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## **Employment Change in the Nonmetropolitan South: An Overview of Recent Trends and Future Prospects**

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**ABSTRACT** Employment growth in the nonmetropolitan South exceeds the national average, yet job losses are the norm for many counties in the region. In addition, the earnings per job differential between workers in the rural South and the nation has widened. Recent changes in the economic environment promise new challenges for many southern nonmetropolitan communities. The new economy is characterized by continued growth in service-related activities, the rapid adoption of new technologies and production organizations, corporate restructuring and industry clustering, and enhanced competitiveness resulting from globalization of markets. The implications of these changes for labor demand in rural areas will vary markedly depending on local history, characteristics, and responses to the changes. Competitiveness in the new environment will be enhanced through raising labor productivity, improving public goods and services, providing supportive institutions, and raising local quality of life.

The nonmetropolitan South is a diverse region of ranch and farming communities, mill villages, mining towns, seaside and mountain resorts, manufacturing centers, regional shopping centers, and bedroom communities on the metro fringe<sup>1</sup>. The heterogeneity of the rural South is reflected in the development experiences and prospects of its communities. Many nonmetro areas in the South

<sup>1</sup>Throughout this paper, rural and nonmetro will be used interchangeably to refer to Nonmetropolitan Statistical Areas, and urban and metro will both refer to Metropolitan Statistical Areas. The South is defined as the 16 state region in the South census division (Delaware, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Mississippi, Alabama, Arkansas, Louisiana, Texas, and Oklahoma).

are rapidly growing (e.g., recreation/retirement areas, urban fringe), and local community development goals in these areas are focused on managing growth to protect the local quality of life. A large number of other rural areas in the South have experienced extended periods of slow (or negative) employment and population growth. A goal shared by these communities is the expansion of local employment opportunities and improvement of local job quality. Community leaders view more and better jobs as a means of retaining young families and high school and college graduates, increasing the local tax base and improving public services, expanding commercial activity and revitalizing "main street," and enhancing the overall local quality of life. The perceived benefits associated with more and better jobs are sufficiently large and visible to encourage the allocation of significant resources to employment generation strategies such as industrial recruitment, small business development, tourism and retirement promotion, value-added enhancement in agriculture, and labor quality enhancement.

Nonmetropolitan areas of the South, on the whole, have been successful in their efforts to expand and improve employment opportunities. During the 1990s, the rate of employment growth in the rural South exceeded the national growth rate. But relatively rapid employment growth in the rural South obscures two weaknesses in the region's demand for labor. First, the southern nonmetro employment growth experience is highly varied, with slow growth or job losses continuing to be the norm for many counties in the region. Second, the average growth of earnings per worker for southern nonmetro employees lags the national average. Thus, the earnings differential between the rural South and the remainder of the nation continues to widen.

The purpose of this paper is to summarize recent employment and earnings trends in the nonmetro South and review changes in the competitive environment that may impact future employment opportunities and earnings for rural workers. The new competitive environment is characterized by greater global competition, a continuing shift from goods-producing to service-producing industries, new production organizations and technologies, and industrial restructuring. The implications of these structural

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changes for nonmetropolitan businesses and workers are summarized after an overview of recent trends.

**Employment and Earnings Trends in the  
Nonmetropolitan South**

Since the 1989-1990 recession, the U. S. economy has experienced a period of sustained growth in employment and nominal earnings per worker, and workers in the nonmetro South benefitted from this “rising tide” of economic activity. From 1991 to 1996, employment in nonmetro areas of the 16 Southern states increased by approximately 1,019,000 jobs (10.2 percent) and average nominal wages per worker increased from \$17,948 to \$20,945 (16.7 percent). For the nation as a whole, employment increased by 9.7 percent and average wages per job by 17.6 percent from 1991 to 1996. Thus nonmetro areas in the South created jobs at a more rapid rate than the nation, but the wage differential between southern nonmetro workers and the nation as a whole increased during the 1990s.

The aggregate employment and wage statistics disguise much variability that exists within the nonmetro South by major industry divisions and by nonmetro county location, size, and employment base. Differences among industries, states, and counties within the rural South are summarized below.

**Major Industry Divisions**

Southern nonmetro employment change by industry parallels that of the nation and nonmetro areas in other regions (Tables 1 and 2). Farm employment declined at similar rates (approximately 5.0 percent) in the nonmetro South and the remainder of the nation. And employment in mining and in the military declined significantly in the rural South as elsewhere in the United States. The rate of southern nonmetro employment loss in mining exceeded that of the nation while military employment declined at a slower rate in the rural South than in other nonmetro areas. Federal civilian employment in the rural South also fell from 1991 to 1996, but only by 1,681 workers or -1.2 percent. Employment loss rates

**Table 1. Nonmetropolitan Employment in Selected Industries, Southern States, 1991 to 1996.**

Industry	Nonmetro Employment 1991	Nonmetro Employment 1996	Employment Change 1991-1996
A. Farm Employment	779,166	740,432	-38,734
B. Nonfarm Employment	9,247,805	10,305,680	1,057,975
1. Private Employment	7,506,766	8,440,385	933,619
Ag. Serv., Forestry, Fishing and Other	113,934	151,137	37,203
Mining	198,497	161,479	-37,018
Construction	511,503	628,039	116,536
Manufacturing	2,033,624	2,118,784	85,160
Transportation and Public Utilities	390,986	417,542	26,556
Wholesale Trade	304,612	331,272	26,660
Retail Trade	1,571,404	1,847,663	276,259
Finance, Insurance, and Real Estate	434,422	465,481	31,059
Services	1,947,784	2,318,988	371,204
2. Government and Govt. Enterprises	1,741,039	1,865,295	124,256
Federal, Civilian	141,679	139,998	-1,681
Military	211,467	184,843	-26,624
State	407,028	450,772	43,744
Local	980,865	1,089,682	108,817
Total Employment	10,026,971	11,046,112	1,019,141

Source: U. S. Department of Commerce, Bureau of Economic Analysis, 1969-96. Regional Accounts Data, County Wage and Salary Summary CA-34.

*Employment Change - Barkley***Table 2. Percentage Employment Change for the Nonmetro South and the Nation, Selected Industries, 1991 to 1996.**

Industry	Nonmetro South (% Change)	Nonmetro U.S. (% Change)	U.S. Total (% Change)
A. Farm Employment	-5.0	-5.3	-5.1
B. Nonfarm Employment	11.4	12.2	10.1
1. Private Employment	12.6	13.8	11.6
Ag. Serv., Forestry, Fishing and Other	32.7	21.9	24.8
Mining	-18.6	-14.7	-13.9
Construction	22.8	25.6	19.2
Manufacturing	4.2	7.2	1.1
Transportation and Public Utilities	6.8	9.4	9.6
Wholesale Trade	8.8	7.0	5.8
Retail Trade	17.6	16.5	12.9
Finance, Insurance, and Real Estate	7.1	14.7	7.2
Services	19.1	17.4	17.2
2. Government and Govt. Enterprises	7.1	5.3	2.1
Federal, Civilian	-1.2	-5.6	-7.7
Military	-12.6	-16.6	-15.9
State	10.7	8.1	6.6
Local	11.1	10.3	7.4
Total Employment	10.2	10.9	9.7

Source: U.S. Department of Commerce, Bureau of Economic Analysis, 1969-96. Regional Accounts Data, County Wage and Salary Summary CA-34.

in this sector were significantly larger for the nonmetro United States (-5.6 percent) and the nation as a whole (-7.7 percent).

The largest net employment gains for the nonmetro South occurred in services (371,204), retail trade (276,259), construction (116,536), local government (108,817), and manufacturing (85,160). Southern nonmetropolitan employment growth rates in agricultural services, forestry, and fishing (32.7 percent), services (19.1 percent), retail trade (17.6 percent), and local government (11.1 percent) exceeded the sectors' growth rates reported for the United States and other nonmetro areas<sup>2</sup>. Employment growth rates for Southern nonmetropolitan manufacturing (4.2 percent) and construction (22.8 percent) industries, on the other hand, were lower than those for other nonmetro areas. Relatively slow employment growth rates for the nonmetro South's manufacturing and construction industries were not anticipated given the strong population growth in the South and the nonmetro South's past success in attracting manufacturing facilities.

In summary, both the goods-producing (agriculture, forestry, fishing, mining, construction, and manufacturing) and the service-producing (services; trade; government; transportation and public utilities; and finance, insurance, and real estate) sectors contributed to southern nonmetro employment growth from 1991 to 1996. However, net employment change in the service-producing industries contributed 84 percent of the new jobs while only 16 percent were provided by net employment change in the goods-producing sectors. The dominance of the service-producing industries in job creation in the rural South is a continuation of the long-term structural change from primary and secondary sectors to tertiary activities. For the United States as a whole, 88.3 percent of the 1991 to 1996 employment change was attributable to the service-producing industries -- leaving only 11.7 percent for manufacturing, construction, mining, farming, forestry, and fishing.

<sup>2</sup>Much of the employment growth in the agricultural services, forestry, and fishing sector in the South was attributable to new jobs in the landscape and horticultural services industry (SIC 078). Many jobs in this industry, however, are seasonal and pay relatively low wages.

## **Earnings and Employment by State**

Tables 3 and 4 provide changes in nonmetro employment and average earnings per job for the 16 southern states from 1991 to 1996, respectively. All southern states exhibited nonmetro employment gains in the 1990s, though only eight of the states exceeded the national average growth rate of 9.7 percent (Arkansas, Delaware, Florida, Georgia, Mississippi, North Carolina, Tennessee, and Texas), and only four southern states exceeded the nonmetro United States average growth rate of 10.9 percent (Florida, Georgia, Mississippi, and North Carolina).

Average earnings per job increased by 17.6 percent for the nation and 16.3 percent for U. S. nonmetropolitan areas. Only five states in the South (Alabama, Georgia, North Carolina, South Carolina, and Tennessee) reported nonmetro average wage growth rates greater than the national averages. And only seven southern states (the above five plus Arkansas and Florida) had percentage increases in average earnings greater than the national nonmetro rate. Growth in nonmetro earnings in the remaining eight southern states lagged the national averages, resulting in a greater earnings gap in 1996 than that of 1991.

Rapid employment growth in the nonmetro South contributed to declining unemployment rates for nonmetro areas during the 1990s. By 1997, nonmetro unemployment rates for 11 of the 16 states were less than 7 percent (Table 5). Yet unemployment rates in southern nonmetro areas continued to significantly exceed the national average (4.9 percent) and those of southern metro areas. In all southern states except Delaware, Georgia, and Texas, the nonmetro unemployment rate was 40 percent to 80 percent higher than that reported for the states' metropolitan areas.

## **Employment and Earnings by County**

The diversity of recent employment and earnings trends among nonmetropolitan areas is more evident upon investigation of county-level data. First, in terms of employment growth, rural counties in the South generally shared in the nation's economic prosperity in the 1990s. Specifically, 846 of the 1,008 Southern nonmetro counties (83.9 percent) experienced employment gains



**Table 3. Nonmetropolitan Employment Change by State, Southern States, 1991 to 1996.**

State	Employment		1991 to 1996 % Change
	1991	1996	
Alabama	586,671	637,436	8.9
Arkansas	573,064	630,297	10.0
Delaware	65,666	72,628	10.6
Florida	367,235	415,061	13.0
Georgia	1,107,851	1,170,489	15.0
Kentucky	862,125	942,840	9.4
Louisiana	406,716	441,285	8.5
Maryland	191,569	204,550	6.8
Mississippi	747,883	843,645	12.8
North Carolina	1,120,146	1,243,807	11.0
Oklahoma	586,290	634,387	8.2
South Carolina	479,848	521,869	8.8
Tennessee	779,521	860,059	10.3
Texas	1,302,148	1,439,688	10.6
Virginia	688,726	738,396	7.2
West Virginia	408,211	442,127	8.3
Nonmetro	10,026,971	11,046,112	10.2
Nonmetro	24,488,246	27,148,496	10.9
U.S. Total	138,785,800	152,314,900	9.7

Source: U.S. Department of Commerce, Bureau of Economic Analysis. 1969-96. Regional Accounts Data, County Wage and Salary Summary CA-34.

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*Employment Change - Barkley***Table 4. Average Wages Per Job, Full and Part-Time Employees by Place of Work, Nonmetro Counties, Southern States, 1991 to 1996.**

State	Average Wage Per Job		1991 to 1996 % Change
	1991	1996	
Alabama	\$17,291	\$20,530	18.7
Arkansas	16,601	19,323	16.4
Delaware	18,243	20,962	14.9
Florida	17,709	20,622	16.4
Georgia	17,884	21,127	18.1
Kentucky	18,510	21,524	16.3
Louisiana	18,209	20,854	14.5
Maryland	19,712	22,844	15.9
Mississippi	17,730	19,956	12.6
North Carolina	17,699	20,977	18.5
Oklahoma	17,829	19,688	10.4
South Carolina	18,293	21,989	20.2
Tennessee	18,348	22,212	21.1
Texas	17,965	20,523	14.2
Virginia	18,430	21,146	14.7
West Virginia	20,150	22,244	10.4
Nonmetro	17,948	20,945	16.7
Nonmetro U.S.	18,496	21,510	16.3
U.S. Total	\$24,216	\$28,483	17.6

Source: U.S. Department of Commerce, Bureau of Economic Analysis. 1969-96. Regional Accounts Data, County Wage and Salary Summary CA-34.

**Table 5. Metro and Nonmetro Area Unemployment Rates for Southern States, 1997.**

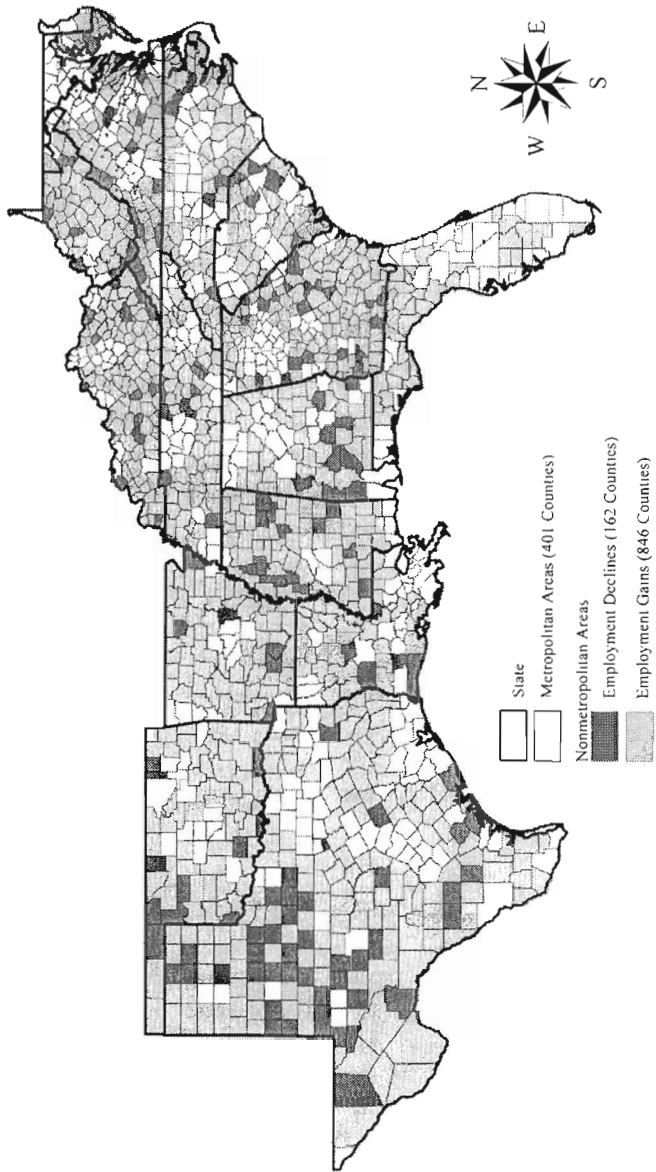
State	Unemployment Rate, 1997 (%)		Nonmetro-Metro Ratio
	Metro	Nonmetro	
Alabama	4.2%	7.0%	1.67
Arkansas	4.2	6.3	1.50
Delaware	4.1	3.9	.95
Florida	4.7	6.0	1.28
Georgia	4.1	5.7	1.39
Kentucky	4.2	6.7	1.60
Louisiana	5.6	8.0	1.43
Maryland	4.9	7.2	1.47
Mississippi	4.0	6.6	1.65
North	3.0	5.0	1.67
Oklahoma	3.5	5.2	1.49
South	3.7	6.6	1.78
Tennessee	4.3	7.8	1.81
Texas	5.2	6.3	1.21
Virginia	3.5	5.7	1.63
West Virginia	5.4	8.2	1.52

Source: U.S. Department of Agriculture, Economic Research Service (USDA/ERS), State Fact Sheets ([www.ers.usda.gov/StateFacts/](http://www.ers.usda.gov/StateFacts/)).

from 1991 to 1996 (see Figure 1). The 162 counties with employment losses were distributed throughout the South, with “county clusters” in the Texas and Oklahoma plains, the Mississippi Delta region, Appalachia, and the old “Cotton Belt” stretching through lower Alabama, Mississippi, Georgia, and South Carolina.

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Figure 1. Employment Change for Southern Nonmetropolitan Counties, 1991 - 1996



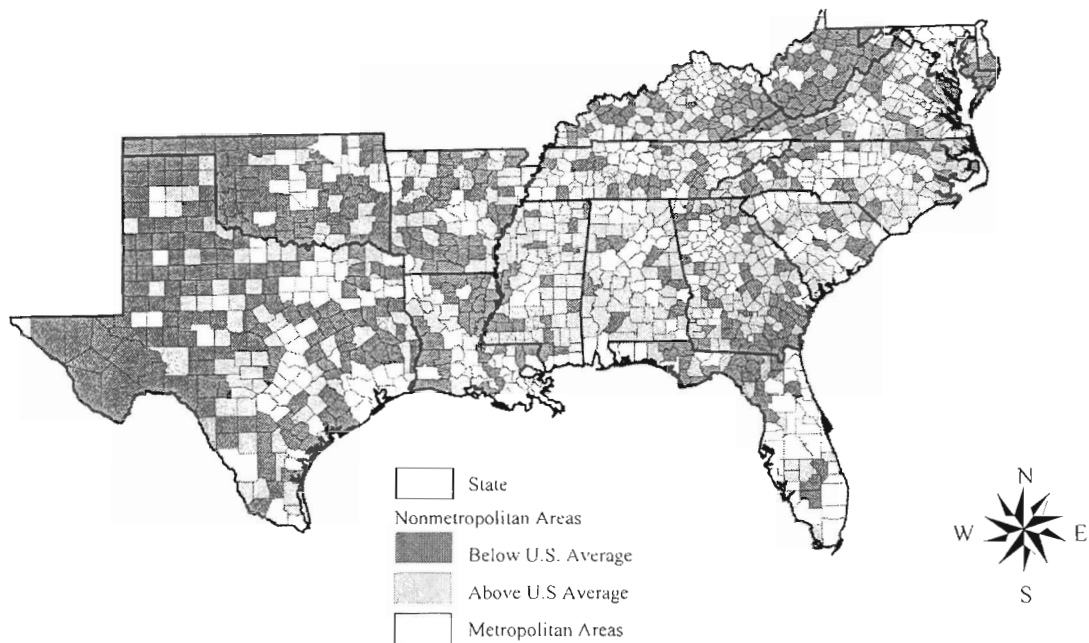
The benefits of national growth for the rural South are less evident when viewed from the perspective of changes in earnings per job. For the nation as a whole, nominal earnings per job increased by 17.6 percent from 1991 to 1996. Among the 1,006 southern nonmetro counties, only 485 counties (48.2 percent) reported gains in earnings per job at rates exceeding the national average (Figure 2). For the remaining 523 rural counties, the gap between local earnings per job and the national average widened during the 1990s. The counties with below average earnings growth were located predominantly in the western portion of the South (Texas, Oklahoma, Arkansas, and Louisiana), Appalachia, and the Georgia-Florida border region.

The cumulative effects of slow growth in employment and earnings per job are reflected in low current earnings for nonmetro workers in the South (Figure 3). In 1996, only 18 nonmetro southern counties (1.8 percent) had earnings per job greater than the national average (\$28,483), while 198 counties (19.6 percent) reported average earnings per job less than 60 percent of the U.S. average. The rural counties with the lowest average earnings generally are, as expected, located in the regions with low job and/or income growth for the 1990s (Texas-Oklahoma Plains, Arkansas Ozarks, Mississippi Delta, Kentucky Highlands, and Cotton Belt). Interestingly enough, however, few counties with low average earnings are located in Appalachia despite the job losses and slow earnings growth experienced in this region from 1991 to 1996. The historically high wages associated with the mining industry appear to support earnings levels above the 60 percent threshold.

### **County Type**

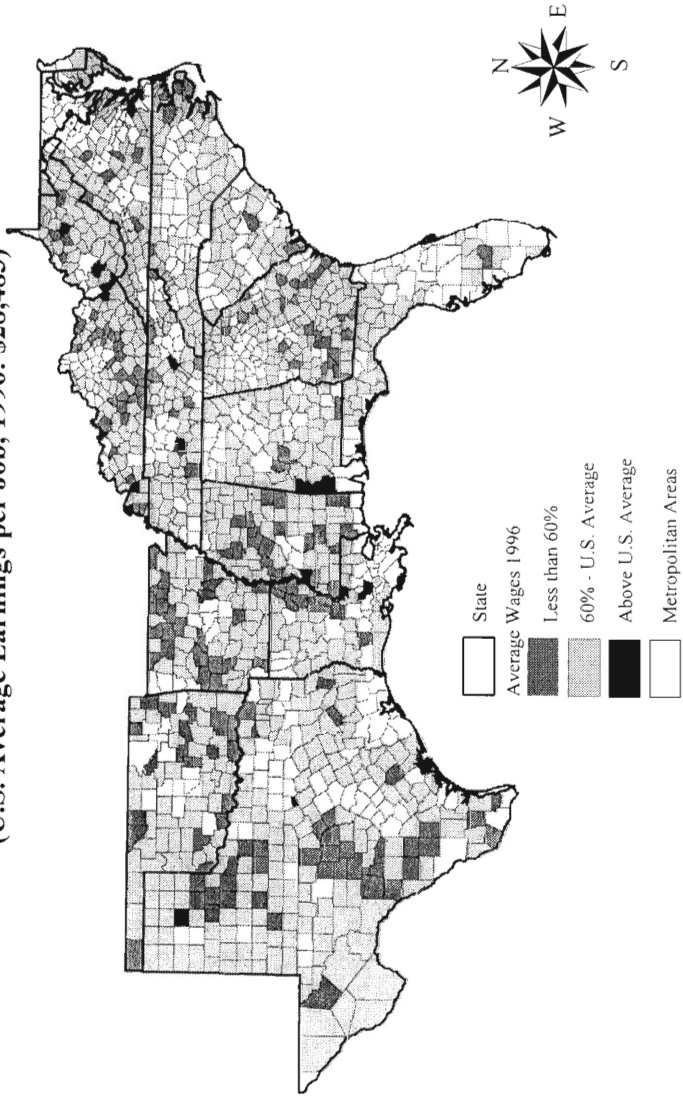
Employment losses in farming and mining and a stagnant manufacturing sector suggest that rural areas dependent on these industries will be at a disadvantage in generating jobs. Similarly, small and geographically isolated rural areas in the South often are perceived to be unattractive to firms in the rapidly growing service-producing industries. Thus, employment growth in these regions is expected to lag that of more populous rural counties and counties adjacent to metro areas.

**Figure 2. The Change of Earnings per Job for Southern Nonmetropolitan Counties, 1991-1996  
(Change in U.S. Earnings per Job: 17.6%)**





**Figure 3. The Average Earnings per Job of Nonmetropolitan Counties, 1996  
(U.S. Average Earnings per Job, 1996: \$28,483)**



An examination of earnings and employment trends by county type (size, adjacency status, and industry specialization) only partially supports these expectations. Population size and adjacency status, on average, were not consistently correlated with county growth rates for employment or earnings per job (Table 6). The 1991 to 1996 percentage change in earnings per job differed little by county--size adjacency status, ranging from a low of 15.8 percent for medium, not adjacent counties to a high of 17.3 percent for medium, adjacent counties. Average employment growth rates were lowest for small, not adjacent counties (8.1 percent), and highest for large, not adjacent rural areas (13.2 percent). And for small- and medium-sized counties, those adjacent to metro areas did experience, on average, marginally higher rates of employment growth. Alternatively, among the more populous rural counties, employment growth rates were strongest in those counties not adjacent to metro areas.

Specialization in a specific industry (farming, mining, manufacturing, services, government, or nonspecialized), was not strongly related to average employment or earnings growth, with the exceptions of mining and manufacturing (Table 6).<sup>3</sup> Among the southern nonmetro counties, the 78 mining-related counties had, on

<sup>3</sup> County types by industry specialization are based on the USDA/ERS nonmetro county typology (Cook and Mizer 1994). The county economic types, which are mutually exclusive, are defined as follows:

*Farming-dependent*—Farming contributed a weighted annual average of 20 percent or more of total labor and proprietor income over 1987-89.

*Mining-dependent*—Mining contributed a weighted annual average of 15 percent or more of total labor and proprietor income over 1987-89.

*Manufacturing-dependent*—Manufacturing contributed a weighted annual average of 30 percent or more of total labor and proprietor income over 1987-89.

*Government-dependent*—Federal, State, and local government activities contributed a weighted annual average of 25 percent or more of total labor and proprietor income over 1987-89.

*Service-dependent*—Service activities (private and personal services, agricultural services, wholesale and retail trade, finance and insurance, real estate, transportation and public utilities) contributed a weighted annual average of 50 percent or more of total labor and proprietor income over 1987-89.

*Nonspecialized*—Counties not classified as a specialized economic type over 1987-89.

**Table 6. Employment and Earnings Change by County Type, Southern Nonmetro Counties, 1991 to 1996.**

County Classification	Number of Nonmetro Counties	Percentage Change in Employment	Percentage Change in Earnings Per Job
<u>Nonmetro (Beale) Code<sup>a</sup></u>			
Large Adjacent	51	10.4	16.5
Large Not Adjacent	37	13.2	16.8
Medium Adjacent	328	11.9	17.3
Medium Not Adjacent	270	10.6	15.3
Small Adjacent	143	11.9	17.0
Small Not Adjacent	179	8.1	16.5
<u>Specialization</u>			
Farming	172	12.8	17.3
Mining	78	4.5	9.4
Manufacturing	310	10.3	18.4
Services	100	12.8	15.5
Government	112	12.5	16.3
Non Specialized	236	13.4	17.6

Source: U. S. Department of Commerce, Bureau of Economic Analysis. 1969-96. Regional Accounts Data. County Wage and Salary Summary. CA-34.

<sup>a</sup>Nonmetro codes are defined by Butler and Beale (1994) as follows:

- Large Adjacent: Urban population of 20,000 or more, adjacent to a metro area
- Large Nonadjacent: Urban population of 20,000 or more, not adjacent to a metro area
- Medium Adjacent: Urban population of 2,500 to 19,999, adjacent to a metro area
- Medium Nonadjacent: Urban population of 2,500 to 19,999, not adjacent to a metro area
- Small Adjacent: Completely rural or less than 2,500 urban population, adjacent to a metro area
- Small Nonadjacent: Completely rural or less than 2,500 urban population, not adjacent to a metro area
- Adjacent: Nonmetro counties physically adjacent to one or more metro areas and having at least 2 percent of the employment labor force in the county commuting to the central metro county

average, both the lowest percentage change in employment (4.5 percent) and the lowest rate of growth in earnings per job (9.4 percent). The 310 counties specializing in manufacturing also had relatively low employment growth (10.3 percent), but the percentage change in earnings per job (18.4 percent) was the highest among the six county specialization categories. The remaining county specialization groups (farming, services, government, and nonspecialized) were very similar in terms of growth rates for employment and earnings per job.

The above findings indicate that employment and earnings growth rate differences among southern nonmetro counties cannot be explained solely by county size, location, or economic base differences. Greater understanding of the determinants of rural county growth requires multivariate analysis of the relationship between county population and employment changes and local and regional characteristics. Carlino and Mills (1987), for example, found that county population and employment growth are interrelated (that is, "jobs follow people" and "people follow jobs"). An implication of this finding is that strategies to retain or attract residents (e.g., good schools, local quality of life, interstate highways) will, in turn, lure businesses and increase the regional demand for labor. In addition, Henry, Barkley, and Bao (1997) found that rural counties near metro areas benefited from nearby urban growth spillovers if the urban population growth rates were fast in the fringe but slow in the core. This population spillover was highest in rural counties with good schools, abundant public services, quality housing, and relatively little poverty. However, Henry et al. found little evidence of urban employment spread effects to nearby rural areas. Finally, local leadership, institutions, and social structure also are considered important determinants of local development, though the influence of these attributes are difficult to quantify (Barkley 1998).

### **Future Prospects for Labor Demand**

The diversity of growth experiences across the nonmetro South indicates significant differences among rural counties in adaptability to the past economic environment. However, recent changes in the economic environment facing the nonmetro South

may result in new “winners” and “losers” among rural communities. The new global economy is characterized by continued growth in service-related activities as sources of employment, the rapid adoption of new technologies and production organizations, corporate restructuring and industry clustering, and enhanced competition resulting from the globalization of markets. The implications of these changes in the economic environment on nonmetro areas are summarized in the following sections.

### **Internationalization of Competition**

Improvements in transportation and communication technologies and reductions in artificial trade barriers through NAFTA and GATT result in the development of global markets for many goods and services. U.S. producers now must meet world market standards for price, quality, service, and delivery.

The internationalization of markets for goods and services and intensification of global competition will present both positive and negative impacts on rural producers and labor demand. On the positive side, new markets are available to rural firms, and southern producers that are competitive in these markets may benefit local labor markets through expanded employment opportunities and higher wages. For example, Testa (1993) suggests that the liberalization of trade should benefit the machinery, transportation, electrical equipment, and instruments industries. And Coughlin and Mandlebaum (1990) predict that export growth will be greatest among firms whose production processes are capital intensive and/or skilled-labor intensive. Alternatively, relatively little impact from freer trade is expected for the food products and lumber and wood products industries — important employers in certain areas of the rural South (Cox and Hill 1994).

On the negative side, an expansion of international trade will render some nonmetro firms susceptible to import penetration from producers in low-wage countries. Bernat (1994) suggests that rural industries reliant on unskilled labor, standardized products, and routinized production processes will be most susceptible to imports from low-wage countries. Responses by rural producers to competition from foreign producers include ceasing production,

moving production overseas (“if you can't beat them, join them”), increasing capital intensity to substitute capital for labor or de-skill labor, or reducing real wages and benefits. Shoe manufacturing is an example of an industry ceasing production/moving overseas in response to heightened competition while textile firms initiated a major change in production technology in an effort to remain competitive. Employment declined significantly in both industries, but relatively less in textiles and labor productivity and wages increased for textile employees.

In sum, rural areas now compete with metro areas for employers requiring skilled labor and with other countries for businesses reliant on low-wage, unskilled labor. Rural areas no longer can rely on product life cycle forces and the filtering down process for a steady source of potential new employers. Firms in the mature phase of their life cycle now by-pass rural areas for foreign locations where unskilled labor is relatively abundant and cheap. In addition, relatively rapid increases in human capital in the rural workforce (a closing of the urban-rural labor quality differential) means that competition with urban areas for businesses requiring skilled labor is a more promising strategy than competing with other countries for manufacturers using routinized production processes and low-wage labor.

### **Service Sector Growth**

As noted earlier, most of the recent net job growth in the rural South (84 percent) resulted from expansion in the service-related industries (transportation and public utilities; trade; services; government; and finance, insurance, and real estate). Glasmeier and Howland (1994) attribute this relatively rapid growth in service-related employment to a number of interrelated factors. Growth in consumer services is explained by the high income elasticity of demand for services, an increase in dual-wage-earning households, and an unprecedented increase in demand for medical services and tourism- and retirement-related activities. Contributing factors to the growth of employment in business and producer services are the expansion of foreign trade, increased complexity of corporate activities, proliferation of government regulations, specialization and the resulting out-sourcing of service

activities, and rapid technological change in information and goods processing. And, for many producer and consumer services, employment growth results from a low potential for productivity increases through capital intensification of the service production process. Yet recent technological innovations suggest that this source of service employment growth may be fleeting (Zachary 1995).

The expansion of service-producing industries relative to the goods-producing sector raises two concerns relative to the impact on southern nonmetro labor markets. First, will nonmetro areas in the South be attractive locations for firms in the service sector as they traditionally have been for manufacturing establishments? Research by Glasmeier and Howland (1994) suggests that the more routine, export-oriented services have not decentralized to rural areas (for low-cost labor and land) to the extent that routine manufacturing decentralized. Rural areas will become more attractive locations for service exporters as advanced telecommunications technologies become more available to rural businesses and residents. Malecki (1996) notes, however, that rural communities will lag years behind large urban areas in the acquisition of state-of-the-art telecommunication facilities, and rural areas may experience difficulty in maintaining telecommunication-based activities they eventually acquire as the same capabilities develop in lower-wage overseas locations. Moreover, Rowley and Porterfield (1993) caution that innovations in telecommunications also permit the invasion of rural markets by urban service providers. Thus, it is not clear that the expanding service sector will create employment opportunities in the rural South to the extent these jobs are created elsewhere.

Second, will the shift to service-related activities negatively impact the earnings potential of rural residents? Anecdotal evidence of displaced factory workers flipping hamburgers suggest that employment in the service sector is often a poor substitute for manufacturing jobs. Recent research on this issue is, however, mixed. A comparison of earnings per nonfarm job by industry for the United States (Table 7) lends support to the perception that jobs in service-related activities are not good substitutes for employment in goods-producing industries. In 1997, mean nonmetro earnings per job in nonmetro manufacturing (\$32,207)

*Employment Change - Barkley*

Table 7. Earnings Per Nonfarm Job by Industry, United States, 1997

Industry	Earnings Per Job	
	Nonmetro	Metro
Agr. Services, Forestry, Fishing	\$12,265	\$16,390
Mining	41,544	57,986
Construction	25,502	34,536
Manufacturing	32,207	47,607
Transportation & Public Utilities	33,999	45,544
Wholesale Trade	28,862	44,458
Retail Trade	13,764	17,311
Finance, Insurance & Real Estate	17,030	37,180
Services	18,958	29,974
Government	26,397	34,445
Federal Civilian	41,309	48,664
Federal Military	17,288	22,990
State	28,853	33,527
Local	24,739	33,280

Source: U.S. Department of Agriculture, Economic Research Service (USDA/ERS), 2000. *Rural Conditions and Trends* 10(2):82.

exceeded mean nonmetro earnings in all service-related industries except transportation and public utilities (\$33,999) and federal civilian government (\$41,309). However, the earnings differentials between jobs in manufacturing and those in the remaining service-related industries are partially the result of the relatively large number of part-time and seasonal workers in services and retail trade. Kozicki (1997) also notes that the gap between manufacturing and service productivity is widening due to lagging computerization of service industries and differences in competitive pressures. Lagging service sector productivity may slow earnings growth among service providers relative to



employees in the goods-producing industries. And Marshall and Wood (1992) suggest that the relatively high-wage, high-skill producer services will concentrate in urban areas due to their orientation toward key producer markets and reliance on diverse labor skills.

On the other hand, Beyers (1996) finds that employment growth in producer services is strong in rural areas with high quality of life, proximity to clients, and attractive transportation and telecommunications infrastructure. Moreover, Dupuy and Schweitzer (1994) show that a wide range of high paying jobs are available in the service sector and, overall, the wage gap between goods- and service-producing jobs is negligible. The authors note, however, that the goods-producing industries do offer better earnings prospects for those with a high school degree or less, a segment of the labor force that is disproportionately represented in the rural South. Finally, Krehling, Smith, and Luloff (1996) find that, for the rural Northeast, the transition from agriculture, mining, and manufacturing to service-related industries had positive impacts on the local economy. The authors note that "counties whose employment structures became service-specialized or diversified experienced higher increases in population, employment, and income . . ." (P. 23)

### **Production Technology and Organizations**

Robotics, computer-aided design (CAD), computer-aided manufacturing (CAM), computerized sorting and handling, just-in-time (JIT) inventory replacement, flexible machining cells, and flexible labor cells are examples of innovative cost-reducing technologies and production practices adopted to enhance international competitiveness. The implementation of "high performance production systems" will negatively impact the demand for rural labor if: (1) rural manufacturers are slow to adopt the new technologies, and as a result, become less competitive in the global economy; (2) the adoption of new technologies and organizations by rural producers eliminates jobs at rural manufacturing facilities; or (3) increased labor-skill requirements reduce manufacturers' propensities to decentralize to rural areas.

Recent research suggests that the negative impacts of changes in

production technologies and organizations on rural labor markets may be overstated.

First, a recent survey of manufacturers by the Economic Research Service, U.S. Department of Agriculture (ERS/USDA) found that rural manufacturers were not far behind urban manufacturers in their overall adoption rate of new technologies and management practice (Teixeira 1998; Gale 1998; McGranahan 1998). Gale attributes part of the “unexpectedly” high adoption rates for nonmetro plants to facility characteristics. The nonmetro plants were larger, more likely branch plants, and more likely engaged in fabrication--all characteristics associated with higher technology use. Yet McGranahan shows that manufacturers in the rural South are less likely to adopt high performance production systems than firms in other rural areas. Lower adoption rates in the rural South may result from the reluctance of manufacturers to introduce new technologies and management practices in nonmetro areas with lower levels of schooling and higher percentages of minority populations—characteristics of many rural labor markets in the South (Gale 1997). In addition, a survey conducted by the Southern Technology Council (1990) found that southern firms in general were slow to adopt new computer-based technologies. Thus, low adoption rates among rural southern firms also may reflect the industry mix of southern manufacturers. Either way, lower adoption rates of high performance production systems may impede southern rural firms' abilities to compete in the global economy.

Second, research is not clear regarding whether the adoption of new technologies and management practices reduces the demand for labor. A survey of midwest manufacturers of nonelectrical machinery finds that the application of flexible machining cells reduced labor needs by 65 percent while flexible labor cells contributed to a 30 percent reduction in labor requirements (Knudsen et al. 1994). Alternatively, for peripheral areas of Great Britain, O'Farrell and Oakey (1993) find that the adoption of new technologies was associated with employment gains among small firms in the mechanical engineering industry. Thus, the impact of technological innovations on labor demand appears to vary by industry. Cappelli (1996) also suggests that the changes in labor demand associated with the adoption of high-performance

production systems will depend on firms' responses to the higher wages associated with the higher-skill requirements. If wages affect technology practices, then the labor demand--technology relationship may be recursive where practices change labor demand and wages, which in turn affect the choice of practices. For example, Cappelli (1996) notes that technological innovations lead to higher labor skill requirements, which in turn, lead to higher wages for skilled production workers. Yet the higher wages may encourage the firm to seek new production practices that substitute capital for the high-wage labor or permit a deskilling of production jobs (thus reducing wages).

The adoption of flexible production systems and practices may impact staffing arrangements as well as number of employees. Houseman (1997) finds that the use of temporary, part-time and contract employment is widespread among firms using flexible staffing arrangements. Workers in these types of jobs have less job security, fewer workplace benefits, and a higher probability of periods of unemployment than other workers (Segal and Sullivan 1995).

Third, a greater consensus exists in the literature regarding the impacts of post-Fordists' production technologies and organizations on the upgrading of the occupation distribution of manufacturing jobs and the education and skill requirements within occupational categories. Berman, Bound, and Griliches (1994) document a decrease in production jobs in U.S. manufacturing while nonproduction employment increased. And among production workers, Cappelli (1996) documents an association between rising skill requirements and computer use and total quality management (TQM) programs. An increase in the skill requirements of production jobs also was found for manufacturers adopting new technologies in the periphery of Great Britain (O'Farrell and Oakey 1993) and in rural areas of the United States (Teixeira 1998).

An increase in labor skill requirements would appear to put rural areas at a disadvantage in attracting and retaining manufacturers; however, Teixeira notes that for the nation as a whole, rural high-adopters report no more problems in finding adequately skilled workers than urban high adopters. Yet the difficulty of finding or attracting skilled workers may be more pronounced in the rural South, since the ERS survey also finds that

the quality of local labor, attractiveness of area to managers and professionals, and quality of schools are three of the top five location factors listed by southern manufacturers as impediments to their establishments' ability to compete.

### **Industrial Restructuring**

The globalization of competition and innovations in production technologies and management practices encourage a restructuring of manufacturing and service activities from large-scale, multi-plant, vertically-integrated operations to smaller, more specialized firms. This disagglomeration and vertical disintegration are attributed to an attempt by firms to focus their activities and exploit niche markets, avoid firm-wide union labor contracts through subcontracting, insulate the firm from production irregularities and uncertainties through subcontracting, and acquire specialized inputs and services from external sources at a lower cost than would be available if produced by the vertically-integrated firms (Erickson 1994; Barkley 1995).

The restructuring of manufacturing activity may have adverse implications for nonmetropolitan communities in the South if the nonmetro areas are perceived to be less attractive locations for manufacturers or the smaller, more specialized firms provide lower earnings potentials. For example, some scholars (Scott 1986; Schoenberger 1988) propose that the transition from large-scale, vertically-integrated operations to smaller, specialized firms will dampen the decentralization of manufacturing since the economies associated with urban locations (proximity to markets, input suppliers, specialized labor and services, and transportation and communication infrastructure) increase in importance relative to the traditional advantages of rural locations (low cost land and labor). The transition to smaller firms also may be detrimental to local employment growth if small firms are less likely than large firms to employ business strategies to gain competitive advantages over their rivals. In a study of rural Georgia businesses, Variyam and Kraybill (1993) found that larger firms had a greater propensity to implement growth-promoting business strategies such as strategic planning, developing more attractive and higher quality products, and adopting new technologies.

Recent research suggests that the negative impacts of industrial restructuring on employment growth in rural labor markets may be overstated. A decentralization of manufacturing employment continues despite the restructuring of industry and the increased importance of proximity between firms and their suppliers and markets. Both Bernat (1995) and Barkley and Hirschberger (1992) found urban-to-rural employment shifts among industries experiencing significant restructuring. Yet these studies also note that the decentralization of employment was weakest among rapidly growing industries and high tech manufacturers. Thus, industrial restructuring appears to reinforce the spatial division of labor with the rapidly-growing, skilled-labor-intensive activities favoring metropolitan locations while rural areas remain attractive to the slower growing, less skill-intensive firms. However, Wojan and Pulver (1995) found numerous exceptions to the above pattern for the upper Midwest.

The implications of industrial restructuring on the earnings of rural workers appear less promising. Lyson and Tolbert (1996) find that an increase in the number of small manufacturing establishments is associated with an increase in nonmetro county family income and a decrease in nonmetro county income inequality and poverty rate. However, the study also shows that a larger increase in income and a larger decrease in poverty and income inequality are associated with an increase in the number of large manufacturing establishments. And for the state of North Carolina, Tomaskovic-Devey and Johnson (1996) find that an increase in manufacturing establishment size and nonlocal ownership are positively correlated with employee earnings, though the differences are not large. Anderson and Holmes (1995) suggest that industrial restructuring may encourage firms to implement a dual labor market strategy. That is, firms' workforces are sharply segmented into highly-skilled product engineers and low-wage nonunion production workers, with the low-wage jobs located primarily in small towns in the periphery of the firms' core locations. Anderson and Holmes offer the auto parts manufacturer Magma as an example of such a strategy. Finally, Miller (1993) suggests that small and medium-size enterprises in rural areas also provide fewer worker benefits than larger enterprises. However, Variyam and Kraybill (1998) find that after controlling for worker

quality, ownership structure, and entrepreneur characteristics, small firms lag large firms only in the provision of health insurance benefits.

In sum, the negative implications of industrial restructuring on rural labor markets appear to be primarily in terms of slower wage growth but not reduced employment growth. This conclusion is consistent with the recent experience in the rural South (refer to Tables 3 and 4) and that found by Bernat (1994) for rural areas as a whole. One exception to this general trend is nonmetro areas with industrial districts or clusters (Rosenfeld 1995). The presence of industry clusters in rural areas has been found to exhibit positive effects on both local wage rates (Gibbs and Bernat 1997) and industry earnings growth rates (Henry and Drabenstott 1996). Yet Gibbs and Bernat caution that not all rural industries exhibit higher wages in clusters, and Barkley and Henry (1998) point out that industry cluster development is not a viable option for many rural areas. A second exception is nonmetropolitan areas with abundant natural amenities and/or a high quality of life. Rural communities with a high quality of life may remain competitive locations for the smaller, more specialized firms because professional, technical, and managerial personnel are more easily attracted to such locations. And Bader (1993) notes that the smaller firms may not consider the lower quality schools and labor force of these rural areas a serious problem. The smaller, more specialized firms can move in with wages slightly above the prevailing average wage and “cream” the local labor market in terms of labor skills.

### **Conclusions and Implications**

Nonmetropolitan areas in the South have benefited from the national economic expansion of the 1990s, rural employment growth during this time slightly exceeds the national average while growth in earnings per job slightly lags. Yet the good economic times are not being experienced equally across the 1,008 counties in the rural South. Job losses were reported for 162 counties while 523 counties experienced earnings per job growth rates less than the national average. Nonmetropolitan counties with relatively slow growth in earnings per job face the likely prospect of household incomes falling further behind the national average.

The current economic environment (internationalization of markets, innovative production technologies and practices, industrial restructuring, and continued structural shift to service-producing industries) presents challenges to southern nonmetro areas. The implications of these challenges for labor demand in rural labor markets will vary markedly depending on local characteristics and history and indigenous responses to the challenges. For example, greater international trade will benefit rural areas whose firms are capital or skilled-labor intensive but negatively impact areas whose producers compete with imports from low-wage countries. The growth in service-producing industries favorably impacts rural communities that are able to attract and support export-oriented services and service industries employing well-educated labor. And the adoption of "high performance production systems" and the restructuring of industry to smaller, more specialized firms are occurring in rural areas where skilled labor is available, industry clustering is present, and the perceived quality of life is high.

On the other hand, southern rural areas with a legacy of low-skill, low-wage activities will be at a competitive disadvantage in attracting or developing the more rapidly growing, higher-skilled service and manufacturing activities. These rural communities may respond to the enhanced competitive pressures by taking the "low road" approach of further reducing local production costs through tax abatements, lax environmental regulations, and downward pressure on wages. Or competitiveness may be improved by the "high road" approach of raising worker productivity through education and training, developing institutions for technology transfers and business assistance, and improving public infrastructure and services. Another important component of the "high road" approach is the improvement of local quality of life to make rural communities attractive locations for entrepreneurs and highly-skilled, highly-educated labor. Finally, North (1994) emphasizes that communities must institutionalize political and economic systems that permit them to readily adapt to changes in the national and global economies. Glasmeier and Conroy (1994) persuasively argue that the long-term growth prospects for rural jobs are best enhanced through the "high road" rather than the "low road" development strategies.

**References**

- Anderson, M. and J. Holmes. 1995. "High-Skill, Low-Wage Manufacturing in North America: A Case Study from the Automotive Parts Industry." *Regional Studies* 29 (November):655-671.
- Bader, N. 1993. "Quality of Life Moves Into the Locational Limelight." *Area Development* April:37-39.
- Barkley, D. L. 1998. "Communities Left Behind: Can Nonviable Places Become Smart?" *Review of Regional Studies* 28 (2):1-7.
- \_\_\_\_\_. 1995. "The Economics of Change in Rural America." *American Journal of Agricultural Economics* 77(December):1252-58.
- Barkley, D. L. and M. S. Henry. 1998. "Rural Industrial Development: To Cluster or Not to Cluster?" *Review of Agricultural Economics* 19: 308-25.
- Barkley, D. L. and S. R. Hinschberger. 1992. "Industrial Restructuring: Implications for the Decentralization of Manufacturing to Nonmetropolitan Areas." *Economic Development Quarterly* 6(February):64-79.
- Berman, E., J. Bound, and Z. Griliches. 1994. "Changes in the Demand for Skilled Labor Within U.S. Manufacturing: Evidence from the Annual Survey of Manufacturers." *Quarterly Journal of Economics* 109(May):367-96.
- Bernat, G. A., Jr. 1995. "Manufacturing Decentralization: Continued Filtering Down to Smaller Rural Counties." Presented at the Southern Regional Science Association Meetings, April, San Antonio, TX.
- \_\_\_\_\_. 1994. "Manufacturing Restructuring and Rural Economies: Job Growth but Lagging Wages." *Rural Development Perspectives* 9(June):2-8.
- Beyers, W. B. 1996. "Trends in Producer Services Growth in the Rural Heartland." Pp. 39-60 in *Economic Forces Affecting the Rural Heartland*. Federal Reserve Bank of Kansas City.
- Butler, M.A. and C. L. Beale. 1994. *Rural-Urban Continuum Codes for Metro and Nonmetro Counties*. AGES 9425. Washington, DC: Economic Research Service, U.S. Department of Agriculture.



- Cappelli, P. 1996. "Technology and Skill Requirements: Implications for Establishment Wage Structures." *New England Economic Review*, Federal Reserve Bank of Boston, May/June:139-54.
- Carlino, G. A. and E. S. Mills. 1987. "The Determinants of County Growth." *Journal of Regional Science* 27:39-54.
- Cook, P. J. and K. L. Mizer. 1994. *The Revised ERS Typology*. Rural Development Research Report Number 89. Washington, DC: Economic Research Service, U.S. Department of Agriculture.
- Coughlin, C. C., and T. B. Mandelbaum. 1990. "Accounting for Changes in Manufactured Exports at the State Level: 1976-86." *Review*, Federal Reserve Bank of St. Louis, 72(September/October):3-14.
- Cox, W. M. and J. K. Hill. 1994. "Effects of Lower Dollar on U.S. Manufacturing: Industry and State Comparisons." *Economic Review*, Federal Reserve Bank of Dallas, March:1-9.
- Dupuy, M. and M. E. Schweitzer. 1994. "Are Service-Sector Jobs Inferior?" *Economic Commentary*, Federal Reserve Bank of Cleveland, February 1:1-4.
- Erickson, R.A. 1994. "Technology, Industrial Restructuring, and Regional Development." *Growth and Change* 25(Summer):353-579.
- Gale, H. F., Jr. 1998. "Rural Manufacturing on the Crest of the Wave: A Count Data Analysis of Technology Use." *American Journal of Agricultural Economics* 80(May):347-59.
- \_\_\_\_\_. 1997. "The Rural-Urban Gap in Manufacturing Productivity and Wages: Effects of Industry Mix and Region." Staff Paper No. 9710. Washington, DC: Rural Economic Division, Economic Research Service, U.S. Department of Agriculture.
- Gibbs, R. M. and G. A. Bernat, Jr. 1997. "Rural Industry Clusters Raise Local Earnings." *Rural Development Perspectives* 12(June):18-25.
- Glasmeier, A. K. and M. E. Conroy. 1994. "Global Squeeze on Rural America: Opportunities, Threats, and Challenges from NAFTA, GATT, and Process of Globalization." A report of the Institute for Policy Research and Evaluation, Graduate

- School of Public Policy and Administration, The Pennsylvania State University, State College.
- Glasmeier, A. K. and M. Howland. 1994. "Service-Led Rural Development: Definitions, Theories, and Empirical Evidence." *International Regional Science Review* 16(Spring/Summer):197-229.
- Henry, M. S., D. L. Barkley, and S. Bao. 1997. "The Hinterland's Stake in Metropolitan Growth: Evidence from Selected Southern Regions." *Journal of Regional Science* 37:479-501.
- Henry, M. S. and M. Drabenstott. 1996. "A New Micro View of the U. S. Economy." *Economic Review*, Federal Reserve Bank of Kansas City, 81(Second Quarter):53-70.
- Houseman, S. N. 1997. "New Institute Survey on Flexible Staffing Arrangements." *Employment Research*, W.E. Upjohn Institute, Kalamazoo, MI, 4(1):1-4.
- Knudsen, D. C., F. R. Jacobs, D. Conway, and M. K. Blake. 1994. "A Survey of Group Technology Adoption in the American Midwest." *Growth and Change* 25 (Spring):183-205.
- Kozicki, S. 1997. "The Productivity Growth Slowdown: Diverging Trends in Manufacturing and Service Sectors." *Economic Review*, Federal Reserve Bank of Kansas City, 82(First Quarter):31-46.
- Kreahling, K. S., S. M. Smith, and A. E. Luloff. 1996. "Economic Restructuring in the Nonmetropolitan Northeast: Adaptation to Transitions." Research Report 253. Department of Agricultural Economics and Rural Sociology, The Pennsylvania State University, University Park.
- Lyson, T. A. and C. M. Tolbert. 1996. "Small Manufacturing and Nonmetropolitan Socioeconomic Well-Being." *Environment and Planning A* 28(October):1779-94.
- McGranahan, D. A. 1998. "Human Resources and the Geography of Advanced Technology Adoption." Presented at annual meetings of the Southern Regional Science Association, April, Savannah, GA.
- Malecki, E. J. 1996. "Technology in Urban and Rural Development: Issues Raised by Telecommunication." Presented at North American Meetings of the Regional Science Association International, November, Washington, D.C.

- Marshall, J. N. and P. A. Wood. 1992. "The Role of Services in Urban and Regional Development: Recent Debates and New Directions." *Environment and Planning A* 24(September):1255-70.
- Miller, J. P. 1993. "Small and Midsize Enterprise Development: Prospects for Nonmetropolitan Areas." Pp. 89-104 in *Economic Adaptation: Alternatives for Nonmetropolitan Areas*, edited by D. L. Barkley, Boulder, CO: Westview Press.
- North, D. C. 1994. "Economic Performance Through Time." *American Economic Review* 84(3):359-68.
- O'Farrell, P. N. and R. P. Oakey. 1993. "The Employment and Skill Implications of the Adoption of New Technology: A Comparison of Small Engineering Firms in core and Peripheral Regions." *Urban Studies* 30:507-26.
- Rosenfeld, S. A. 1995. *Industrial-Strength Strategies: Regional Business Clusters and Public Policy*. Washington, DC: The Aspen Institute.
- Rowley, T. S. and S. L. Porterfield. 1993. "Removing Rural Development Barriers Through Telecommunications: Illusion or Reality?" Pp. 247-64. In *Economic Adaptation: Alternatives for Non-metropolitan Areas*, edited by D. L. Barkley, Boulder, CO: Westview Press.
- Schoenberger, E. 1988. "Multinational Corporations and the New International Division of Labor: A Critical Appraisal." *International Regional Science Review* 11(Winter):105-19.
- Scott, A. J. 1986. "Industrial Organization and Location: Division of Labor, the Firm, and Spatial Process." *Economic Geography* 62(July):215-31.
- Segal, L. M. and D. G. Sullivan. 1995. "The Temporary Labor Force." *Economic Perspectives*, Federal Reserve Bank of Chicago, 19(March/April):2-19.
- Southern Technology Council. 1990. "STC Survey Finds Southern Firms Slow to Adopt Computer-Based Technologies." *Regional Forum* 4(October):1-2.
- Teixeira, R. 1998. *Rural and Urban Manufacturing Workers: Similar Problems, Similar Challenges*. Agriculture Information Bulletin Number 736-02. Washington, DC: Economic Research Service, U.S. Department of Agriculture.

- Testa, W. A. 1993. "Trends and Prospects for Rural Manufacturing." *Economic Perspectives*, Federal Reserve Bank of Chicago, 17(March/April):27-36.
- Tomaskovic-Devey, D. and J. Johnson. 1996. "Southern Rural Economic Development and the Branch Plant/Local Firm Development Options." Publication No. 197, Southern Rural Development Center, Mississippi State University, Starkville.
- U.S. Department of Agriculture, Economic Research Service (USDA/ERS). 2000. *Rural Conditions and Trends* 10(2):81-83.
- U. S. Department of Commerce, Bureau of Economic Analysis. 1969-96. Regional Accounts Data, County Wage and Salary Summary CA-34.
- Variyam, J. N. and D. S. Kraybill. 1998. "Fringe Benefits Provision by Rural Small Businesses." *American Journal of Agricultural Economics* 90(May):360-68.
- Variyam, J. N. and D. S. Kraybill. 1993. "Small Firms' Choice of Business Strategies." *Southern Economics Journal* 60(July):136-45.
- Wojan, T. R., and G. C. Pulver. 1995. "Location Patterns of High Growth Industries in Rural Counties." *Growth and Change* 26(Winter):3-22.
- Zachary, G. P. 1995. "Service Productivity is Rising Fast -- and So is the Fear of Lost Jobs." *Wall Street Journal*, June 8, pp. A1 and A10.