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Migration in the Nonmetropolitan South

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ABSTRACT Data from multiple sources are analyzed to provide a picture of domestic migration patterns, characteristics of migrants, and effects of migration on poverty and human capital in the rural South during the 1990s. Migration trends in the 1990s were quite favorable for the rural South. Net migration was positive and substantial and represented a gain of people in their early career years including a disproportionate share of young families. The "brain drain" that characterized the 1980s has at least slowed, and possibly stopped. The comparative advantage of rural areas is increasingly found in their natural amenities and low population densities and corresponding attractiveness as places to live and recreate. At the same time, the positive effects of production factors that attract manufacturing enterprises are still very much in evidence in the nonmetro South. The most economically disadvantaged areas of the nonmetro South may not be benefiting as much as other areas from the rural migration rebound. Net immigration to rural areas was widespread, but one-fourth of the counties in the nonmetro South continued to experience outmigration, although at a lower rate than in the 1980s.

Migration and employment are related in complex and important ways. At the most basic level, migration can be considered a relatively simple process of spatially equalizing labor supply and labor demand, with wage rates being the market's signal device (Borts and Stein 1964, Greenwood 1985). The reality is much more complex. The location of jobs does affect migration decisions of workers, of course, but the location of workers and potential workers also affects decisions as to where physical plant, equipment, and infrastructure - and thereby jobs - are located (Clark and Murphy 1996, Vias 1999). Further, the *types* of jobs available in a locale differentially attract persons with specific levels and types of education and personal capacity. At the same time, concentrations of persons with specific levels and types of education, and the mix of community services and amenities created by that population, differentially attract specific

kinds of businesses. The interaction of these processes can produce spatial differentiation, including clusters of similar industries and spatial concentrations of wealth and poverty, even across geophysically homogeneous space.

To further complicate the matter, in this complex interaction of migration, business location, and human settlement pattern, the relatively few exogenous forces change over time, sometimes abruptly (Plane 1989, Milne 1993, Pandit 1997). Changes in production technologies, transportation and communications technologies, infrastructure, international trade and capital-mobility regimes, and domestic economic policies all affect the relative competitive advantage of locales as well as the demand for goods and services produced in them.

In the face of this complexity, it is a daunting task to try to make sense out of the labor force-migration puzzle. Nevertheless, there are some broad trends that can be described in the migration patterns of the last few decades which provide insight into current forces reshaping human settlement patterns in the rural South. In this paper we begin with two conceptual frameworks, one that describes three stages of relative comparative advantage among rural locales, the second focusing on population deconcentration. Using these frameworks, we describe nonmetropolitan (hereafter nonmetro) migration trends in recent years, giving special attention to the nonmetro South. We describe overall trends, characteristics of migrants, and spatial patterns. We then examine the association of migration with economic structure, urban proximity, and natural amenities in the nonmetro South. Finally we explore the implications of migration patterns for the most economically vulnerable areas in the nonmetro South: the persistent-poverty counties of the Black Belt, the lower Mississippi River valley, the Southern Highlands, and the Rio-Grande Valley.

Rural Migration Theory: Recent Developments

Migration is determined largely by the economic "milieu" in which it occurs (Brown and Sanders 1981). Over the past several decades, vast shifts in national and international economies, increases in productivity, decreases in relative demand for primary (rural-produced) products, and declining U.S. investment, among other developments, have shifted the economic context in which rural migration takes place. Changes in comparative advantage among rural regions and in

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rural America vis-à-vis other parts of the nation and the world have resulted.

Galston (1993) identifies three broad, overlapping phases of rural advantage: (1) From early on, rural areas have built their economies on "place-specific natural resources" (p.15) – this advantage has declined in relative importance since the 1960s and 1970s, as reflected in employment changes in agriculture and mining, but has not vanished completely; (2) Growing in importance during the 1960s and 1970s were production factors (the costs of production: lower cost, less unionized labor, abundant land, relaxed regulations), which led to a manufacturing growth spurt and played a major role in the "rural renaissance" of the 1970s; and (3) Recently, natural amenities (aspects of the landscape attractive for non-economic reasons) have begun to fuel rural growth. Migration patterns, the major determinants of population growth in rural locales, change as rural areas move from one phase to the next. Not only do the destinations of migrants change, but the relationship between migration and economic structure is altered.

Migration is more than an economic decision. Residential preferences or, more importantly, changes in the ability to act upon preferences, determine rural migration patterns as well. A complementary theoretical viewpoint, first elaborated by Wardwell (1980) and given the label "deconcentration perspective" by Frey (1993), emphasizes the growing convergence of rural and urban areas as a result of increasing locational flexibility on the part of both firms and households:

...longstanding residential preferences toward low-density locations are becoming less constrained by institutional and technological barriers. The changing industrial structure, rising standard of living, and technological improvements in transportation, communication, and production are leading to a convergence - across size and place categories - in the availability of "urban" amenities that were previously accessible only in large places. As a consequence, deconcentration ...tendencies represent the beginning of a long-term shift toward the depopulation of urban agglomerations in all regions. (Frey 1993:45)

Taken together, Galston's (1993) "three phases of rural comparative advantage" and Wardwell's (1980) "deconcentration perspective," provide a theoretical framework for modeling the joint effects

migration. If Galston is correct, amenity-related employment sectors (e.g., retail, personal consumer services) should be a dominant engine of nonmetro migration in the 1990s, compared with employment related to natural resource extraction and employment related to low costs of production (e.g., routine manufacturing). According to Wardwell, the effect of urban influence on migration should be declining and that of natural amenities rising as more and more people find themselves able to act on their preference for high-amenity, rural settings.

Analyses of Internal Revenue Service county migration data from the early 1990s are generally consistent with both Galston's (1993) and Wardwell's (1980) hypotheses for the nonmetro United States as a whole:

The changing effects [on migration] of different sectors of the economy follow Galston's three phases of rural comparative advantage. Primary, extraction-based industries - farming but especially mining - have an increasingly negative effect on net migration. (Interestingly, urban-based sectors such as wholesale and professional consumer services also exhibit a negative effect). The effect of routine manufacturing (corresponding to Galston's second phase), switched from positive to negative in the early 1990s. Whether this represents the end of an era - the transition from the second to third phase in Galston's timeline - can be confirmed only with a longer time series. Manufacturing areas continued to grow in the 1980s and early 1990s (Cromartie 1993, Beale 1996), but in this era of increasing globalization of trade more and more of these areas are attracting migrants or retaining population on the basis of assets other than manufacturing employment. Finally, sectors associated with amenities (retail and personal consumer services) show strong, increasingly positive effects on net migration, even when controlling (to some extent) for the physical amenities themselves.

The bivariate association of nonmetro net migration with metro proximity all but disappeared in the early 1990s after being quite strong [positive] in the late 1980s. Isolated, nonmetro areas, especially in the intermountain West, were capturing a significant share of total net migration. Controlling for industrial structure, the effect of metro proximity switched from positive to negative during this time period. Metro proximity affects the kinds of jobs that are available in different places; the types of jobs associated with strong immigration in 1993-94 coincided

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with Galston's third phase of rural comparative advantage. But there remains a strong direct [negative] effect of metro proximity, denoting a revived period of deconcentration as people are increasingly able to act upon long-held residential preferences (Cromartie and Nord 1996:13-14).

In the following sections we examine recent migration trends in the nonmetro South with these theoretical perspectives in mind. In particular, we consider the extent to which migration patterns are favoring less urbanized, less densely populated rural areas and areas with attractive natural amenities, and how this is changing the rural South.

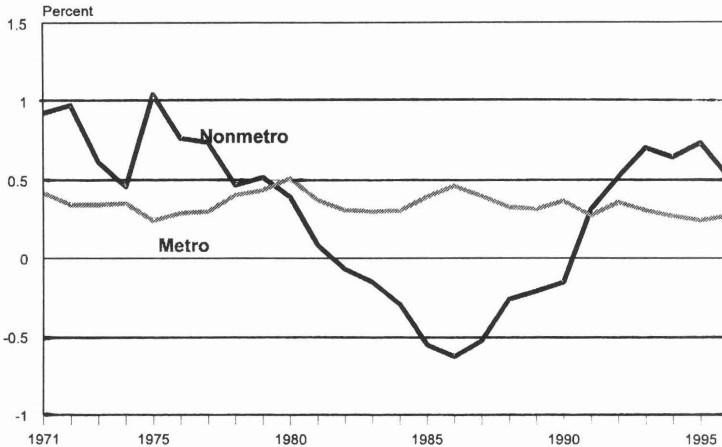
Rural-Urban Migration, the Rural Renaissance and the Rural Rebound

Nonmetro America, after many decades of net outmigration, experienced a migration turnaround in the 1970s (Figure 1). Annual net migration to nonmetro areas reached 1 percent by mid-decade. A small share of this was international immigration, but the large majority resulted from net exchange with metropolitan areas. This "rural renaissance" was short-lived, however, lasting just over a decade. During most of the 1980s, net migration again favored metro areas of the U.S. at the expense of nonmetro areas. But then migration to nonmetro areas rebounded in the 1990s. In the first six years of the decade, metro-to-nonmetro migrants outnumbered the reverse stream by 1.6 million persons, and an additional 227 thousand immigrants moved into nonmetro areas from other countries.¹

The nonmetro South got its fair share of these migrants. From 1990 to 1996, the nonmetro South gained 733 thousand residents through migration exchange with the metro South and with other regions - a six-year net domestic migration rate of 3.2 percent (Figure 2) - as well as 97 thousand international immigrants. Only the nonmetro West had a higher net migration rate. This pattern was in

¹All migration statistics for the period 1990-1996 are based on the U.S. Bureau of the Census Cooperative County Population Estimates File, 1996 (U.S. Department of Commerce 1996).

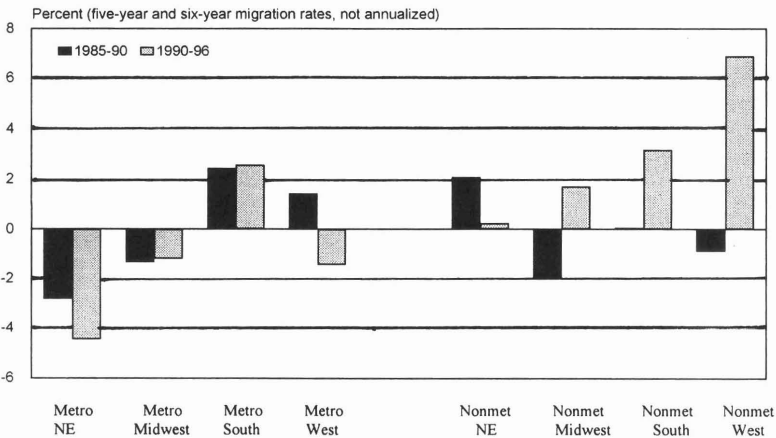
Figure 1. Net Migration to Nonmetro and Metro Areas* of the United States, 1971-96 (includes domestic and international migration)



*Metro status as of 1993.

Data source: Prepared by ERS based on Cooperative County Population Estimates data.

Figure 2. Net Domestic Migration Rates by Region and Residence, 1985-90 and 1990-96

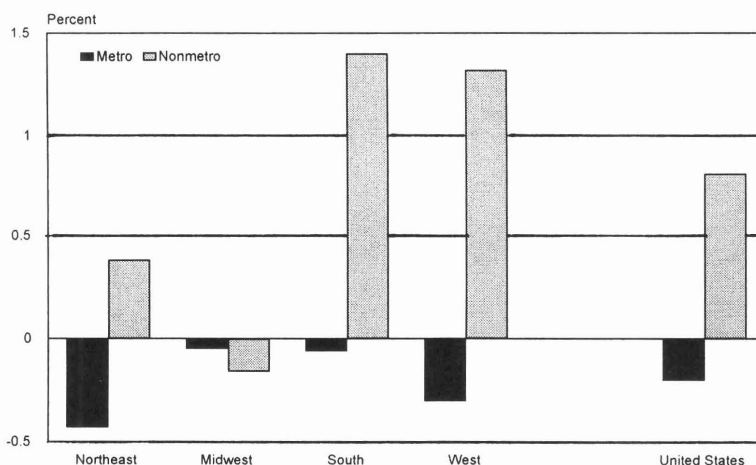


Source: Calculated by ERS using data from the U.S. Census Bureau County-to-County Migration File, 1985-90, and Cooperative County Population Estimates, 1990-96.

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sharp contrast with the last half of the 1980s, when net domestic migration to the nonmetro South was negligible. Current Population Survey (CPS) data confirm that net migration to the nonmetro South has remained substantial into the last half of the 1990s (Figure 3). In the two-year period ending in March 1997, average annual net domestic migration to the nonmetro South was 1.4 percent per year, equaling or surpassing that of the nonmetro West. This represented a net gain for the nonmetro South of over 300,000 persons per year.²

Figure 3. Net Domestic Migration Rates by Region and Residence, Annual Average 1995-97



Source: Calculated by ERS using data from the March 1998 and March 1997 Current Population Surveys.

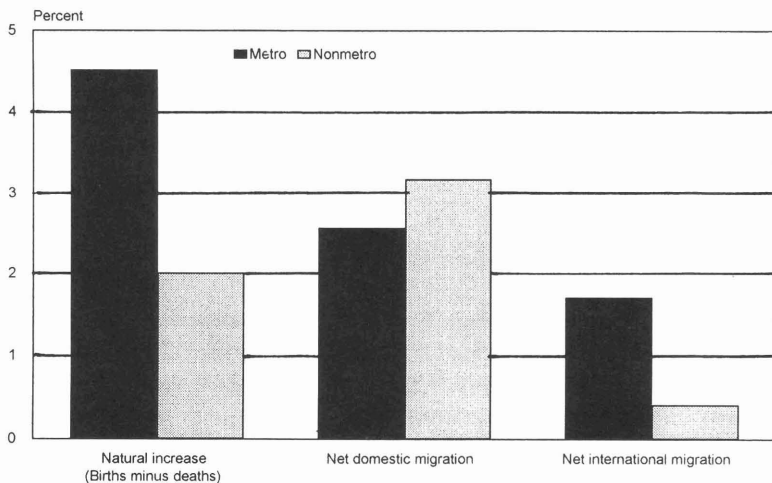
²Figure 3 represents only domestic migration. International immigration is not included because it is partially offset by an unknown amount of international outmigration. Unlike the county population estimates, CPS data do not include international outmigrants because CPS is a survey of U.S. households. This omission does not distort the nonmetro estimates too much, since a relatively small share of international immigrants settle initially in nonmetro areas. But for metro areas, looking only at domestic migration gives a very misleading picture of the overall effects of migration. Other data sources indicate that net international immigration to metro areas more than offsets domestic outmigration to nonmetro areas.

In recent years the importance of migration in determining population change in nonmetro areas has increased. With declining fertility and an aging population, the importance of natural increase (the surplus of births over deaths) has declined in relation to migration. In the period 1990-1996, net domestic migration was the largest component of population change in the nonmetro South, exceeding net natural increase by one-half, and net international migration by a factor of more than seven (Figure 4). Of even more importance, net migration is highly variable across space in contrast to natural increase, which tends to be fairly stable. Variation in net domestic migration accounted for over 80 percent of the variation in population change across counties in the nonmetro South from 1990 to 1996.

Who are They? Age, Education, and Income of Immigrants to the Nonmetro South

The capacity of migration to redistribute human capital is much greater than the regional net migration rates suggest. Net migration is the (usually small) difference between the two much larger streams of

Figure 4. Components of Population Change in the Metro and Nonmetro South, 1990-96



Source: Calculated by ERS using data from the Cooperative County Population Estimates, 1990-96.

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in- and outmigration. Further, there is a great deal of migration within the region. The effect of migration on local communities and labor markets depends both on the scale of migration and on the characteristics -- age, education, income, etc. -- of those who move in and those who move out. We examine next the characteristics of migrants to and from the nonmetro South for the two-year period ending in March 1997, the most recent year for which Current Population Survey data are available. Two-year averages are presented because the size of the survey does not assure adequately reliable estimates for a single year for some population groups.

During the two-year period, 14 percent of residents in the nonmetro South moved each year (Table 1). Mobility was highest in the post-high school (age 18-25) and early career (age 26-30) stages, when more than one person in four moved each year. Mobility during these stages of life is important for the development of human capital as people move to further their education and to explore and respond to job opportunities. Somewhat more than half of the moves in these age groups were within the same county, but even some of those moves represented changes of employment or educational pursuit as did most of the moves among counties within the region and to other regions and metro areas.

Net movement into the nonmetro South was highest for persons in the early career stage (age 26-30) and for children. Both age groups gained 2.6 percent per year. This combination indicates that young families were well represented in the migration into the nonmetro South. In the immediate post-high school period (age 18-25), migration both into and out of the nonmetro South was high, but net migration was quite small (0.7 percent per year). This finding is not surprising because many young people move to cities or suburban areas to attend college after completing high school.

Mobility and net migration were both lower, although still substantial in middle- and late-career stages. In the nonmetro South, 5.9 percent of persons age 31-40 and 2.5 percent of persons age 41-64 moved across county lines each year. Net migration rates were 0.5 percent and 1.3 percent, respectively. Mobility was lowest in retirement years with 3.6 percent of persons moving annually, and the net gain of retirees by the nonmetro South was only 0.4 percent.

The life-cycle migration pattern in the South differed somewhat from those of other regions (Nord and Cromartie 1999). Compared with the gains of predominantly younger migrants in the nonmetro

Table 1. Proportion of Nonmetro South Residents who Moved, Annual Average, 1995-1997.

	Age						All ages
	1-17	18-25	26-30	31-40	41-64	65+	
	----- percent -----						
Total mobility ¹	17.3	26.9	26.0	16.0	7.2	3.6	13.9
Moved within same county	12.2	16.6	16.4	10.1	4.7	2.0	9.1
Moved between counties within nonmetro South	2.3	4.3	3.9	2.0	1.2	.7	2.0
Moved out of nonmetro South	2.7	5.9	5.6	3.9	1.3	.9	2.8
Moved into the nonmetro South	5.3	6.6	8.2	4.3	2.6	1.3	4.2
Net migration to the nonmetro South	2.6	.7	2.6	.5	1.3	.4	1.4

Note: Components of total mobility and net migration may not sum to total due to rounding errors.

¹Total mobility is the percent of residents who moved during the year, whether within the same county, between nonmetro counties in the South, or out of the nonmetro South.

Source: Prepared by ERS using data from the March 1996 and March 1997 Current Population Surveys.

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South, workers in mid and late career were predominant in the West. Migration gains in the nonmetro Northeast were fairly uniform across the age spectrum. The Midwest lost population through domestic migration, and its losses were mostly in the mid- and late-career age groups. Retirement-age migrants moved, on balance, into the nonmetro Northeast and South and out of the nonmetro West, while net migration of retirement-age persons in the nonmetro Midwest was negligible. The nonmetro South, then, was unique in the predominance of young workers and young families moving into the area.

Recent education-specific migration rates between nonmetro and metro areas -- important indicators of the effects of migration on the spatial distribution of human capital -- differ, at the national level, from those of previous decades. In the early 1990s for the first time in many years, more college-educated people migrated into than out of nonmetro areas (McGranahan and Kassel 1995). This pattern continued and strengthened in the mid 1990s (Nord and Cromartie 1999). Net nonmetro immigration of persons with a college degree increased from under one-half percent per year in the early 1990s to about 1 percent per year in 1996 and 1997 (Figure 5), essentially the same as net migration rates for less-educated persons. This was less true in the nonmetro South than in other nonmetro areas, however. Although net migration of college-educated persons to the nonmetro South was positive during the 1995-1997 period, it was lower than the 1.4 percent rate for the total population (Table 2), whereas the opposite was true in nonmetro areas of the other three regions (Nord and Cromartie 1999). Still, the nonmetro South gained high school graduates at a higher net rate than high school dropouts, and college graduates at a rate similar to that of high school dropouts. This finding is good news for the nonmetro South and represents an end to the "brain drain" of earlier decades, if not yet a reversal.

Comparing migration rates across income categories gives a picture somewhat at odds with the comparison of education categories (Table 2). The highest net migration rates were for the poor (1.5 percent) and for those with income just above the poverty line (2.6 percent). For high-income households, those with income higher than four times the poverty line, the net migration rate was slightly negative. The nonmetro South already had a disproportionate share of poor and near-poor households (Nord 1997), and this pattern was reinforced by the income-specific migration just described. It should be noted, however, that this migration pattern reflects, to some extent,

Table 2. Characteristics of Migrants to and from the Nonmetropolitan South, Annual Average, 1995-1997

Characteristic	Domestic Immigration Rate	Domestic Outmigration Rate	Net Domes- tic Migra- tion Rate	International Immigration Rate
	----- percent -----			
Total	4.2	2.8	1.4	.1
Age:				
1-17	5.3	2.7	2.6	.2
18-25	6.6	5.9	.7	.3
26-30	8.2	5.6	2.6	.2
31-40	4.3	3.9	.5	.2
41-64	2.6	1.3	1.3	.1
65+	1.3	.9	.4	0.0
Education (ages 25 and over):				
Less than high school graduation	2.4	1.5	.9	.1
High school graduation or GED	3.5	2.0	1.5	.1
Some college, less than bachelor	3.7	3.1	.6	0.0
Bachelor degree or more	4.8	4.1	.7	.1
Income:				
Below poverty line	5.3	3.8	1.5	.3
1-2 times poverty line	5.0	2.4	2.6	.2
2-3 times poverty line	3.7	2.4	1.3	0.0
3-4 times poverty line	3.2	2.1	1.2	0.0
Above 4 times poverty line	2.9	3.2	-.3	.1
Race and ethnicity:				
White non-Hispanic	4.3	2.9	1.4	0.0
Black	3.0	2.3	.7	0.0
Hispanic	6.5	2.3	4.2	1.2

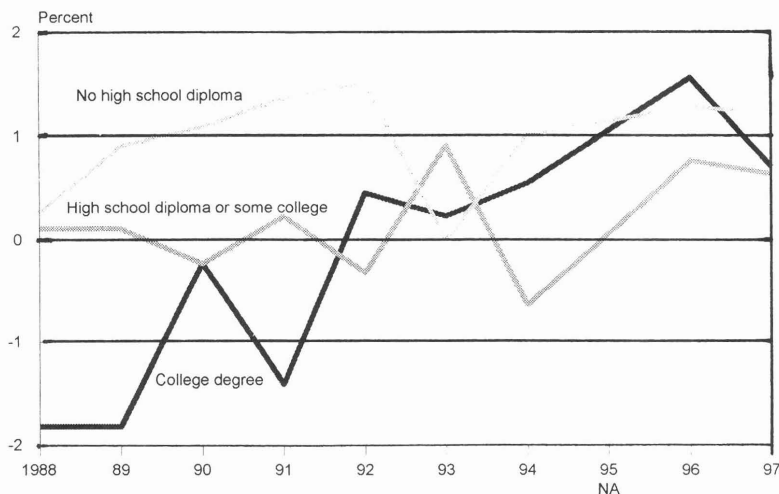
Note: Components of net migration may not sum to total due to rounding errors.

Source: Prepared by ERS using data from the March 1996 and March 1997 Current Population Surveys.

the immigration of young families with their generally lower incomes.³ Nevertheless, these income-specific migration patterns

³A further factor biases the association of migration and income. Income measured during the year of a move tends to be lower than income the previous and following years. Thus, migrants have, on average, lower measured income than nonmigrants with otherwise similar characteristics. Where net migration is positive, as it is in the nonmetro South during the period under study here, this biases the net migration of lower-income categories upward.

Figure 5. Change in the U.S. Nonmetropolitan Population Ages 25-44 from Net Migration, by Education Completed



Source: Calculated by ERS using data from the March Current Population Surveys, 1988-1994 and 1996-1997.

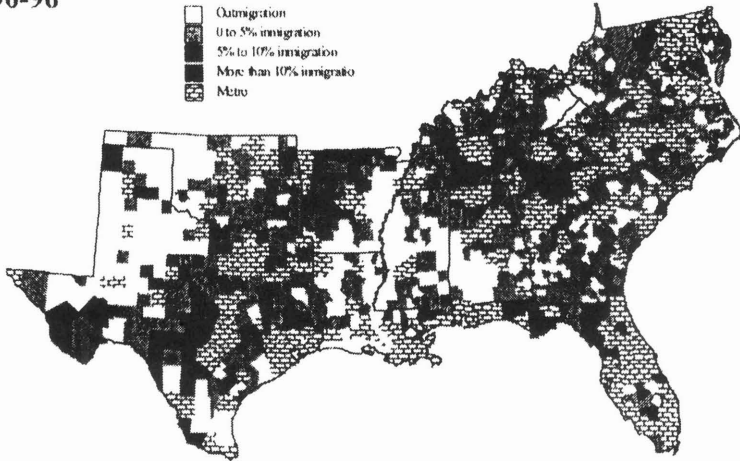
clearly impede the convergence of economic well-being of the rural South with the rest of the nation.

Net migration of Hispanics to the nonmetro South was substantially higher than that of non-Hispanic whites and blacks (Table 2). This high net migration combined with their higher rate of natural increase makes Hispanics the fastest-growing racial/ethnic group in the nonmetro South. Currently Hispanics make up 6 percent of the population and blacks make up 19 percent.

Where do they go? The Importance of Urban Proximity and Natural Amenities

Migration to the nonmetro South was not spread evenly across the region. Over one-fourth of the 1,006 nonmetro Southern counties lost population through migration (Figure 6), and losses exceeded 1 percent per year in 51 counties. At the other extreme, 159 counties experienced net migration exceeding 10 percent for the six-year period, including 30 counties with net migration above 20 percent -- more than 3 percent per year. Both extremes can be problematic. Sustained

Figure 6. Net Migration to Nonmetro Counties in the South, 1990-96



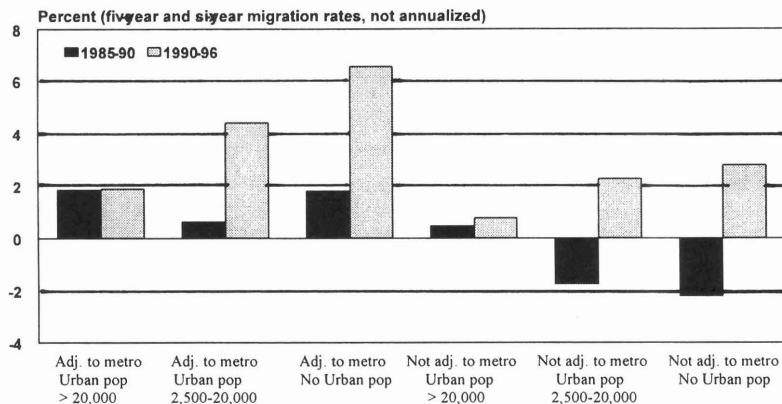
Source: Prepared by ERS using data from the U.S. Bureau of the Census.

outmigration erodes the population base and the local market for goods and services, often leading to further business closures and additional outmigration. As populations fall, thresholds for the cost-effective provision of various community services are no longer met and those services begin to fail. Too-rapid population growth creates its own problems as communities are unable to develop utilities, transport infrastructure, education, health and other human services rapidly enough. Residential development in high-growth counties often occurs with inadequate planning, resulting in environmental degradation and less than optimal location of housing and facilities.

During the 1980s, migration was strongly organized around metropolitan centers and smaller nonmetropolitan cities. Net domestic migration from 1985 to 1990 was highest in nonmetro counties adjacent to metro areas. For those not adjacent to metro areas, net migration was highest in counties with larger urban populations (Figure 7).⁴

⁴Migration rates for categories of counties throughout the paper are calculated for the total populations and total net migrants of counties in the categories. Thus, they are true category migration rates, and correspond to population-

Figure 7. Net Domestic Migration Rates in the Nonmetro South by Metropolitan Proximity and Extent of Urbanization, 1985-90 and 1990-96



Source: Calculated by ERS using data from the U.S. Census Bureau County-to-County Migration File, 1985-90, and Cooperative County Population Estimates, 1990-96.

The two most rural non-adjacent categories registered net outmigration over the period. In the 1990s, this urban-centered pattern weakened. Although net domestic migration remained higher in counties adjacent to metro areas than in those not adjacent, it increased rather sharply with increasing rurality in both adjacency groups. Net domestic migration was highest for fully rural counties adjacent to metro areas (6.6 percent). Even the most remote nonmetro counties, those not adjacent to metro areas and with no urban population at all, registered net migration of nearly 3 percent from 1990 to 1996, a rate higher than any other non-adjacent category.

The deconcentration process hypothesized by Wardwell (1980) is observed partially in these data. In the South, though, metro areas continue to be centers of population growth to a greater extent than they are elsewhere in the United States. (Cromartie and Nord 1996; Cromartie and Wardwell 1999).

Galston (1993) argues that in the third phase of comparative rural advantage, natural amenities become increasingly important in determining rural residential and business settlement patterns and resulting migration patterns. Places with climatic and physiographic characteristics that make them pleasant places to live and recreate attract

people. Then, new production, transportation, and communication technologies make it increasingly possible for jobs to follow people rather than vice versa. An indirect way to test this hypothesis is to examine the association between migration rates and economic sectors typical of amenity-based economies. We do this, to some extent, in the next section. A more direct way, which we undertake first, is to examine the association of migration rates with a measure of the natural amenities that are believed to positively influence residential and recreational choices. The ERS Natural Amenities Scale is a measure of these characteristics. It is an index that includes measures of mild sunny winters, moderate summers with low humidity, varied topography, mountains, and abundance of water area. (See McGranahan 1999 for a complete description of the measure.)

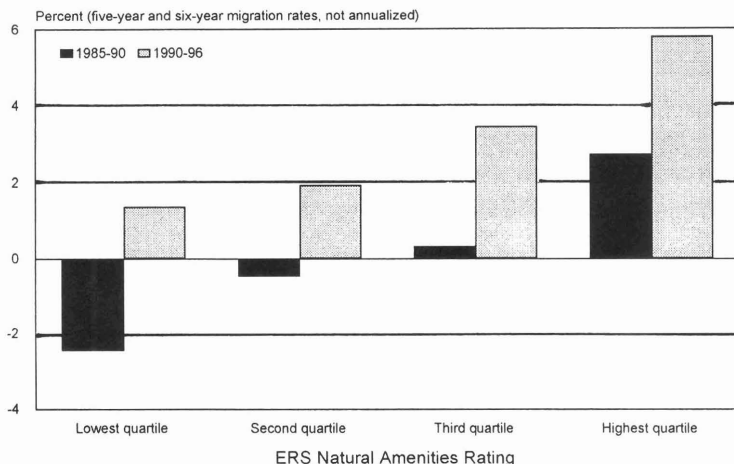
We ranked the counties of the nonmetro South into quartiles based on the ERS Natural Amenities Scale and calculated net domestic migration rates within each category. There is a substantial positive association between migration rates and natural amenities (Figure 8). Net domestic migration to the highest-amenity counties was nearly 6 percent during the period 1990-96, compared with 1.4 percent for the lowest-amenity counties. This association changed little from the 1980s to the 1990s, although rates were much higher in all categories in the later period. Indeed, analysis of this association over the last two decades indicates that the effect of natural amenities on migration may have peaked about 1980 and declined somewhat since then. In recent years, net migration in the nonmetro West has been highest into counties in the *second* quartile on the Natural Amenities Scale (Cromartie and Wardwell 1999). These facts suggest that the migration "boom" in the high amenity nonmetro counties represents an adjustment to changes in technology and other factors, and that, in the West, it is slowing as that adjustment approaches completion. In the nonmetro South, however, there is no evidence that an equilibrium is being approached yet, and natural amenities continue to exert a powerful force on migration.

Economic Structure and Migration

We are interested in the association between migration, employment, and the economic structures in which jobs exist. In particular, we would like to know what industries attract migrants, and to what extent the relative attractiveness of rural and urban areas is due to the

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Figure 8. Net Domestic Migration Rates in the Nonmetro South by Natural Amenity Endowment, 1985-90 and 1990-96



Source: Calculated by ERS using data from the U.S. Census Bureau County-to-County Migration File, 1985-90, and Cooperative County Population Estimates, 1990-96.

jobs available in each area. To explore these issues, we modeled net migration among counties of the nonmetro South during the period 1990-1996 as a function of location on the rural-urban continuum, natural amenities, and economic and demographic characteristics of the counties. Independent variables in the model are:

- Location on the rural-urban continuum, entered as a set of dummy variables corresponding to the ERS rural-urban continuum codes (Butler and Beal 1994), with category 4 (adjacent to metro area, urban population greater than 10,000) as the reference category.
- Natural amenities, measured by the ERS Natural Amenities Scale (McGranahan 1999).
- Percent of population elderly in 1990. This variable is intended to identify popular retirement destination counties, which are likely to have growing economies because the national proportion of elderly is increasing.

- Industrial structure in 1990, measured as the percent of employment in selected industrial sectors. To avoid problems of colinearity, only a limited number of sectors can be included in the model. We began with those with the highest bivariate correlations with the dependent variable, then removed sectors with statistically insignificant coefficients and added sectors that had high correlations with the regression residuals to arrive at a final model in which all sectors in the model are statistically significant, and no omitted sector would be significant if it were added.
- Percent of workers commuting to work outside the county in 1990.
- Occupational structure in 1990, measured as the percent of employment in selected occupational sectors. A strong association exists between some occupational and industrial sectors. We gave priority to industrial structure, and then added two occupational sectors following a stepwise procedure similar to that described above.
- Unemployment rate in 1990.

The dependent variable, net migration 1990-1996, was calculated using data from the U.S. Bureau of the Census Cooperative County Population Estimates File, 1996, and included net domestic and international migration. The Rural-Urban Continuum Codes and Natural Amenities Scale are ERS data products. The other variables were calculated based on data from the 1990 decennial census Summary Tape File 3C (Census of Population and Housing 1990). Ordinary least squares regression was used to model the multivariate associations. We checked the results against a weighted least squares regression, with the natural logarithm of 1990 population as the weight variable, but there were no substantial differences in any of the coefficients or in the overall fit, so we present only the unweighted regression results.

The coefficients of the rural-urban continuum dummy variables show a substantial positive effect of rurality on migration (Table 3). The more rural categories all had positive coefficients compared with the reference category --counties adjacent to metropolitan areas and

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with large urbanized populations. With the important economic, demographic, and natural amenity factors controlled, the positive effect of metro adjacency was greatly reduced from the bivariate associations described earlier. This suggests that the more rural counties are inherently more attractive migration destinations, but that migration to them is suppressed somewhat by their relative lack of employment opportunities.

Both Galston (1993) and Wardwell's (1980) theories suggest an important role for natural amenities in determining rural migration patterns, and migration in the nonmetro South in the early 1990s was consistent with this expectation. Based on standardized coefficients, the ERS Natural Amenities Scale was the strongest predictor of net migration in the regression model. Counties with a high proportion of elderly did attract migrants, but the effect was modest. The weakness of this effect may result from the existence of two types of counties with high proportions of elderly, retirement destinations, and low-density agricultural counties. The former are likely to have high rates of immigration, but the latter have high proportions of elderly because of outmigration of younger persons and aging in place.

The coefficients for the economic structure variables suggest that the nonmetro South has not moved completely from Galston's (1993) second (production-based) to third (amenity-based) phase of comparative rural advantage. Mining did have a small negative effect on migration, and the effect of agriculture was negligible (thus not included in the model), consistent with the waning of Galston's first (extractive-based) phase. Sectors typical of amenity-based economies (retail, finance-insurance-real-estate, and entertainment-recreation-services) had positive effects on migration, but durable manufacturing -- a second-phase sector -- also had a fairly strong positive effect. Further, the two service *occupation* categories in the model had negative effects on migration.

The regression model, then, is completely consistent with Wardwell's deconcentration hypothesis, with natural amenities as well as rurality exerting quite strong positive attraction for migrants. However, the economic structure characteristics attracting migration are more broadly-based, including both production and amenity-based services, than would be expected if the nonmetro South conformed to Galston's third phase of comparative rural advantage. It is difficult to say at this point if the nonmetro South is moving toward

Table 3. Regression of Net Migration During the Period 1990-1996 on Location, Economic Structure, Demographic Characteristics and Natural Amenities of Counties in the Nonmetro South

Variable	Metric Regression Coefficient	Standardized Regression Coefficient
ERS Rural-Urban Continuum Category:		
(4) Adjacent to metro area, urban pop. greater than 20,000		
(5) Not adjacent to metro area, urban pop. greater than 20,000	1.067 ns	0.03ns
(6) Adjacent to metro area, urban pop. 2,500 to 20,000	2.758	0.19
(7) Not adjacent to metro area, urban pop. 2,500 to 20,000	2.848	0.19
(8) Adjacent to metro area, fully rural	3.252	0.17
(9) Not adjacent to metro area, fully rural	2.504	0.14
ERS Natural Amenity Scale score	1.076	0.22
Percent of population elderly in 1990	0.197	0.11
Industrial structure in 1990 (% of employment):		
Mining	-0.088	-0.07
Construction	0.418	0.15
Durable manufacturing	0.193	0.19
Retail	0.355	0.16
Finance, insurance, and real estate services	0.861	0.15
Business and repair services	0.433	0.06
Entertainment and recreation services	0.931	0.08
Public Administration	0.350	0.16
Percent of workers commuting to work outside the county in 1990	0.082	0.19
Occupation structure in 1990 (% of employment):		
Private household services	-1.770	-0.13
Services except private household and protective	-0.179	-0.07
Unemployment rate in 1990	-0.348	-0.17
Number of cases = 1,006		
Adjusted R ² = .40		

ns means not significant at 95% confidence level.

Source: Prepared by ERS using data from the U.S. Bureau of the Census cooperative county population estimates, 1996, Census of Population and Housing Summary Tape File 3C, 1990, and the ERS Natural Amenities Scale.

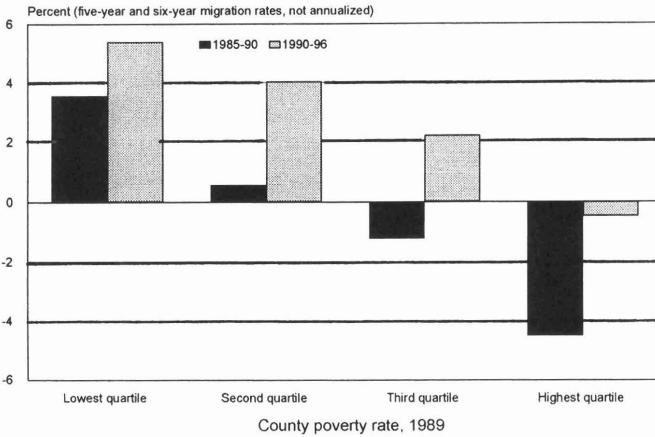
the third phase but has just not completed the transition, or if its relative rural advantage will continue to be based on production as well as amenity-based services.

Migration in the Nonmetro South - Nord and Cromartie 195**Migration and High Poverty Areas of the Nonmetro South**

We are interested not only in overall or average migration impacts on the nonmetro South, but also in how widespread these impacts are and whether they extend to the most economically-disadvantaged areas. Economic well-being is far from equal across the counties of the nonmetro South. Many counties are doing well, but others have high poverty rates that have persisted for decades. In 443 of the 1,006 counties of the nonmetro South, poverty rates have exceeded 20 percent in every decennial census since poverty rates were first estimated in 1960. In the nonmetro South, most persistent-poverty counties fall into one of three categories based on geography and on the predominant race and ethnicity of the poor: (1) Areas of high black poverty in the lower Mississippi River Valley and in the "Black Belt" stretching from the Carolinas across southern Georgia, Alabama, and Mississippi; (2) Areas of high Hispanic poverty in the Rio Grande Valley and the High Plains of Texas; and (3) areas of high white poverty in the Appalachian Highlands and the Ozark/Ouachita Plateau (Beale 1993). We consider now how migration is affecting these high-poverty areas. Is there evidence of revitalized economies attracting migrants to these areas? Do income- and education-specific migration patterns in the high-poverty areas reduce or exacerbate their economic disadvantages?

As a first step, we categorized the counties of the nonmetro South into quartiles based on 1990 poverty rates and calculated net domestic migration rates for each quartile. The results are not encouraging (Figure 9). In both time periods, 1985-1990 and 1990-1996, net domestic migration declined monotonically with increasing poverty rate. The absolute levels of net migration were higher in the 1990s, but the association with poverty rate was unchanged. Still, the reversal from net outmigration to net immigration in the third quartile and the substantial reduction of net outmigration in the fourth quartile are at least modestly good news. The bivariate correlation of poverty rate with net migration was negative with a Pearson correlation coefficient of $-.33$. However, this variable was not statistically significant when added to the regression model described in the previous section (Table 3), suggesting that the negative association of high poverty with migration is mediated almost completely by the economic structure of those counties.

Figure 9. Net Domestic Rates in the Nonmetro South by County Poverty Rate, 1985-90 and 1990-96



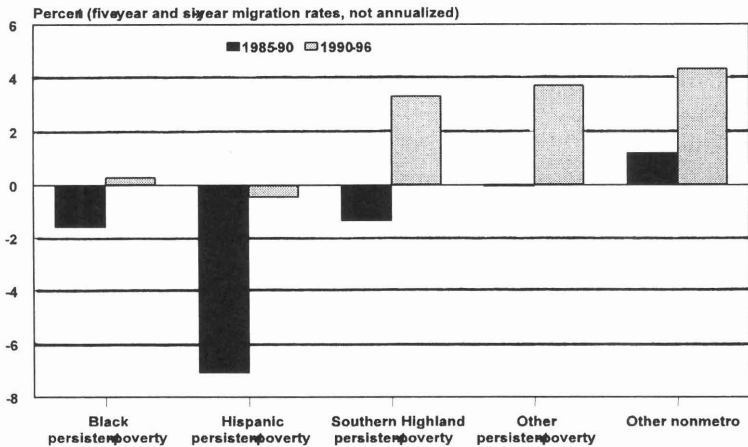
Source: Calculated by ERS using data from the U.S. Census Bureau County-to-County Migration File, 1985-90, and Cooperative County Population Estimates, 1990-96. and Summary Tape File 3C, 1990.

Net domestic migration in the late 1980s was negative in the black, Hispanic, and southern highland persistent-poverty counties in the nonmetro South, and negligible in the “other persistent-poverty” category⁵ (Figure 10). In the period 1990-96, however, the southern highland and “other” persistent poverty counties registered net domestic immigration at nearly the same level as did nonmetro counties not persistently poor. If international immigration is added, the Hispanic persistent-poverty counties would also register positive net migration, although at a somewhat lower level than that of the southern highland and “other” categories. Only the black persistent-poverty counties, as a category, lagged far behind the average for the nonmetro South, and even there net migration was slightly positive.

⁵The “other persistent-poverty” category includes 50 persistent-poverty counties that do not meet criteria for inclusion in any of the other three geographic or race-ethnic subcategories. They are outside of the southern highlands and their poor population has neither a black nor Hispanic majority. Four have a predominantly Native-American poor population.

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Figure 10. Net Domestic Migration Rates in the Nonmetro South by Persistent-Poverty Status of Counties, 1985-90 and 1990-96

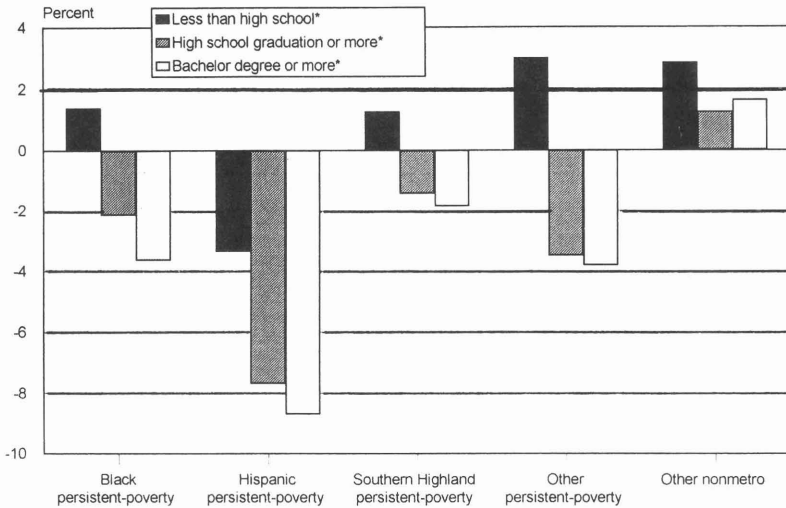


*Net international immigration to Hispanic persistent-poverty counties in 1990-96 was 2.8 percent, more than offsetting the domestic migration loss. Source: Calculated by ERS using data from the U.S. Census Bureau County-to-County Migration File, 1985-90, Cooperative County Population Estimates, 1990-96 and Summary Tape File 3C, 1990.

Analysis of county-to-county migration based on the 1990 census found that at the national level, differential migration of the poor and nonpoor increased the spatial concentration of poverty during the period 1985-1990 (Nord 1998a). Similarly, differential migration of persons with more and less education reduced the high school graduate and college graduate shares of the working-age population in the persistent-poverty counties (Nord 1998b). In the persistent-poverty counties of the nonmetro South these patterns were quite consistent (Figure 11). All four persistent-poverty categories lost working-age high school graduates and college graduates through migration during the period 1985-90. Further, three of the persistent-poverty categories gained persons with less than high school graduation, and in the remaining category (Hispanic), net outmigration of those with less than high school graduation was much lower than for high school graduates.

Nested regression analyses (not shown) indicate that somewhat more than half of the education differentials in the migration rates of

Figure 11. Education-Specific Net Domestic Migration Rates of Working-Age Persons in the Nonmetro South by Persistent-Poverty Status of Counties, 1985-90



Notes: Less than high school and high school graduate categories include persons age 25-64 in 1990. High school graduates includes college graduates as well. The bachelor degree or more category includes only persons age 35-64 in 1990.

Source: Calculated by ERS using data from the U.S. Census Bureau County-to-County Migration File, 1985-90.

persistent-poverty counties can be explained by differences between the economic structures of persistent-poverty counties and those of other counties. Separate regressions were calculated with the net migration rate of each education category as dependent variable. For each education category, three regression models were run. In the first, the only independent variables were dummy variables for the four subcategories of persistent-poverty counties. In the second, location variables were added (rural-urban continuum dummies, natural amenities, and percent elderly). In the third model the economic structure variables in Table 3 were added. Adding the location variables generally reduced only slightly the difference across education categories of the persistent-poverty dummy coefficients, while adding the economic structure variables reduced them substantially.

To further explore the county characteristics that differentially

attract immigrants with various levels of education, we compare regres-

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sion equations of net migration rates of three groups differing by education attained (Table 4). During the 1980s, deconcentration was less pronounced in general than it was in the early 1990s (cf. Table 3), and the least educated migrants, especially, exhibited almost no tendency to migrate to the nonadjacent and less urbanized counties. Deconcentrating migration was stronger, although still not statistically significant in any individual category, for high school graduates, and stronger still for college graduates. The natural amenities coefficient was also much lower for the least-educated category, probably indicating their lower ability to act on preferences for lower-density residential locations. High school dropouts were more attracted than others to counties with larger employment shares in retail sales and less attracted to construction (which may stand as a proxy for recent growth) and to finance-insurance-real-estate.

It is not known if this spatial sorting through migration -- exacerbating human capital deficits in persistent-poverty counties -- has continued into the early 1990s, or if the reversal of the "brain drain" from nonmetro areas in general in the 1990s has reached to the persistent-poverty counties. County-level data on personal characteristics of migrants needed to explore this important issue do not exist except in the decennial censuses. An indirect (though unfortunately rather weak) indicator is available in the county migration data produced by the Internal Revenue Service (Internal Revenue Service 1993, 1994). The IRS county migration files provide, for each county, estimates of immigrants, outmigrants, and nonmovers as well as the aggregate income associated with each of the three groups. These data allow the calculation of per-capita income of each of the three groups, and of a summary variable for the county which we call the "income effect of migration." The income effect of migration is, conceptually, the change in per-capita income in the county due to the migration of the previous year. It is determined by the in- and outmigration rates as well as the per-capita income of in-movers, out-movers and non-movers. This variable is interesting in its own right as a measure of where income is moving (see Nord and Cromartie 1997), but it can also stand as a proxy for the mix of education levels in the migration streams, given the strong association between education and income. The mean income effect of migration in the persistent-poverty subcategories of the nonmetro South during the period 1992-1994 is depicted in Figure 12. The persistent-poverty

Table 4. Determinants of Net Migration During the Period 1985-90 in Counties of the Nonmetro South for Three Education-Attainment Categories. Dependent Variables are Net Migration Rates for the Respective Education Categories.

Variable	Education attained		
	Less than HS graduation ¹	HS graduate or more ²	College graduate or more ³
	standardized regression coefficients		
ERS Rural-Urban Continuum Category:			
(4) Adjacent to metro area, urban pop. > than 20,000 (ref.)			
(5) Not adjacent to metro area, urban pop. > than 20,000	0.01 ns	0.01ns	0.00ns
(6) Adjacent to metro area, urban pop. 2,500 to 20,000	0.02ns	0.11ns	0.15
(7) Not adjacent to metro area, urban pop. 2,500 to 20,000	0.02ns	0.09ns	0.09ns
(8) Adjacent to metro area, fully rural	0.04ns	0.07ns	0.12
(9) Not adjacent to metro area, fully rural	-0.05ns	0.05ns	0.11ns
ERS Natural Amenity Scale score	0.12	0.20	0.22
Percent of population elderly in 1990	0.14	0.14	0.05ns
Industrial structure in 1990 (% of employment):			
Mining	-0.10	-0.09	-0.11
Construction	0.03ns	0.13	0.15
Durable manufacturing	0.19	0.20	0.12
Retail	0.10	0.06ns	0.05ns
Finance, insurance, and real estate services	-0.03ns	0.09	0.15
Business and repair services	-0.01ns	0.01ns	-0.03ns
Entertainment and recreation services	0.06	0.05ns	0.07
Public Administration	0.33	0.28	0.02ns
Percent of workers commuting to work outside the county in 1990	0.19	0.20	0.06ns
Occupation structure in 1990 (% of employment):			
Private household services	-0.16	-0.14	-0.13
Services except private household and protective	-0.06ns	-0.15	-0.08
Unemployment rate in 1990	-0.02ns	-0.15	-0.09
Number of cases = 1,006			
Adjusted R ²	.274	.413	.251

Notes: ns means not significant at 95% confidence level

¹Ages 25-64 in 1990 without high school graduation

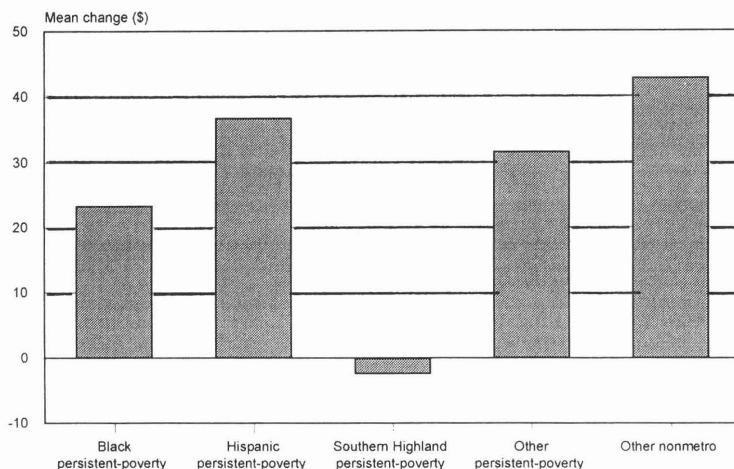
²Ages 25-64 in 1990; all high school graduates including college graduates

³Ages 25-64 in 1990 college graduate or more

Source: Prepared by ERS using data from the U.S. Bureau of the Census cooperative county population estimates, 1996, Census of Population and Housing Summary Tape File 3C, 1990.

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Figure 12. Effect of Migration on Per-Capita Income in the Nonmetro South by Persistent-Poverty Status of Counties, Annual Average 1992-93 and 1993-94



Source: Calculated by ERS using data from the Internal Revenue Service County-to-County Migration Files, 1993 and 1994.

counties, with the exception of those in the southern highlands, appear to be nearly holding their own, although not gaining on the rest of the nonmetro South. The southern highlands persistent-poverty counties, though, continued to attract primarily lower-income, presumably less-educated migrants, even though net migration is relatively high.

Summary

Migration trends in the 1990s are quite favorable for the nonmetro South as a whole. Net migration is positive and substantial. The net immigrants represent a gain especially of people in their early career years and include a disproportionate share of young families. The “brain drain” that characterized the 1980s has at least slowed, and possibly stopped. Net migration of high school graduates to the nonmetro South now exceeds that of high school dropouts, and net migration of college graduates is at a rate similar to that of high school dropouts.

The net migration gain of the nonmetro South as a whole is consistent with Wardwell's (1980) deconcentration perspective. The pattern of migration gains in the nonmetro South across the rural-urban continuum provides further, although somewhat mixed, support for this hypothesis. Migration gains were substantial in counties not adjacent to metropolitan areas, although net gains were greatest in counties adjacent to metropolitan areas. Further, within adjacency categories, less urbanized counties experienced higher rates of net migration than did more urbanized counties. This pattern of "deconcentrating" migration was much stronger in the first half of the 1990s than it was in the last half of the 1980s. Net immigration to rural areas was widespread, although not ubiquitous in the rural South. One-fourth of the counties in the nonmetro South continued to experience outmigration, but even in those counties, the rate of outmigration has slowed, and exceeds 1 percent per year in only about 50 counties.

Recent migration patterns in the nonmetro South also conform strongly to Galston's (1993) hypothesis that the comparative advantage of rural areas is increasingly found in their natural amenities and corresponding attractiveness as places to live and recreate. Counties with high natural amenity endowments exerted a strong attraction for migrants in the nonmetro South. Net migration to counties in the top quartile on a measure of natural amenities was four times that to counties in the bottom quartile. In the multivariate regression model, this measure of counties' natural amenities endowments was the strongest single predictor of net migration during the 1990s. At the same time, Galston's (1993) second phase of rural comparative advantage -- production factors that attract manufacturing enterprises -- is still very much in evidence in the nonmetro South. The economic structural characteristics that are associated with high net migration include employment in durable manufacturing industries (second phase) as well as in sectors associated with amenity-based development such as retail sales and entertainment and recreation services (third phase).

Finally, the most economically disadvantaged areas of the nonmetro South may not be benefiting as much as other areas from the rural migration rebound. Net migration to the high-poverty counties remains far below that to other counties, although the net outmigration from those counties observed in the 1980s has slowed or stopped. Differential migration by income and education tended to reinforce rather than redress the economic disadvantage of the

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persistent-poverty counties in the 1980s. It is not clear whether this trend has continued or abated in the 1990s, although there is some evidence that it has weakened. Much of the education-specific difference in migration patterns in the persistent-poverty counties can be accounted for by differences in economic structures between the persistent-poverty counties and other counties, pointing again to the critical role of economic structures and labor markets in addressing problems of spatial economic inequalities.

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