	0.23 (0.86)	-0.17 (0.69)	-0.10 (0.44)	-0.25 (0.99)
%Pop Foreign Immigrants between 1995-2000	0.28 (1.94)	0.25 (1.75)	0.27 (1.74)	0.43 (2.09)	0.56 (2.88)	0.19 (1.15)	0.18 (1.20)	0.11 (0.69)
%Pop Foreign Immigrants between 1990-1994	0.12 (0.62)	0.24 (1.16)	-0.04 (0.19)	-0.05 (0.18)	-0.25 (1.00)	0.35 (1.29)	0.70 (2.41)	0.32 (1.23)
%Pop White[f]								
%Pop African American[f]	-0.02 (1.65)	-0.006 (0.40)	-0.03 (1.91)	-0.001 (0.08)	-0.007 (0.45)	-0.02 (1.44)	-0.02 (0.90)	-0.02 (1.07)
%Pop Other Race[f]	-0.05 (1.82)	-0.02 (0.41)	-0.04 (1.63)	-0.10 (1.94)	-0.11 (2.34)	-0.03 (1.26)	-0.11 (1.53)	-0.02 (0.93)
%Pop Hispanic[f]	-0.05 (2.27)	-0.09 (2.13)	-0.05 (2.20)	0.02 (0.89)	0.02 (1.33)	-0.02 (1.23)	0.02 (0.48)	-0.02 (1.17)
%Pop Children<7 yrs old	0.01 (0.09)	0.005 (0.05)	-0.09 (0.74)	0.22 (1.71)	0.38 (2.61)	-0.16 (1.09)	-0.21 (1.60)	-0.04 (0.24)
%Pop Children 7-17 yrs old	0.09 (1.07)	0.14 (1.60)	-0.02 (0.20)	0.11 (1.05)	-0.09 (0.82)	0.13 (1.13)	0.08 (0.76)	0.06 (0.55)
%Pop Adults 18-24 yrs old	0.11 (2.36)	0.10 (2.15)	0.07 (1.21)	0.23 (3.75)	0.12 (1.47)	0.28 (5.68)	0.29 (6.05)	0.15 (2.10)
%Pop Adults 25-59 yrs old								
%Pop Adults 60-64 yrs old	0.31 (1.25)	0.43 (1.66)	0.22 (1.19)	0.58 (2.19)	0.31 (1.25)	0.50 (2.01)	0.46 (1.95)	0.40 (1.61)
%Pop over 65 yrs old	-0.03 (0.55)	-0.04 (0.80)	-0.17 (2.35)	-0.02 (0.34)	-0.12 (2.08)	0.10 (1.93)	0.08 (1.65)	0.004 (0.07)
Industry Structure[g]	Y	Y	Y	Y	Y	Y	Y	Y
Residential Mobility[h]			Y		Y			Y
F-stat:βemp grth+ βcencty*emp grth=0	3.39 (p=0.067)	8.81 (p=0.003)	5.06 (p=0.026)	2.64 (p=0.106)	0.45 (p=0.504)	13.07 (p=0.000)	6.58 (p=0.011)	12.60 (p=0.001)
F-stat: βspatial mismatch= βΔSpatial mis=0	2.39 (p=0.094)	2.89 (p=0.058)	1.72 (p=0.181)	2.63 (p=0.074)	4.30 (p=0.015)	1.11 (p=0.330)	0.77 (p=0.464)	0.68 (p=0.510)
F-stat: Race X emp grth[i]		2.41 (p=0.069)					5.52 (p=0.001)	
F-stat: Cen Cnty X Race X emp grth[i]		8.16 (p=0.000)					3.57 (p=0.015)	
F-stat: all six race X emp growth interactions[i]		4.67 (p=0.000)					2.96 (p=0.009)	
R^2	0.974	0.977	0.979	0.963	0.971	0.972	0.975	0.975
N	251	251	251	304	304	269	269	269

a. Absolute values of robust t-statistics or F-statistic p-values are in parentheses. A metropolitan county is defined using 2000 Bureau of Economic Analysis REIS county definitions. Large, medium, and small MAs are respectively defined as having a population of greater than 1.5 million, 350,000-1.5 million, and less than 350,000.
b. See note b in Table 2.
c. See note c in Table 2. In the employment-growth interactions, "central county" also includes single-county MAs.
d. See note d in Table 2.
e. See note e in Table 2.
f. See note f in Table 2.
g. Industry shares are percent of employed residents in agriculture; goods; transportation and public utilities; trade and entertainment; information; finance and real estate; services; with public administration as the omitted sector.
h. The mobility measures are percent of residents who lived in the same house in 1995; percent of residents who lived in the same county but a different house in 1995; and the percent of residents who lived in the same MA in 1995 but different house.
i. The joint F-statistics respectively test the joint null hypothesis that the three interactions of the race/Hispanic shares with employment growth are equal to zero and the joint hypothesis that the three three-way-interactions of central county x race/Hispanic x employment growth are equal to zero. The third F-statistic tests the joint significance of all six race/employment-growth interaction variables.