
Chapter 11

Impacts on Rural Communities

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Impacts on Rural Communities

The impacts of technological and structural change in agriculture do not end with the individuals who live and work on farms. A variety of other consequences are to be expected at the level of the rural communities that have direct and indirect linkages to farms and farmers. As with individual farmers, some communities are likely to benefit from change, while others are likely to be affected adversely. Much depends on the type of overall labor force in the community and on the opportunities for labor to move to other areas of employment.

Hard-hit communities may need technical assistance to attract new businesses to their areas, to develop labor retraining programs, and to alter community infrastructure to attract new inhabitants. To accomplish these goals, Federal policy will have to be complemented by regional and local policies.

Those rural communities that benefit from changes in agricultural technology and structure may do so in several ways. For example, as agriculture becomes more concentrated, some communities will emerge as areawide centers for the provision of new, high-value technical services and products. Likewise, some communities will emerge as centers for high-

volume food packaging, processing, and distribution. In both cases, the economic base of these communities is likely to expand. However, unless total demand for agricultural commodities increases substantially, centralization of services, marketing, and processing will be like a zero-sum game in many areas; the market centers will benefit at the expense of other communities. Many of the communities that are bypassed will decline as a result of the process of centralization.

Communities may also benefit in those parts of the country in which the number of small and part-time farms is increasing. This phenomenon results in an increase in population in many rural areas and in an increase in total income and spending in some of these rural areas. The increase in small farms may sustain more retail establishments than would otherwise be the case, since purchases by small farmers may tend to be more local than those by larger farmers. The operators of these farms in many cases subsidize their own production from off-farm income.

This chapter assesses the impacts that emerging technologies and structural change have had on rural communities in the 1970s in five regions of the United States, outlines several areas of potentially adverse impacts, and provides a policy framework for options that may help mitigate the adverse impacts.

¹ Rural communities are defined as places with less than 20,000 inhabitants in a nonmetropolitan county.

STRUCTURAL CONCENTRATION AND INDUSTRIAL AGRICULTURE

A landmark study that addressed the relationships between increased concentration in agricultural production and community welfare was done by Walter Goldschmidt in 1944. Goldschmidt found a series of negative social effects associated with large-scale agriculture in the central valley of California. His research was based on a matched-pair comparison of a community of relatively large farms (Arvin) and a community of relatively small farms (Dinuba).

He found higher median family income, lower poverty, better schools, more retail trade, stronger institutions—including churches, more recreational opportunity, and more newspaper readership—associated with the set of small farms surrounding Dinuba. Although numerous methodological and theoretical criticisms have been made about this study, the thesis of this study continues to frame the discussion of structure and community relationships. Gold-

schmidt and his supporters argue that when farming is practiced on a scale that exceeds a family's ability to provide the main source of labor and management, it tends to acquire industrial relations of production in which ownership and management are separated from labor. As a result, this industrialized form of agriculture tends to become disarticulate from the surrounding communities, increasingly relying on these communities as a source of low-cost hired labor. This, in turn, is thought to result in social inequality, poverty, and a range of associated pathologies. The general hypothesis is that increases in structural concentration of production, and especially industrial relations of production, are associated with decreases in social welfare.

There has been a long-run secular trend toward an increased proportion of hired labor and a decreased proportion of family labor in agriculture. Large and very large farms tend to rely more on hired labor than do moderate farms. As total agricultural production becomes more concentrated in the large and very large sales classes, the proportion of hired labor in U.S. agriculture is likely to continue to increase. The available data on regional changes in proportion of hired labor is limited. Data is available on changes in number of hired workers by the four regions of the United States defined by the 1970 and 1980 Census of Agriculture. Hired labor increased by 21 percent in the North Central region during this period. In the West hired labor stayed about the same. Hired labor decreased by about 18 and 5 percent in the Northeast and South, respectively (Pollack, et al., 1983).

Increasing structural concentration in U.S. agriculture is not necessarily synonymous with agricultural industrialization. In many areas of the United States large and very large farms are owned and operated primarily with family labor. This is generally most true where the farming system is land-extensive and not labor-intensive, such as cash grain production in the Midwest and ranching in the Great Plains and the West. Increasing concentration is expected to continue to take place in these regions without large increases in hired labor. However, adverse effects may also occur in regions where continued concentration is likely to result in the loss of a substantial proportion of the moderate farms. Adverse impacts may result simply from the loss of a substantial proportion of the local population if many farm families relocate to other parts of the country and they are not replaced by immigration. This in turn will result in a reduction in the population base that supports civic activities and patronizes the small businesses and services in the local rural communities.

Retail establishments in rural communities that provide goods and services to these moderate farms may decline when the consolidated farms choose to purchase goods and services at greater distances. The operators of the large and very large farms that emerge from the process of structural change are considered more likely to purchase goods and services and to market their products over greater distances than their more moderate predecessors were. The argument is that they are able to receive volume discounts and premiums from more centralized purchases and sales.

REGIONAL DIFFERENCES

The structure of agriculture and the characteristics of rural communities vary greatly across the United States, owing to major differences in soils, climate, population density, pattern of land use, economic and social history, availability of irrigation water, topography, availability of low-cost labor, and the level of education of the population. Following from this it

can be expected that changes in agricultural structure will vary in different parts of the country and that the impacts of structural change on rural communities may vary in different regions. To avoid overgeneralizing in its assessment of impacts of structural change on rural communities, OTA analyzed five regions of the United States: the Northeast; South; Midwest;

the Great Plains and the West; and the CATF (those counties with the most industrialized agriculture in four Southern and Western States—California, Arizona, Texas, and Florida). This division of the United States differs in several respects from the regional division used in the U.S. Census of Agriculture. In particular, the Great Plains and the West in this chapter include most of the Western region of the Census of Agriculture and also have parts of the North Central and Southern regions from the census. The CATF region in this chapter has no close counterpart in the Census of Agriculture.

Although the intended focus was on rural communities, information on the welfare of individual communities and on linkages between individual communities and surrounding farms was not directly available on a regional basis for most States. In general, it was necessary to do the analysis in terms of rural agricultural counties instead of individual communities. This was a distinct disadvantage, since county-level data tend to obscure the details of linkages and impacts at the community level.² With the exception of the CATF region, the set of counties defined as rural and agricultural was drawn from the set of nonmetropolitan counties. Metropolitan counties as defined by the Office of Management and Budget are also known as Standard Metropolitan Statistical Areas, with the exception of the New England region. All other counties may be considered to be rural counties. Rural counties with a significant proportion of total income from agricultural sources were considered as candidates for inclusion in the set of rural agricultural counties. The minimum proportion of agricultural income that was considered significant varied by region and ranged from 5 to 20 percent.

²However, if statistically significant relationships can be shown between structural change in agriculture and changes in social welfare when the unit of analysis is the county, then it is likely that the associations are even stronger for a proportion of the communities in the county. This is generally true because not all communities are likely to be equally affected within a county. The county level of analysis aggregates the different impacts on the individual communities and tends to level out strong relationships with respect to particular communities. Therefore, statistically significant associations at the county level area strong test of a hypothesis concerning associations at the community level.

The CATF Region

The CATF region includes all of Florida and the industrial-agricultural counties of California, Arizona, and Texas. The counties studied are the 98 counties that were either in the top 100 counties nationwide in sales or that had \$2,000 or more per year in per capita income from agriculture. Twenty-six Texas cattle and grain counties that met these criteria were grouped with the region covered by the Great Plains and the West, since they fit the land-use intensity and farming system types of this region better than the CATF region. The CATF regional set of counties³ differs considerably from the nonmetropolitan counties in the rest of the United States in that agricultural development is relatively recent in these counties. Many CATF counties have not gone through a period in which moderate farms dominated agricultural structure. These counties are also unique in the extent to which they depend on subsidized irrigation water from State and Federal water projects.

CATF counties are of particular interest because agriculture in these counties has already evolved into a highly concentrated structure. The great majority of agricultural sales comes from large-scale, industrial-type farms. In 1982, farms in the very large sales class had 66 percent of regional sales as compared with 25 percent for the rest of the United States. Moreover, the share of sales from very large farms increased from 58 to 66 percent between 1978 and 1982. The number of farms in all acreage categories in CATF counties has recently declined, with the exception of the very large sales class. This reduction in the number of farms with fewer than 2,000 acres increased the concentration of production by 17 percent at the same time that total agricultural sales in the region increased only 6.5 percent (see tables 11-1 and 11-2). The counties selected as the data set for

³"CATF counties," "CATF regional set of counties," and "CATF region" are used synonymously.

⁴The findings in this section are contained in Dean MacCannell and Edward Dolber-Smith, "Report on the Structure of Agriculture and Impacts of New Technologies on Rural Communities in Arizona, California, Florida, and Texas," prepared for the Office of Technology Assessment, Washington, DC, 1985.

Table 11-1.—Comparison of Selected Farm Characteristics, All Counties in California, Arizona, Texas, and Florida, for 1969 and 1978

| Attribute | 1969 | 1978 | Change from 1969 to 1978 |
|---|----------------------------------|----------------------|--------------------------|
| Number of farms: | 332,878 (856)^a | 290,977 (746) | - 9.88 |
| Sales: | | | |
| Sales categories: | | | |
| >\$100,000 | | 31,983 (82) | |
| \$40-90,999 | | 29,693 (76) | |
| > \$40k | 34,028 (88) | 61,676 (158) | 81.25 |
| \$20-39,999 | 27,672 (71) | 28,536 (73) | 3.12 |
| \$10-19,999 | 34,973 (90) | 34,856 (90) | - 0.33 |
| \$ 5-9,999 | 43,733 (112) | 42,960 (110) | - 1.77 |
| \$2,500-4,999 | 46,947 (121) | 45,679 (117) | - 2.70 |
| <\$2,500 | 145,476 (374) | 76,903 (197) | -47.14 |
| Total sales per county | \$20,509,402 (1,000) | \$21,838,408 (1,000) | 6.48 |
| Average sales per farm (1980 dollars) | | | 16.85 |
| Acreage: | | | |
| Acreage categories: | | | |
| >2,000 acres | 14,826 (38) | 14,869 (38) | 0.29 |
| 1,000-1,999 acres | 16,969 (44) | 16,468 (42) | - 2.95 |
| 500-999 acres | 32,419 (83) | 27,772 (71) | -14.33 |
| 180-499 acres | 70,513 (181) | 56,773 (146) | -19.49 |
| 50-179 acres | 96,974 (249) | 81,939 (210) | -15.50 |
| 10-49 acres | 69,878 (180) | 62,002 (159) | -11.27 |
| <10 acres | 31,319 (81) | 31,154 (80) | - 0.53 |
| Average acreage per farm | 1,939 | 1,957 | 0.93 |
| Type of ownership | | | |
| Family ownership | 166,911 (429) | 176,448 (452) | 5.71 |
| Partnership | 25,283 (65) | 26,443 (68) | 4.59 |
| Corporate ownership | 5,209 (13) | 9,529 (24) | 82.93 |
| Other type of ownership | 1,866 (5) | 1,287 (3) | -31.03 |

^aFirst value is the SUM for all counties; the mean value per county is in parentheses

SOURCE Off Ice of Technology Assessment

this analysis are shown in detail in a paper by MacCannell and Dolber-Smith (1985).

Background on the CATF Region

Current agricultural patterns were not fully established in the CATF area until after World War II. Arizona was not even a State until 1912, and many of the new agricultural regions of all four States were not settled until this century. Historically and nationally, the original pattern of Spanish land grants and dependence on irrigation systems are the two main underlying causes of present-day farming systems. Prior to this century, agricultural landholdings were enormous, and the main products were range animals and nonirrigated grains. The first crude irrigation systems were built at the beginning of this century by land developers and speculators. The Imperial Valley of California went through several successive cycles of irrigation,

land sales based on the promise of cheap and plentiful water, irrigation system failure, farmer bankruptcy, land repurchase or repossession by the original speculators, irrigation system overhaul, land resale, and so forth. These and similar abuses eventually resulted in Federal intervention and public involvement in the construction and management of irrigation systems throughout CATF. A number of these systems are enormous and of very recent construction. The San Luis Unit of the California Central Valley Project, completed in 1969, is one such system. This farm and rural community system in the most productive area of California (West Fresno County) has only a 15-year history.

Since World War II, the large agricultural operators of the CATF region have exploited their natural, historical, and political advantage by combining new agricultural technologies, modern irrigation techniques, Government sup-

Table 11-2.—Comparison of Selected Farm Characteristics, Agricultural Counties in California, Arizona, Texas, and Florida, for 1969 and 1978

| Attribute | 1969 | 1978 | Change from 1969 to 1978 |
|---|----------------------|----------------------|--------------------------|
| Number of farms: | 97,557 (995) | 84,951 (867) | - 12.92 |
| Sales: | | | |
| Sales categories: | | | |
| >\$100,000 | | 16,184 (165) | |
| \$40-90,999 | | 13,703 (140) | |
| > \$40k | 16,298 (166) | 29,887 (305) | 83.38 |
| \$20-39,999 | 13,082 (133) | 11,048 (113) | -15.55 |
| \$10-19,999 | 14,473 (148) | 10,522 (107) | -27.30 |
| \$5-9,999 | 14,240 (145) | 9,942 (101) | -30.18 |
| \$2,500 -4,999 | 11,696 (119) | 8,766 (89) | -25.05 |
| <\$2,500 | 27,768 (283) | 14,705 (150) | -47.04 |
| Total sales per county. | \$10,307,860 (1,000) | \$11,855,632 (1,000) | 15.02 |
| Average sales per farm (1980 dollars) . | \$113,068 | \$153,750 | 27.14 |
| Acreage: | | | |
| Acreage categories: | | | |
| >2,000 acres. | 5,418 (55) | 5,744 (59) | 6.02 |
| 1,000-1,999 acres | 6,420 (66) | 6,647 (68) | 3.54 |
| 500-999 acres | 11,792 (120) | 9,839 (100) | -16.56 |
| 180-499 acres | 18,968 (194) | 14,926 (152) | -21.31 |
| 50-179 acres | 21,507 (219) | 18,303 (187) | -14.90 |
| 10-49 acres | 24,757 (253) | 21,047 (215) | -14.99 |
| <10 acres | 8,702 (89) | 8,445 (86) | - 2.95 |
| Average acreage per form | 2,074 | 2,192 | 5.69 |
| Type of ownership: | | | |
| Family ownership. | 60,503 (617) | 55,639 (568) | - 8.04 |
| Partnership | 10,015 (102) | 10,019 (102) | 0.04 |
| Corporate ownership | 2,096 (21) | 4,048 (41) | 93.13 |
| Other type of ownership | 648 (7) | 459 (5) | -29.17 |

^aFirst value is the sum for all counties; the mean value per county is in parentheses.

SOURCE: Office of Technology Assessment

port programs, and an abundant supply of cheap, foreign labor. At the present time, CATF counties occupy a preeminent position in the national agricultural economy and international trade. Half of the top 100 agricultural counties nationwide are found in these four States. Agricultural products are the principal "industry" and export of California, Arizona, and Texas. In Florida, agriculture ranks behind tourism and manufacture, but it still employs 77,000 workers and has an annual sales of \$1.3 billion. In Texas, the value added in agriculture is 1.3 times that of all manufacturing. The economic position of agriculture within the CATF region is all the more remarkable when the high level of industrial development of these same States is taken into consideration.

The agricultural commodity mix of the CATF counties is extremely diverse. With the exception of Florida citrus, there is no statewide

monoculture or clear dominance of entire regions by a single crop or commodity. Leading commodities of the four States are cotton, sorghum, beef, wheat, citrus, row-crop vegetables, rice, sugarcane, sugar beets, grapes, melons, avocados, strawberries, nuts, peanuts, and corn. Over 9 million acres of cotton are grown in the CATF region, amounting to 70 percent of the U.S. total and about 30 percent of the world trade in cotton. One hundred percent of U.S. citrus and 55 percent of all noncitrus fruits are grown in the CATF region.

The CATF counties have four dominant forms of agricultural operations: 1) large-scale, family-owned corporations; 2) large-scale, corporate farms and partnerships; 3) highly sophisticated "part-time" operations owned by investors (usually urban-based professionals), which have high gross sales from small acreages; and 4) small-scale, unsophisticated, part-time farming

operations with low sales. There has never been a widespread pattern of moderate-scale, family-owned farms in the CATF region.

Findings for the CATF Region

Examining the impact of structural change that has already occurred on the rural communities among these counties may give insight into the impacts of continuing concentration in other regions of the country. The analysis of these counties has benefited from the availability of data on poverty, unemployment, and standard of living at the community level (census tract data) in contrast to the analyses of other regions, which are based almost entirely on county-level data.

The primary finding is that there is a strong correlation between increased concentration and substandard social and community welfare in this regional set of counties. However, this relationship is not strictly linear. As agricultural scale increases from very small to moderate farms, the quality of community life improves. Then, as scale continues to increase beyond a size that can be worked and managed by a family, the quality of community life begins to deteriorate. Increasing concentration in this region results in increasing poverty, substandard living and working conditions, and a breakdown of social linkages between the rural communities that provide labor and the farm operators. In other words, the relationship of community welfare to agricultural structure resembles an inverted U curve (MacCannell and Dolber-Smith, 1985). This finding is a modification of the basic Goldschmidt hypothesis that any increase in concentration is associated with a decrease in community well-being.

The most extreme poverty in CATF counties is found in those counties with the most concentrated and productive agriculture. Up to 70 percent of the population of the most highly concentrated counties live in poverty. Up to 40 percent of the population live in houses without plumbing in the same counties.⁵

⁵The measure of agricultural concentration that is the best predictor of change in median family income between the 1970 and 1980 census years is the proportion of farms in each county

It was found that the types of rural communities in the CATF counties could be usefully placed in one of three categories:

1. Communities in which the population living on farms is wealthy and the associated rural communities are impoverished. This pattern is found in the central valley of California and in parts of Texas.
2. Communities that are internally segregated; the wealthy and the poor live in segregated neighborhoods in the same community. This pattern was found in and near Lubbock and Brownsville, Texas.
3. Communities that are externally segregated. In this pattern, entire communities are dominated by a single social class or ethnicity. The result of this pattern is a regional set of counties within which some of the towns are lower working class, farm worker, and transient communities, while other towns nearby exhibit the classic pattern of the rural trade center, and are the communities of choice for middle-class immigrants and nonagricultural, industrial relocation.

In general, CATF communities that are surrounded by farms that are larger than can be operated by a family unit have a bimodal income distribution, with a few wealthy elites, a large majority of poor laborers, and virtually no middle class. The absence of a middle class at the community level has a serious negative effect on both the quality and quantity of social and commercial services, public education, and education. Rothman and others (1977) find that hired agricultural laborers are always located on the bottom of community status hierarchies, are always transient to some degree (even if not technically migratory), and are never treated as full-fledged members of the rural community. On the other hand, the large-scale farm owner-operators tend to bypass local public and commercial services and establishments, preferring

with greater than \$40,000 in annual gross sales of farm products. This variable is inversely related to the variation in median family income and accounts for 31 percent of the change in income. That is, counties that had a high proportion of farms with sales in excess of \$40,000 in 1970 had a strong tendency toward low growth in family income in the decade of the 1970s. This finding lends strong support to the Goldschmidt hypothesis.

to shop in distant cities. These same large-scale farm owner-operators purchase education, police protection, recreation, and other public sector amenities from the private sector for their own exclusive use. As a result, their needs and desires are not translated into community well-being. The recent public involvements of the largest farmers in CATF are not based in the local community, but in lobbying and selling at the State, Federal, and international levels.

In sum, CATF rural communities in the most productive agricultural areas do not share in economic or social benefits from increased production and sales. Instead, the rural community stagnates or declines in the context of increasing agricultural productivity. Under these structural conditions, CATF agriculture is increasing its dependence on foreign labor. Continued importation of labor, operating within a different value system than the rest of the United States, is the only possible support for an agricultural economy that has become disarticulate from the local community. Increasingly, the rural communities in CATF agribusiness areas are not local in the sense of participating in U.S. social and cultural traditions. Instead, they resemble Honduran plantation communities more than their rural counterparts in other areas of the United States. In effect, social and economic relations from the developing world have been adopted to maintain the world market position of CATF agriculture.

A major cause for concern in CATF counties stems from the potential for substantial additional displacement of labor in the production of certain fruit and vegetable crops and dairy products. Historically, fruit and vegetable production in CATF has been a large, steady source of employment, although low paying and often seasonal in nature. However, one of the anticipated impacts of emerging technologies is a reduction in the labor required to prepare fields and seedbeds, plant, cultivate, treat, harvest, sort, and process fruits and vegetables. This situation could result in substantial increases in unemployment in CATF counties among farm laborers who have few employment alternatives. Since the rural-labor communities in this region are already impoverished and alienated

from mainstream U.S. society, substantial increases in unemployment are likely to result in increased unrest and discontent among the farmworker population. This problem will be offset to some extent if CATF counties succeed in capturing additional production shares from other regions of the country.

The Great Plains and the West Region

Background on the Great Plains and the West Region

The region of the Great Plains and the West encompasses the 17 States—North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Texas, New Mexico, Colorado, Montana, Wyoming, Idaho, Utah, Arizona, Nevada, California, Oregon, and Washington—that potentially had agricultural counties in which farming systems of grains, or livestock (excluding dairy), or combined grains and livestock predominated.⁶ In these 17 States, 351 counties were classified as agricultural. The basic units of analysis are the 234 counties with at least 20 percent of total proprietor and labor income from agriculture and counties with at least 25 percent of their economically active population in agriculture in 1982. Each county in the region is classified by its predominant type of agriculture, according to data from the 1974 and 1982 Census of Agriculture. The four classes of agriculture used are wheat farming (33 counties), livestock (84 counties), wheat and livestock (72 counties), and mixed grains (corn, sorghum, and wheat) and livestock (45 counties). Counties with 25 percent or more of production in other grains and field crops, hogs, or dairy production are eliminated from the analysis. Those counties of California, Arizona, and Texas that are characterized by industrial agriculture are also excluded. The industrial-agricultural counties of these States are considered separately as part of the CATF region. The counties used to rep-

⁶The findings reported in this section are contained in: Jan L. Flora and Cornelia Butler Flora, "Emerging Agricultural Technologies, Farm Size, Public Policy, and Rural Communities: The Great Plains and the West," prepared for the Office of Technology Assessment, Washington, DC, 1985.

resent the Great Plains and the West are shown in detail in the paper of Flora and Flora (1985).

Counties are further subdivided into those with a predominance of moderate farms and those with a predominance of large farms. Farms in this region are generally much larger per dollar of production than farms in other regions of the United States. Consequently, the definition of large and moderate size is different than that in other regions. Farms with acreages in the range of 500 to 999 acres represent moderate farms, whereas farms larger than 2,000 acres represent large farms.

The analysis was based on agricultural counties in the Great Plains and the West. The Great Plains includes most of both the northern and southern plains. Northeast New Mexico and the eastern half of Colorado are included in the Great Plains. The western half of South Dakota and northwestern Nebraska, areas in which grazing on federally owned land is common, are considered part of the West. Annual precipitation in the Great Plains ranges from more than 40 inches, in eastern Texas, to less than 20 inches, along the western border of the region. In the area of the West considered agricultural, annual precipitation ranges from 25 inches or less in most river valleys to 6 inches or less in the intermountain basins and southern desert areas. Much of the land outside the river valleys is owned by Federal or State governments that regulate access to the land, which is used primarily for grazing cattle and sheep. The frost-free period in this region ranges from less than 100 days in North Dakota to over 300 days in southern Texas.

Wheat production (spring wheat in the northern plains and winter wheat in the southern plains) dominates the Great Plains. Corn, an increasing proportion of which is irrigated from west to east, is an important crop in southeastern South Dakota and eastern Nebraska and Kansas. In those areas where integrated grain-livestock operations rotate corn and soybeans, and are the dominant farming system, agriculture is very similar to that in the Corn Belt. Grain sorghum is an important crop farther west in Nebraska, Kansas, and Texas, where precipi-

tation levels are less. Cotton dominates agriculture in parts of Oklahoma and Texas. However, much of the land, especially in the western half of the region, is in native range, whose productivity is limited by low precipitation.

Findings for the Great Plains and the West Region

Growth in the number of large farms in each type of county was associated with a decline in the number of moderate farms. In general, there was a kind of homogenization; more counties had a similar structure in 1980 than in 1970. A number of significant findings parallel those found in CATF counties, although they are not as dramatic. Support for the Goldschmidt hypothesis was provided by two specific findings:

1. The decline in the number of retail services and retail sales was greatest in those counties with the largest increase in very large farms. Conversely, more retail services and sales were retained in counties in which the number of moderate farms increased in the 1970s.
2. Counties with a predominance of moderate farms in 1970 experienced a greater increase in hired labor than large farm counties during the 1970s, where farm consolidation occurred, and an even greater increase in mechanization investment.

There is evidence that the growth in the number of very large farms was associated with moderate declines in rural, nonfarm, and total population. This suggests that concentration is occurring at the same time that the total number of agricultural workers is declining. That is, expansion of farm size in the Great Plains and the West is taking place without a substantial increase in hired labor as has been the case in industrial agriculture of the CATF counties.

Counties with growth in the number of moderate farms tended to retain rural nonfarm and total population. Unlike CATF counties, there was no significant association between change in size of farms and change in measures of income.

The counties with a predominance of moderate farms in 1969 had a much greater decline in the numbers of commercial establishments between 1969 and 1982 than did those counties initially dominated by large farms. This was largely because moderate farms in the 1970s declined in numbers during the process of land concentration.

Median family income was generally positively associated with the proportion of land in large farms and negatively associated with land in moderate farms. This suggests that population has declined in large farm counties and that the reduced number of large farms that remain generally have higher net incomes than the farms in counties where moderate farms still predominate. During the decade of the 1970s, the gap in median family incomes between large and moderate farm counties generally tended to close, especially for wheat and wheat/livestock counties,

A number of differences emerged between the four different types of counties:

1. Livestock counties were the only counties that gained population as a group. The livestock counties had the greatest increase in rural nonfarm population and did not lose as much of their farm population as the other three types of counties. However, the livestock counties had the lowest initial population base.
2. Wheat counties that were dominated by large farms in 1969 had a greater increase in hired labor than wheat counties dominated by medium farms in 1969. This is the opposite of what occurred in the other types of counties.
3. The strongest correlation between increases in median family income and increased farm size occurred in wheat counties. This was consistent with the relationship of poverty and farm size in wheat counties. Wheat counties with a higher percentage of large farms had a lower percent of poverty. Interestingly, wheat/livestock counties had the opposite relationship between poverty and farms size. Poverty was positively correlated with percent of large farms in the

wheat/livestock counties. Moreover, the correlation between poverty and percent of large farms became more strongly positive during the 1970s. The dominant size class of farms was unrelated to poverty for the livestock and mixed crop/livestock counties.

The basic conclusion about the Great Plains and the West is that there is some support for the modified Goldschmidt hypothesis, but that the outcome there is likely to be much different than that in CATF counties. Incomes improved as concentration increased, but there were declines in population and number of retail establishments. There is a strong potential for the development of a high concentration of agricultural production in the Great Plains and the West—especially in terms of farm size, if not gross sales per farm. The most likely adverse impact will be the loss of population and small retail firms in the region. At the same time, there is likely to be lower availability of alternate employment options in manufacturing and service industries as compared with other regions of the country. As a result, many small rural communities are expected to become substantially less viable. As in the CATF region, the trend is toward increasing sales and net income per farm as farm concentration and consolidation continue.

The region of the Great Plains and the West is unlikely to develop the highly intensive, diversified agriculture with high dependence on low-cost, hired labor that characterizes the CATF counties. The people that remain in the agricultural counties of the West are likely to have higher median incomes as a result of concentration of production in this region. The type of farming systems in the counties included in the Great Plains and the West will simply not have the labor requirements of the intensive fruit, vegetable, and livestock production of CATF industrial counties.

The Northeast Region

Background of the Northeast Region

The Northeast region comprises six New England States (Connecticut, Maine, Massachu-

setts, New Hampshire, Rhode Island, and Vermont) plus three Middle Atlantic States (New Jersey, New York, and Pennsylvania).⁷ This region is characterized by a relatively uniform distribution of farm types and sizes and a relative absence of large-scale or industrialized agriculture. Agriculture in this region is dominated by the production of dairy products, followed by fruit, vegetable, and poultry production for nearby urban markets. There has been a long-standing decline in the amount of land in agriculture in this region; however, this decline was attenuated in the early 1970s. The farm population as a percentage of the nonmetropolitan population has been lower than that of the other regions of the United States since the turn of the century.

Urban economic and social influences have a relatively dominant role over the well-being of rural communities in this region. There are only 105 nonmetropolitan counties in the whole region, and only 30 counties in which 5 percent or more of labor-proprietor income was derived from agriculture. The most agriculturally productive counties in this region are not the most rural, but are instead closely linked with major urban centers. In consequence, it is reasonable to expect that structural change in agriculture in the Northeast is much less likely to be associated with adverse effects on rural communities as it is in other regions of the United States, since opportunities for off-farm employment are likely to continue to be better for more rural residents in this region than in many other parts of the country.

The Northeast is also quite diverse. One source of diversity is agroecological in nature. The six New England States generally have low-quality soils and short growing seasons, with a few exceptions, such as the Connecticut River Valley. The Middle Atlantic States generally have more favorable agricultural conditions. The second source of diversity is socioeconomic in nature and relates to the dramatic variations

in urban-metropolitan influence in the region. The contrasts are striking between the Boston to Washington, DC, megalopolis, with its densely settled 35 million inhabitants, on the one hand, and the State of Vermont, which is composed entirely of nonmetropolitan counties, on the other.

The farm structure of the Northeast showed increased strength in the small and part-time farm component during the 1970s and early 1980s. The number of farm operators whose principal occupation was not farming, or who worked any days off-farm, or who worked 100 or more days off-farm increased more rapidly in the Northeast than in the remainder of the United States. The Northeast also exhibited a larger increase in the number of individual or family farms than in the rest of the United States, primarily in the small and part-time classes of farms. Table 11-3 shows a comparison of the Northeast with the rest of the United States for selected characteristics for 1974 and 1982.

Findings for the Northeast Region

The results of the analysis of relationships between measures of structural change and measures of community well-being support the expectation that structural change in agriculture is not likely to have great impact on rural communities. This finding is in stark contrast with the findings from CATF counties and also differs considerably from the findings for the Great Plains and the West region. The analysis does provide some useful insights of a more detailed nature:

1. There was no strong pattern of social or economic decline in rural counties between 1970 and 1980.
2. The rural population of the Northeast region has relatively high income levels and access to services.
3. The rate of technical change as measured by expenditures on machinery and chemicals was relatively low during the 1970s.
4. There was no significant relationship between: a) change in technology and farm structure, and b) rural community welfare changes during the 1970s.

⁷The findings reported for the Northeast region are contained in: Frederick H. Butte] and Mark Lancelle, "Emerging Agricultural Technologies, Farm Structural Change, Public Policy, and Rural Communities in the Northeast," prepared for the Office of Technology Assessment, Washington, DC, 1985.

Table 11-3.—Comparison of Northeast Regional Farms With Total U.S. Farms by Selected Characteristics, 1974 and 1982

| Farm structure characteristics | Northeast region | | Percent change, 1974-82 | Total United States | | Percent change, 1974-82 |
|--|---------------------|------------|-------------------------|------------------------|-------------|-------------------------|
| | 1974 | 1982 | | 1974 | 1982 | |
| Number of farms | 127,531 | 131,991 | 3.5 | 2,314,013 | 2,241,124 | -0.3 |
| Land in farms (acres) | 23,359,889 | 23,061,163 | -1.3 | 1,017,030,357 | 984,755,115 | -0.3 |
| Average size of farm (acres) | 183 | 175 | -4.4 | 440 | 439 | -0.1 |
| Value of land and buildings: | | | | | | |
| Average per farm (dollars) | 121,227 | 214,623 | 77.0 | 147,838 | 347,974 | 135.2 |
| Average per acre (dollars) | 662 | 1,236 | 86.7 | 336 | 791 | 135.4 |
| Farms by size: | | | | | | |
| <10 acres | 7,689 | 10,599 | 37.8 | 128,254 | 187,699 | 46.3 |
| 10-49 acres | 19,416 | 26,421 | 36.1 | 379,543 | 449,301 | 18.3 |
| 50-179 acres | 54,901 | 51,866 | -5.5 | 827,884 | 711,701 | -14.0 |
| 180-499 acres | 37,864 | 34,533 | -8.8 | 616,098 | 526,566 | -14.5 |
| 500-999 acres | 6,421 | 7,070 | 10.1 | 207,297 | 203,936 | -1.6 |
| 1,000-1,999 acres | 1,046 | 1,282 | 22.5 | 92,712 | 97,396 | 5.1 |
| 2,000 acres | 194 | 220 | 13.4 | 62,225 | 64,525 | 3.7 |
| Land use: | | | | | | |
| Total cropland (acres) | 13,851,473 | 13,972,802 | 0.8 | 440,039,087 | 445,527,557 | 1.2 |
| Woodland (acres) | 5,809,958 | 5,899,750 | 1.5 | 92,527,627 | 87,133,026 | -5.8 |
| Agricultural products sold: | | | | | | |
| Market value (\$1,000) | 4,291,380 | 7,179,543 | 67.3 | 81,526,124 | 131,810,903 | 61.6 |
| Average per farm | 33,650 | 54,394 | 61.6 | 35,231 | 58,815 | 66.9 |
| Crops | 1,440,397 | 2,181,303 | 51.4 | 41,790,360 | 62,274,394 | 49.0 |
| Livestock | 2,216,436 | 4,998,240 | 125.5 | 33,301,560 | 69,536,509 | 108.8 |
| Poultry | 616,094 | 844,395 | 37.1 | 6,202,291 | 9,732,222 | 56.9 |
| Farms by type of organization: | | | | | | |
| Individual or family | 82,142 ^a | 115,713 | 40.9 | 1,517,573 ^a | 1,945,724 | 28.2 |
| Corporation | 2,615 ^a | 4,098 | 56.7 | 28,656 ^a | 59,788 | 108.6 |
| Tenure of operator | | | | | | |
| Full owner | 83,389 | 82,043 | -1.6 | 1,423,953 | 1,325,931 | -6.9 |
| Part owner | 36,112 | 40,005 | 10.8 | 628,224 | 656,219 | 4.5 |
| Tenant | 8,030 | 9,943 | 23.8 | 261,836 | 258,974 | -1.1 |
| Principal occupation: | | | | | | |
| Farming | 78,144 | 75,111 | -3.8 | 1,427,368 | 1,234,858 | -13.4 |
| Nonfarming | 46,390 | 56,442 | 21.5 | 851,902 | 1,006,266 | 18.1 |
| Operators reporting: days of work off farm | | | | | | |
| Any days | 56,670 | 67,751 | 19.6 | 1,011,476 | 1,187,490 | 17.4 |
| 100 days | 46,691 | 56,048 | 20.0 | 814,555 | 963,728 | 18.3 |
| Selected production expenses (\$1,000) | | | | | | |
| Commercial fertilizer | 207,433 | 309,769 | 49.3 | 5,137,361 | 7,689,577 | 49.7 |
| Other agricultural chemicals | 74,225 | 140,301 | 89.0 | 1,757,776 | 4,282,795 | 143.6 |
| Hired labor | 401,846 | 712,383 | 77.3 | 4,652,074 | 8,434,399 | 81.3 |
| Workers working >150 days: | | | | | | |
| farms | 21,775 ^a | 29,242 | 34.3 | 223,093 ^a | 312,621 | 40.1 |
| Numbers of workers ^b | 66,149 | 88,547 | 33.9 | 712,715 ^a | 950,112 | 33.3 |
| Machinery and equipment: | | | | | | |
| Estimated value (\$1,000) | 2,879,414 | 5,337,081 | 85.4 | 48,402,626 | 93,686,308 | 93.6 |
| Average per form | 23,470 | 40,435 | 72.3 | 22.303 | 41.930 | 88.0 |

^aAmong farms with sales ≥ \$2,500^bComputed from the preliminary reports for the nine Northeastern States

SOURCES Data for 1974 1978 Census of Agriculture Preliminary Report, Northeast region and United States (Washington, DC US Department of Commerce, Bureau of the Census, 1980). Data for 1982 1992 Census of Agriculture Preliminary Report, nine Northeastern States and United States (Washington, DC US Department of Commerce, Bureau of the Census, 1983)

5. Farm population change, the proportion of full-owner farms, and the proportion of part-time farmers had a positive effect on community well-being in rural counties, as measured by the poverty rate and median family income. That is, counties in which farm population declined, the proportion of full-owner farms declined, or the proportion of part-time farmers declined had a moderate increase in the poverty rate. The proportion of farms that were fully owned had the strongest relationship to the poverty rate.
6. Counties in which the percent of farms owned by corporations increased also had increases in poverty rates and declines in median family incomes.

The primary structural change that is likely to occur in the Northeast is due to technological changes in the dairy industry. As discussed in chapters 2 and 8, new dairy technologies, primarily bovine growth hormone and computerized feeding technologies, are expected to increase production greatly and lower production costs substantially for those dairies that are able to adopt them. The result will be greatly increased production at the currently administered milk price levels. This will in turn trigger price support reductions and increased failure rate among dairy farms. Over the next 10 years, over half of the small-to-moderate dairies in the Northeast may be forced to leave agriculture. The production of milk will become concentrated in the larger dairies in the region, and more milk will be shipped into the region. Unlike the CATF region, where the bulk of milk production is expected to be concentrated in very large-scale dairies, with thousands of cows and with industrial relations of production, dairy production in the Northeast is more likely to remain concentrated in dairies with herds in the 100-to 500-cow range and with relatively few hired workers per dairy.

The Midwest Region

Background of the Midwest Study Area

The Midwestern region is composed of Illinois, Indiana, Iowa, Michigan, Wisconsin, Min-

nesota, Missouri, and Ohio.^a The 565 nonmetropolitan counties served as the data set for the analysis of this region. These counties were segregated into three groups; those in which 10, 20, and 30 percent of total labor and proprietor income came from agriculture. Table II-4 shows the distribution of the nonmetropolitan counties according to the level of dependence on agriculture by State. As can be seen, the counties most dependent on agriculture are located in the western part of the region. The range of dependence on agriculture among the seven States varies considerably. For example, 29 percent of the counties with at least 30 percent of income from agriculture are in Iowa alone, whereas Ohio and Michigan have no counties with 30 percent income from agriculture and only one and two counties, respectively, with at least 20 percent income.

With the exception of CATF counties, this region differs from the other regions of the United States in the extent to which agriculture dominates its landscape. Nonetheless, this region also has a large industrial base. Table 11-5 provides aggregate statistics for the Midwest region as well as for the nonmetropolitan counties and agricultural counties of this region. The nonmetropolitan counties account for 30 percent of the Midwest's population and for over 75 percent of the farm population, farming acreage, and farm sales. When the proportion of county income derived from agriculture is taken into account, it becomes apparent that the agricultural counties have only a modest percentage of the regional population. Around 12 percent of the region's population live in counties with at least 10 percent of income derived directly from agriculture. The counties that depend most on agriculture account for less than 2.5 percent of the region's total population and less than 10 percent of the nonmetropolitan population (van Es, Chicoine, and Flotow, 1985).

Because change in agricultural technologies will not have uniform impacts on agriculture—

^aThe findings reported for the Midwest region are contained in: J.C. van Es, David L. Chicoine, and Mark A. Flotow, "Agricultural Technologies, Farm Structure, and Rural Communities in the Midwest: Policy Choices and Implications for 2000," prepared for the Office of Technology Assessment, Washington, DC, 1985.

Table II-4.—Distribution of Rural Counties, by Varying Levels of Dependence on Agriculture, for States in the Midwest

| | Rural counties | | Dependence on agriculture | | | | | |
|----------------|----------------|---------|---------------------------|---------|---------------|---------|---------------|---------|
| | | | At least 10%0 | | At least 20%0 | | At least 30%0 | |
| | Number | Percent | Number | Percent | Number | Percent | Number | Percent |
| Ohio..... | 49 | 8.67 | | 4.19 | 1 | 0.52 | — | |
| Indiana..... | 62 | 10.97 | | 8.98 | 15 | 7.81 | 5 | 5.00 |
| Michigan..... | 56 | 9.91 | 9 | 2.69 | 2 | 1.04 | | |
| Wisconsin..... | 57 | 10.09 | 35 | 10.48 | 16 | 8.33 | 3 | 3.00 |
| Illinois..... | 80 | 14.16 | 50 | 14.97 | 30 | 15.63 | 17 | 17.00 |
| Minnesota..... | 71 | 12.57 | 58 | 17.37 | 35 | 18.23 | 26 | 26.00 |
| Iowa..... | 91 | 16.11 | 76 | 22.70 | 56 | 29.17 | 29 | 29.00 |
| Missouri..... | 99 | 17.52 | 62 | 18.56 | 37 | 19.27 | 20 | 20.00 |
| Total..... | 565 | 100.00 | 334 | 100.00 | 192 | 100.00 | 100 | 100.00 |

Dependence on agriculture is measured in terms of the proportion of labor and proprietary income derived from agriculture. The figures are based on the years 1975-79.

SOURCE: Office of Technology Assessment

for example, technological changes in cash grain production will have little direct impact on dairy farms and vice versa—a more accurate analysis of technological impacts entailed the subdivision of the nonmetropolitan agricultural counties in the Midwest into grain counties, dairy counties, and mixed agriculture counties. The dominant type of agriculture in each county (defined as 50 percent or more of sales) determined a county's classification.

Dairy production in the Midwest accounts for about 13 percent of the regional agriculture and about 41 percent of dairy production nationwide. Dairy farms account for about 9 percent of the farm population but only about 2 percent of the regional population. There are more dairy farms (about 60,000) in the part-time sales class in this region than in any other sales class in the other regions. Almost all of the dairy counties are concentrated in Wisconsin. In 1978 there were 28 counties in the Midwest in which 50 percent or more of total agricultural sales were from dairy products. Only 3 dairy counties derived 30 percent or more of county income from agriculture, all in Wisconsin.

Grain counties realize more than 50 percent of their agricultural sales from the sale of grain. In the Midwest, grain sales include corn, wheat, soybeans, and minor specialty grains. Within the Midwest, grain farming is predominantly carried out by family-based enterprises, with a considerable input of outside capital. These families rent the land but contribute much of

the labor and management. The grain counties account for about 20 percent of the agricultural acreage and sales and about 16 percent of the farm population and number of farms of the agricultural counties.

Once the counties characterized by the grain and dairy industry have been separated, the remaining 181 counties are characterized as being mixed livestock, dairy, and grain counties. The exact nature of these counties varies considerably. Most of the counties are in the western part of the Midwest and are characterized by integrated grain and livestock farm enterprises. In a few cases, the counties contain different types of enterprises that are primarily specialized, none of which account for more than 50 percent of agricultural sales. The mixed agricultural counties account for 6.5 percent of the region's total population but about 30 percent of the region's farm population and sales. The 53 mixed agricultural counties that are most dependent on agriculture (30 percent or more income from agriculture) have less regional significance than might be expected. These counties have only 1 percent of the regional population and less than 10 percent of its sales from agriculture.

Findings for the Midwest Region

The impact of farm structure changes at the community level are difficult to isolate from other societal changes that may occur simultaneously. For example, agricultural counties

Table 11-5.—Characteristics of the Midwest Region, Rural Counties in the Region, and the Rural Agricultural Counties

| | Region | Rural counties | | | | | | Dependence of agriculture ^a | | | | | |
|--|------------|----------------|-------------------|-----------|-------------------|------------------|-----------|--|-----------|------------------|-----------|------------------|------------------|
| | | 10% | | | 20% | | | 30% | | | | | |
| | | Value | Percent of region | Value | Percent of region | Percent of rural | Value | Percent of rural | Value | Percent of rural | Value | Percent of rural | Percent of rural |
| Population 1980 | 53,101,523 | 43,009 | 80.8 | 8,561,406 | 12.35 | 42.48 | 3,000,400 | 5.65 | 1,277,287 | 19.42 | 1,277,287 | 2.41 | 8.27 |
| Farm population, 1980 | 2,308,613 | 1,130,130 | 76.26 | 1,192,596 | 51.66 | 67.74 | 670,299 | 29.03 | 331,551 | 38.08 | 331,551 | 14.36 | 18.83 |
| Total farms, 1978 | 757,484 | 576,713 | 76.13 | 378,485 | 49.97 | 65.63 | 211,411 | 27.91 | 106,459 | 36.66 | 106,459 | 14.05 | 18.46 |
| Acreage in agriculture (in thousands) 1978 | 182,579 | 146,967 | 80.49 | 103,445 | 56.66 | 70.39 | 63,236 | 34.63 | 33,984 | 43.03 | 33,984 | 18.61 | 23.12 |
| Total sales (in millions), 1978 | 33,468 | 26,245 | 78.42 | 19,395 | 57.95 | 73.90 | 12,084 | 36.11 | 6,399 | 46.04 | 6,399 | 19.12 | 24.38 |
| Number of counties | 732 | 565 | 77.19 | 334 | 45.63 | 50.12 | 101 | 26.80 | 400 | 53.84 | 400 | 53.84 | 53.84 |

^aDependence on agriculture is measured in terms of the proportion of labor and proprietary income derived from agriculture. The figures are based on the years 1975-79.

SOURCE: Office of Technology Assessment.

(those receiving at least 10 percent of their income from farming) in the rural Midwest experienced differential population change and a sharp increase in unemployment during the 1970s; neither change can be attributed to structural changes in agriculture.

Comparisons within homogeneous groups (grain, dairy, and mixed farming) of agricultural counties show that those counties with larger farms tend to be somewhat better off than those counties where the process of concentration in agriculture has not progressed so far.

The data available for this analysis does not provide evidence of negative county-level consequences associated with the historical direction of change in farm structure in the Midwest during the 1970s. Although the process of structural change continues in the Midwest, the major changes in population, agricultural structure, and impacts on rural communities appear to have taken place before the 1970s.

The concentration of sales was used as the principal indicator of structure and structural change in the Midwest. Concentration of sales is measured with reference to the mean percent of farms with sales over \$100,000 in 1980 for each set of counties deriving 10, 20, and 30 percent of their income from agriculture. That is, in each set, those counties whose percentage of farms with sales over \$100,000 was greater than the median percentage were considered to have greater concentration than those counties whose percentage was less. The degree of concentration is measured by the difference between the median percent and the individual percentage for each county. In terms of the sales classes used elsewhere in this report, this measure of concentration groups counties into those with small and part-time farms on the one hand and those with more moderate to large and very large farms on the other hand.

According to this basic dichotomy, dairy counties with higher concentrations of moderate-to-large dairy farms consistently have higher median family incomes and lower median percentages of poverty than dairy counties with large percentages of small and part-time farms. These findings are shown in table 11-6. This

measure does not provide any definite understanding of the association between increased sales from large and very large farms and measures of welfare such as median family income or poverty.⁹ It is surprising that in the dairy counties, where the labor demands of the agricultural enterprise are high, there is a very large amount of off-farm employment.

Table 11-7 indicates that in grain counties with a higher concentration of sales of the moderate, large, and very large farms, it is more likely that farms are fully rented and that more labor will be hired. The farm operators are less likely to work at least 100 days off the farm. These factors are what would be expected in an agricultural setting characterized by moderate, large, and very large farms. Table 11-7 also shows that the grain counties characterized by higher concentration tend to have larger populations and to be more urbanized. Median family incomes are higher and the occurrence of poverty is less. In the counties with higher concentration, employment in manufacturing is higher, and unemployment is lower. Overall, it can be argued that grain counties with a higher concentration of sales have a higher level of economic well-being. It should be noted again that this definition of higher concentration includes farms in the moderate, large, and very large sales classes.

As shown in table 11-8, mixed agricultural counties with a heavier dependence on agriculture are somewhat different from counties that depend less on agriculture. Farms in the most dependent counties are slightly more likely to be rented fully and to hire labor. In these counties, the farm operator is less likely to work more than 100 days off the farm. The most dependent counties tend to contain fewer people, have a higher percentage of farm population, have lower median incomes, and have higher levels of poverty. Their retail sales and manufacturing employment are lower. These kinds of differ-

⁹Because of the small number of dairy counties, a comparison of the different levels of agricultural dependence among the dairy counties is not meaningful. Similarly, data on counties with increased concentration in sales among large and very large sales class farms would probably not be statistically significant, since the Midwest does not have many very large dairies.

Table n-6.—Comparison of Midwestern Counties With Greater and Lesser Concentration of Sales on Farms With Sales of More Than \$100,000 for Counties Dominated by Dairy Production

| | Counties with sales concentration | | | | | |
|---|-----------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | 10%0 | | 20% | | 300/0 | |
| | Below the regional mean | Above the regional mean | Below the regional mean | Above the regional mean | Below the regional mean | Above the regional mean |
| Mean county values (ca 1980) | | | | | | |
| Agriculture: | | | | | | |
| Percent of renters of farms | 4.09 | 5.63 | 6.54 | 4.50 | 8.69 | 6.45 |
| Hired labor, 150+ days per farm | 0.29 | 0.43 | 0.32 | 0.46 | 0.21 | 0.54 |
| Percent of farms hiring some labor. | 43.53 | 47.27 | 45.15 | 48.17 | 55.56 | 48.91 |
| Percent of operators working 100+ days off farm | 35.20 | 30.39 | 27.46 | 30.71 | 31.25 | 24.76 |
| Demographic: | | | | | | |
| Total population | 20,576.00 | 31,950.00 | 20,280.00 | 21,929.00 | 25,642.00 | 14,309.00 |
| Percent of farm population | 18.93 | 16.34 | 26.19 | 19.45 | 31.55 | 27.33 |
| Percent of urban population | 19.07 | 27.27 | 15.60 | 22.83 | 14.00 | 18.00 |
| Median family income (\$) | 15,790.00 | 16,996.00 | 15,703.00 | 16,262.00 | 15,703.00 | 16,996.00 |
| Percent at poverty level | 10.60 | 8.60 | 11.00 | 9.17 | 10.60 | 8.60 |
| Business and employment: | | | | | | |
| Retail sales per capita (\$) | 2,391.00 | 2,687.00 | 2,379.00 | 2,154.00 | 1,807.00 | 1,893.00 |
| Percent employment: manufacturing | 22.54 | 23.40 | 20.00 | 21.17 | 16.00 | 16.00 |
| Percent employment: services | 18.15 | 18.53 | 17.20 | 18.50 | 19.00 | 18.00 |
| Percent of unemployed | 8.62 | 7.47 | 7.40 | 8.00 | 6.00 | 7.00 |
| Number of counties | 13 | 15 | 5 | 6 | 1 | 1 |

SOURCE Office of Technology Assessment.

Table 11.7.—Comparison of Midwestern Counties by Concentration of Sales on Farms With Sales of More Than \$100,000 for Counties Dominated by Grain Production

| | Counties with sales concentration | | | | | |
|---|-----------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | 10 %0 | | 20% | | 30% | |
| | Below the regional mean | Above the regional mean | Below the regional mean | Above the regional mean | Below the regional mean | Above the regional mean |
| Mean county values (ca 1980) | | | | | | |
| Agriculture: | | | | | | |
| Percent of renters of farms | 15.35 | 25.57 | 17.84 | 26.44 | 18.70 | 27.23 |
| Hired labor 150+ days per farm | 0.19 | 0.32 | 0.21 | 0.30 | 0.22 | 0.26 |
| Percent of farms hiring some labor. | 38.18 | 46.85 | 40.63 | 47.67 | 42.80 | 48.00 |
| Percent of operators working 100+ days off farm | 32.57 | 26.14 | 27.53 | 24.47 | 24.26 | 22.59 |
| Demographic: | | | | | | |
| Total population | 18,074.00 | 21,022.00 | 14,258.00 | 18,507.00 | 13,269.00 | 14,829.00 |
| Percent of farm population | 20.03 | 16.80 | 23.49 | 18.89 | 26.44 | 22.75 |
| Percent of urban population | 24.95 | 32.19 | 18.35 | 28.78 | 17.00 | 21.95 |
| Median family income (\$) | 16,706.00 | 18,665.00 | 16,637.00 | 18,623.00 | 15,844.00 | 18,221.00 |
| Percent at poverty level | 9.46 | 8.05 | 10.00 | 8.07 | 11.60 | 8.30 |
| Business and employment: | | | | | | |
| Retail sales per capita (\$) | 2,521.00 | 2,711.00 | 2,370.00 | 2,627.00 | 2,519.00 | 2,446.00 |
| Percent employment: manufacturing | 20.93 | 22.04 | 18.15 | 21.80 | 14.78 | 19.36 |
| Percent employment: services | 18.72 | 18.38 | 19.10 | 17.53 | 18.95 | 18.00 |
| Percent of unemployed | 7.94 | 6.96 | 7.43 | 6.64 | 7.43 | 6.14 |
| Number of counties | 65 | 57 | 40 | 36 | 23 | 22 |

SOURCE Office of Technology Assessment.

Table 11-8.—Comparison of Midwestern Counties by Concentration of Sales on Farms With Sales of More Than \$100,000 for Counties Dominated by Mixed Agriculture

| | Counties with sales concentration | | | | | |
|---|-----------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | 10 %/0 | | 200/0 | | 30 %/0 | |
| | Below the regional mean | Above the regional mean | Below the regional mean | Above the regional mean | Below the regional mean | Above the regional mean |
| Mean county values (ca 1980) | | | | | | |
| Agriculture: | | | | | | |
| Percent of renters of farms | 9.90 | 19.43 | 11.76 | 22.11 | 13.30 | 22.85 |
| Hired labor 150+ days per farm | 0.18 | 0.26 | 0.19 | 0.26 | 0.17 | 0.25 |
| Percent of farms hiring some labor. | 36.85 | 43.87 | 37.67 | 45.87 | 38.35 | 47.03 |
| Percent of operators working 100+ days off farm | 36.34 | 27.65 | 32.54 | 22.76 | 29.15 | 21.85 |
| Demographic: | | | | | | |
| Total population | 16,776.00 | 21,874.00 | 13,174.00 | 16,794.00 | 10,213.00 | 13,290.00 |
| Percent of farm population | 22.93 | 21.62 | 26.95 | 25.15 | 39.54 | 27.52 |
| Percent of urban population | 18.82 | 30.01 | 14.20 | 27.81 | 8.97 | 21.29 |
| Median family income (\$) | 15,363.00 | 18,184.00 | 15,363.00 | 17,768.00 | 14,729.00 | 17,070.00 |
| Percent at poverty level | 11.63 | 8.68 | 11.92 | 9.36 | 13.50 | 10.33 |
| Business and employment: | | | | | | |
| Retail sales per capita (\$) | 2,300.00 | 2,699.00 | 2,162.00 | 2,616.00 | 2,197.00 | 2,398.00 |
| Percent employment: manufacturing | 20.16 | 19.72 | 17.18 | 16.95 | 13.97 | 15.81 |
| Percent employment: services | 17.95 | 18.40 | 17.87 | 18.63 | 18.21 | 18.10 |
| Percent of unemployed | 7.18 | 5.53 | 6.23 | 4.98 | 6.03 | 4.76 |
| Number of counties | 109 | 72 | 61 | 43 | 32 | 21 |

SOURCE: Office of Technology Assessment

ences were not expected in advance of the analysis. Counties that are most heavily dependent on agriculture in general turnout to be less prosperous.

The general finding that measures of social welfare improve as farm structure moves away from a predominance of small to part-time farms is consistent with the findings in other regions of the country. However, negative associations between farm scale and social welfare might emerge if data were available to distinguish between counties with a predominance of moderate farms and those with a predominance of large to very large farms. Also, the decade of the 1970s was generally a very prosperous period for the Midwest. It is not easy to find adverse associations between social and economic factors during periods of relatively little economic adversity.

An analysis of the relationships between factors as factors changed during the 1970s yields results similar to those of the static, cross-sectional analysis described above. As average farm size increased in the direction of moderate to large farms, median levels of income increased in dairy and mixed agricultural coun-

ties. Associations between the change in poverty rates and other factors did not yield consistent or significant results. There was a negative association between population change and change in the share of full ownership and part ownership of farmland. As the share of part ownership increased, county populations tended to decrease. The percent of manufacturing and service employment in 1970 was positively associated with population change during the 1970s.

The biotechnologies for animal agriculture will be of less significance to technological change in the Midwest because monoculture cash grain farming characterizes much of the agriculture in the region. Since the biotechnologies for plant agriculture are expected to bring changes relatively more slowly to this subsector, past trends in the Midwest will characterize much of the farm structural change and related community effects of the rest of the century (OTA, 1985).

The combined impacts of biotechnologies on the mixed crop and animal counties of the Midwest is more difficult to discern. This is particularly true in much of Iowa and parts of Illinois and Missouri, where pork production is

the primary type of animal agriculture. As discussed in chapter 3, the rate of productivity increase in pork production is not significantly different from past trends, even under the most optimistic scenario of technological change. The hog industry is already in the process of restructuring in the direction of more concentration, vertical integration, and specialization of production technology. The impact of new technologies in the mixed crop and animal counties maybe simply to accelerate the changes that are already taking place.

In general, the Midwest lies between the Northeast and the Great Plains and the West with respect to expected impacts on rural communities. At the regional level, the Midwest is similar to the Northeast in that certain areas have a concentration of dairy production—that is likely to undergo considerable change. Also, like the Northeast, employment opportunities are likely for displaced farmers over large parts of the region. Unlike the Northeast, the Midwest does have some areas—primarily the western counties of Iowa and Missouri—in which agriculture dominates the economic base of the rural communities. These areas are likely to be more similar to the Great Plains and the West in that a decline in population and number of retail establishments will be associated with a continuing concentration of agricultural resources. Like the Great Plains and the West, the counties with at least 30 percent income from agriculture are likely to have fewer opportunities for off-farm employment.

The South Region

In this study, the Southern region comprises Alabama, Arkansas, Delaware, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia.¹⁰ Florida is excluded from this region and treated separately as part of the CATF counties. The South is more difficult than

the other regions to characterize in terms of farm structure, owing to the relative diversity and complexity of areas within the South. For this reason, the structure of agriculture for this region will be presented in more detail than it was for the other regions.

Farm Structure in the South Region

The South has a high degree of diversity in commodities and in structures of production. It has the largest concentration of small, low-income farms in the United States, particularly in the Appalachian and tobacco-producing States. About 35 percent of the Nation's farms with sales less than \$10,000 are located in the South. In contrast, 21 percent of all farms in the United States with sales in excess of \$250,000 per year are also located in the South. In 1982, farms with sales of less than \$40,000 made up 82 percent of the farms in the South and 68 percent of the farms in the rest of the United States. Commodities such as cotton and poultry are highly concentrated, whereas other commodities such as cattle and tobacco have very low concentrations. Hog and pig production is in the middle of a transition period from widely dispersed, small-scale production to concentrated, large-scale confinement operations.

Agriculture is more diversified in the South than in the other major regions of the United States. Cattle sales in the South account for the largest percentage of total sales in the South. However, at 27 percent in 1982, this share was less than that of the top commodity in each of the other four regions.

Different commodity groups have different structures of production in the South. In the deep South, where the plantation system was strongest and both cotton and sugarcane are still raised, there is a greater preponderance of industrial-type farms and larger-than-family farms. However, cotton and sugarcane have never been raised by family farms. On the other hand, both Kentucky and North Carolina are centers for tobacco production and are characterized by a proportionately larger number of small family farms. The South also has an especially large number of farms that raise cattle—363,994 out of a national total of 618,270

¹⁰Findings reported for the South are contained in: Jerry R. Skees and Louis E. Swanson, "Examining Policy and Emerging Technologies Affecting Farm Structure in the South and the Interaction Between Farm Structure and Well-Being of Rural Communities," prepared for the Office of Technology Assessment Washington, DC, 1985.

cattle farms in 1982. Fifty-three percent of all U.S. farms that had sales or inventory of cattle in 1982 were in the small farms class in the South. In contrast, poultry and egg production is relatively concentrated in the South in large and very large farms, with 26 and 39 percent of regional sales in 1982, respectively.

The South is also undergoing change at a faster rate than the rest of the United States. A comparison of basic farm structure statistics between nonmetropolitan counties in the South and in the rest of the United States is shown in table 11-9. The number of farms declined faster in the South than in the rest of the United States between 1969 and 1978. Average farm sales increased by 87 percent in the same period in the South, yet the increase was only 58.1 percent in the rest of the United States. Average acres per farm increased 37 percent in the South and actually decreased in the rest of the United States. One of the most dramatic changes in the structure of agriculture in the South involves the percent of full owners: the rate of decline was twice as great in the South as in the rest of the United States. The South went from 71 percent full ownership in 1969 to 39 percent in 1978, a 33-percent decline. The rest of the United States went from 56 to 39 percent, a 17-percent decline.

Many rural areas of the South still have low standards of living compared with other regions of the United States. Table 11-10 shows several quality-of-life variables in nonmetropolitan counties of the South and the rest of the United States. Poverty in the South was greater in both 1970 and 1980. In 1980 the average rural county poverty level was approximately 6 percent higher in the South than in the rest of the country. Median family income was also significantly lower than that in the rest of the United States. Because of the diversity of agriculture and the wide dispersion of production scales, there is a strong a priori expectation that definitive conclusions may be difficult to achieve for the region as a whole.

Findings for the South Region

The analysis of associations between structural change and rural community welfare is

Table 11.9.—Comparison of Basic Farm Structure Statistics in Rural Counties of the South With Those of Total United States

| Variable | Rest of U.S. county mean | South county mean |
|---|------------------------------------|--------------------------------|
| Farm numbers | 860 ^a 741 (-1 19) | 849 624 (-225) |
| Farm size (sales) | \$48,788 77,140 (28,352) | \$24,675 46,112 (21,437) |
| Farm size (acres) | 1,232 1,220 (-12) | 205 232 (27) |
| Part-time farming | 36.1 0/0 38.2 (2.1) | 44.3 47.4 (3.1) |
| Chemical and fertilizer use per farm | \$2,697 5,713 (3,016) | \$2,646 5,517 (2,871) |
| Machinery value per farm | \$27,584 54,710 (27,126) | \$17,023 36,043 (19,020) |
| Hired labor per farm | \$4,781 4,638 (-143) | \$3,049 3,936 (887) |
| Farms below 180 acres | 43.40/0 43.5 (0.1) | 71.0 %/0 67.2 (-3.8) |
| Percent full owners | 55.80/0 38.9 (-16.9) | 70.6% 38.0 (-32.6) |
| Percent tenant operators | 13.9%/0 11.9 (-2.0) | 9.9 %/0 (-1.9) |
| Percent grain sales | 18.40/0 25.9 (7.5) | 11.0 %/0 20.0 (9.0) |
| Percent livestock sales | 38.00/0 36.9 (-1.1) | 17.7 % 20.6 (2.9) |
| Percent unemployment | 4.5% (2.0) | 4.9% 7.8 (2.9) |

^a1967-70 values are listed first

1977-80 values are listed second

NOTE: The change between the two time periods appears in parentheses

SOURCE: Office of Technology Assessment

based on the complete set of 706 rural counties in the region. Nonmetropolitan counties with low proportions of income from agriculture were not excluded from the set of counties.

The principal findings are as follows:

1. The Goldschmidt hypothesis is not confirmed at the regional level for the majority

**Table 1 I-10.—Quality of Life Variables
in Rural Counties**

| Variable | Rest of U.S. county mean | South county mean |
|--|-------------------------------|-------------------------------|
| County population | 21,738 25,064 (3,326) | 23,036 26,723 (3,687) |
| Percent families below poverty | 15.0%/0 11.8 (-3.2) | 26.6%/17.6 17.6 (-9.0) |
| Total year housing units | 7,550 9,840 (2,290) | 7,500 9,907 (2,407) |
| Property taxes per capita . . . | \$346 396 (50) | \$103 135 (32) |
| Retail establishments | 247 248 (1) | 226 237 (11) |
| Median family income | \$17,547 20,860 (3,313) | \$14,055 18,112 (4,057) |
| Percent unemployment | 4.5 %/0 (2.0) | 4.9% (2.9) |
| Farm/rural population. | 27.1 0/0 18.8 (-8.3) | 17.5% (-8.4) |
| Percent employed in manufacturing | 16.00/0 15.8 (-0.2) | 30.4% 29.3 (-1.1) |
| Percent employed in services | 7.0 %/0 18.9 (11.9) | 7.7% 16.8 (9.1) |

^a1967-70 values are listed first

1977-80 values are listed second

NOTE The change between the two time periods appears in parentheses

SOURCE Office of Technology Assessment

of indicators for community welfare, although there is support for a modification of the Goldschmidt hypothesis with respect to levels of unemployment. The nonmetropolitan counties are more dependent on manufacturing and service sector employment than on employment in agriculture. The structure of the manufacturing and service sector has a greater impact on social welfare than does agriculture in these counties. Manufacturing industries are associated with low levels of unemployment, but also with lower median family incomes. Service industries in the South are

associated with both low levels of median family incomes and high rates of poverty.

2. There is a strong association between average farm size and unemployment in southern agricultural counties in both 1970 and 1980. However, this association is not strictly linear as is predicted by the Goldschmidt hypothesis. A pattern similar to an inverted U emerges when the agricultural counties are compared as a cross-section in 1970 and 1980. In each year, unemployment decreases sharply over the range from small farms to moderate farms. However, unemployment is also strongly associated with increasing average farm size over the range from moderate to large-scale farms. Other basic measures of social welfare, such as percent of poverty and median family income, do not appear to follow the same pattern. The basic conclusion is that the lowest rate of unemployment is associated with a farm structure dominated by moderate farms in the South. Unemployment tends to be substantially higher when the average farm size in a county is especially small or large.
3. Counties in which the average farm size increased the most during the years between 1970 and 1980 were likely to have declining levels of unemployment but greater increases in poverty. This analysis of changes over time provides some weak evidence in support of the Goldschmidt hypothesis.
4. Counties that had a substantial decrease in farm population have increased unemployment, poverty, and decreased median family incomes.
5. Levels of part-time farming are associated with county well-being. Those counties with high levels of part-time farming in 1969 and 1978 were more likely to have lower levels of poverty and higher levels of median family income. Furthermore, counties with the most rapid increase in the proportion of operators working 100 or more days off of the farm were more likely to have had a faster rate of decline in unemployment and poverty, along with a faster rate of increase in median family income. It is likely that the part-time farms have a welfare func-

tion: they provide their operators with supplemental income and some security in the context of employment variability.

Potential for Adverse Impacts on Rural Communities in the South

The potential for structural change varies considerably in different parts of the South. Large sections of the South are hilly and mountainous, terrain more similar to that of the Northeastern region of the United States. Like the Northeast in general, there is relatively low potential for the concentration of production in large and very large farms in these areas. The geography of these areas prevents the creation of large contiguous parcels of land on which large machinery can operate effectively. However, there is cause for concern with respect to the potential for developing highly concentrated industrial-scale agriculture in the coastal areas of the South. The topography and climate of this area lends itself to the establishment of agricultural structure with a pattern similar to that found in the other Sunbelt States included in the CATF region. This coastal area also has a labor force with the same kind of characteristics as those found in the CATF region—that is, relatively poorly skilled, segmented, and impoverished. Therefore, agriculture in the coastal plains has the potential to develop a similar structure and a similar set of adverse impacts on rural communities in this area as has already occurred in CATF counties. This in turn may result in substantial worsening of living standards and community welfare in this area. Detailed research on this area would be necessary to assess the potential for adverse structural change and the extent to which adverse impacts have already occurred in rural communities in this area.

In summary, the South is more similar to the CATF region than to the other regions of the United States. Unlike the CATF, the South has a relatively high percentage of small farms and

rural poverty in areas that are not dominated by industrial agriculture. The availability of services, levels of education, and income levels is substantially lower in the rural counties of the South compared with those in the Northeast and Midwest. Unlike the Northeast, Midwest, and CATF regions, specific technologies are not seen as having a clearly identifiable impact on rural communities in the South, since production of particular commodities does not predominate regionally or within a particular State in the region. One moderate exception to this lies in the soybean/rice rotations in Louisiana, which accounted for almost all of the cash grains produced in this State in 1982. However, cash grain production is already highly concentrated in Louisiana, and relative to other parts of the South, the structure of agriculture is not likely to change greatly in Louisiana. Public policies that pertain to tobacco production and cattle raising may have a detrimental impact on small-scale farms that depend on these commodities.

The economic fortunes of the rural South are tied to its position in the national and international economy. Given the relatively poor position of this region in the national economy it is not reasonable to expect these areas to improve their social and economic conditions with their own resources. Rural sociologists and agricultural economists have argued for a comprehensive rural development program for the South. They argue that the rural areas are already experiencing extreme social and economic problems. The dire social consequences of these depressed conditions and the persistence of social inequalities include “intolerably high rates of infant mortality and homicide. . . inadequate jobs and income, inadequate services” and a decline in effective grassroots, self-help initiatives (Wilkinson, 1984). Those communities that remain primarily dependent on their farming hinterlands are thought to be the most likely to experience a decline in their populations, quality of services, and retail establishments (Whiting, 1974).

THE RURAL DEVELOPMENT POLICY CONTEXT

Concern about the impact of changing agricultural technologies and structural change in agriculture on rural communities should be placed in the context of changes that have occurred and are likely to continue to occur in the general economic structure of rural areas. For purposes of this discussion, all nonmetropolitan counties and areas of the United States are aggregated together into the category of rural areas. Two basic trends have clearly been operating in rural areas for several decades. First, since about the time of World War I, there has been along-run displacement of labor from agriculture, primarily due to mechanization and consolidation of agricultural production. Second, since about 1940 there has been a steady growth in the number of manufacturing and service sector jobs in rural areas. The rate of industrialization of rural America increased greatly in the 1970s, especially in the South. Reduction in the population of farm operators slowed in the 1970s and reversed in some areas. Overall, rural areas in the United States are much less dependent on agriculture in 1980 than they were in 1940. In 1983 the natural resource sector, which includes all of agriculture as well as forestry, fisheries, and mining, accounted for only 11 percent of the wage and salary income of nonmetropolitan areas (U.S. Department of Commerce, 1984). Government accounted for 19.4 percent of income, and the service and manufacturing sector accounted for 70 percent. The economy of rural areas has therefore become more diversified and less sensitive overall to economic cycles in agricultural prices.

Along with the changes in population and economic structure in the 1970s, there were several trends of improvement in the welfare of rural areas and communities. The gap between incomes of rural and urban workers narrowed, to within 12 percentage points of each other, availability of services has improved, and poverty rates in rural areas declined from 17 percent (in 1970) to 14 percent (in 1980). Even at the historical low point in rural poverty, nearly all of the poorest counties in the United States were nonmetropolitan. There were only 8 met-

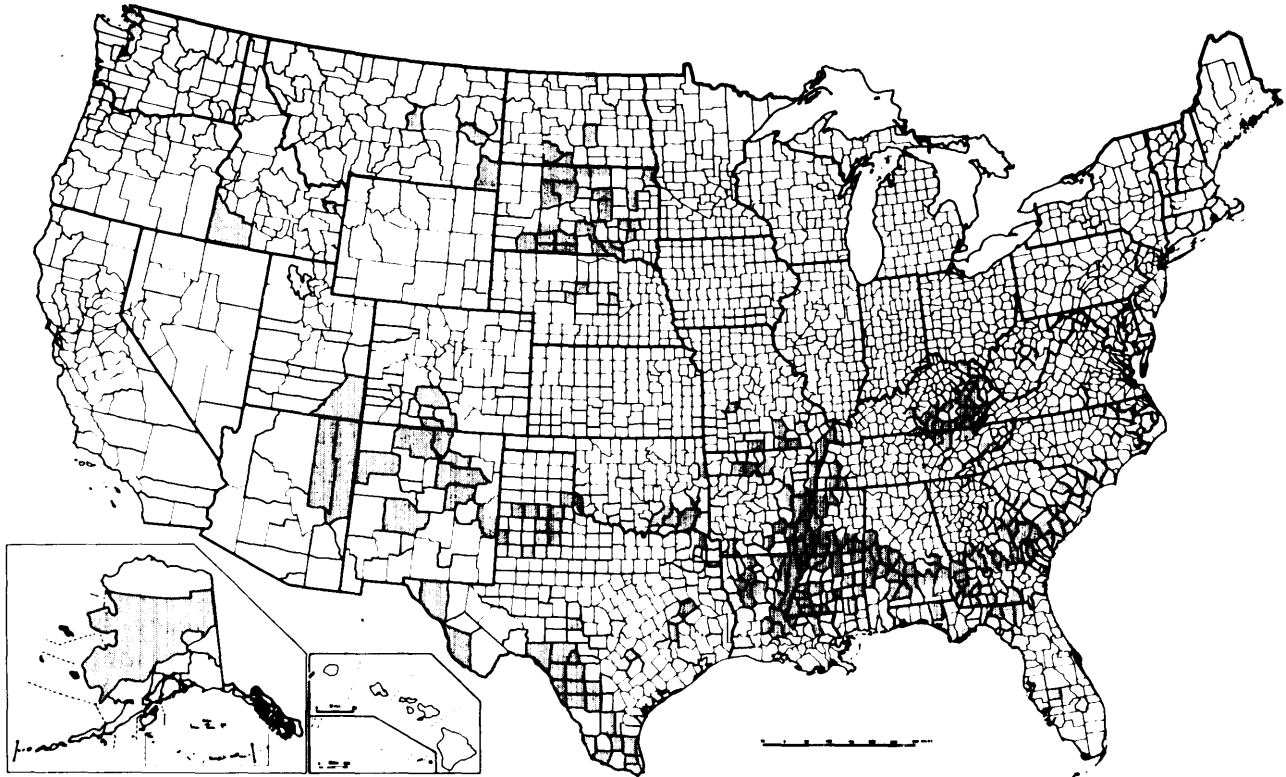
ropolitan counties with poverty rates of 25 percent or more in 1980, whereas there were 339 nonmetropolitan counties with this rate of poverty.

Improvement in the welfare of rural areas is due to investment by both private and public sectors. The private sector has invested in new housing, manufacturing, and service facilities, while the public sector invested primarily in the basic infrastructure of rural areas: roads, water and sewer systems, health and educational facilities, and so forth. Much of this development has been interrelated; water projects such as dams and reservoirs tend to attract investment in retirement housing, which in turn provides these rural areas with a relatively stable increase in service sector jobs. In turn, increases in industrialization and retirement housing as well as increases in land values in general tend to increase the tax base, which provides for improvements in many rural services such as education, health facilities, water treatment plants, and so forth.

The improvements in rural welfare have not been evenly distributed. Some regions and subregions have not improved nearly as much as other areas. Figure 11-1 shows the incidence of nonmetropolitan counties with a poverty rate of 25 percent or higher as determined by the 1980 Census of Population. Nonmetropolitan counties with this high percentage of poverty appear to occur in five groups. The largest group is the southern "black belt" counties that run across the States of North Carolina, South Carolina, Georgia, Alabama, Louisiana, Mississippi, and Arkansas. Another group occurs in the cluster of Appalachian counties in eastern Kentucky and northeastern Tennessee. Poverty is also prevalent in a more diffuse pattern in rural counties along the Rio Grande Valley in Texas, and among many of the counties dominated by Indian reservations in Arizona, New Mexico, Utah, North Dakota, and South Dakota.

Moreover, the incidence of poverty falls disproportionately on minorities and women in rural areas. In 1982, only 15 percent of non-

Figure 11-1.—Nonmetropolitan Counties With a Poverty Rate of 25 Percent or Higher



SOURCE: U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population.

metropolitan whites were poor, compared with 42 percent of nonmetropolitan blacks and 31 percent of nonmetropolitan Hispanics. In 1979, 34 percent of nonmetropolitan Indians had poverty-level incomes. The incidence of female headed households in nonmetropolitan areas increased by 25 percent in the 1970s. In 1980, 35 percent of these households were classified as being at or below the poverty line (Skees and Swanson, 1985).

Minorities have had some relative gains in welfare in some areas. In the South, the poverty rates among nonmetropolitan blacks decreased by 10 percentage points from 1970 to 1982, while the poverty rates among nonmetropolitan whites increased somewhat, from 13 to 15 percent over the same period.

Trends toward improvements in rural welfare have taken a turn for the worse in the 1980s. Rural poverty increased again in the recession

of 1980-81 to 18 percent in 1982. Many rural service and manufacturing industries that relocated in rural areas in the 1960s and 1970s began to move overseas in search of still lower labor rates. The tax base that supports many rural services such as schools and hospitals was eroded as cropland values fell across the country. There is also evidence that the movement of population from urban to rural areas in the 1970s has reversed in many areas. Throughout the 1970s, population grew more rapidly in rural areas than in urban areas. The rate of population growth in rural areas fell rapidly in 1980 through 1982 and is now significantly lower than that of urban areas.

In summary, rural poverty is still very prevalent at high levels compared with metropolitan areas. Changes in the economic structure of rural areas have increased the economic base of many communities and counties but have along way to go before the welfare of rural areas is

equivalent to that of urban areas. Moreover, the economic and financial base of many rural communities is significantly less strong in 1985 than in 1980. Overall, agriculture plays a much smaller role in the rural economy than it did

in previous decades, but the economic situation of many rural counties is sufficiently precarious that substantial changes in agriculture will undoubtedly have an impact on the welfare of these areas.

SUMMARY AND POLICY IMPLICATIONS

A wide range of diversity is evident in the character, agricultural structure, patterns of change, and patterns of impact on rural communities in five different regions of the United States. A clear picture of adverse relationships between agricultural structure and the welfare of rural communities is evident in the CATF counties. Large-scale and very large-scale industrialized agriculture in these counties is strongly associated with high rates of poverty, substandard housing, and exploitive labor practices in the rural communities that provide hired labor for these farms. Very large-scale agriculture has been a strong source of employment in the CATF region for many years, although at very low wage rates. Emerging technologies may reduce the labor requirements throughout much of the CATF region between now and year 2000. Increased unemployment will greatly increase the strain on these communities. There is potential for CATF to increase its share of national agricultural production, which would mitigate the trend toward increasing unemployment. However, increased agricultural production in this region will tend to be constrained by the cost of irrigation water and the need to control environmental impacts.

There is a substantial potential for a pattern similar to that of the CATF region to occur in the coastal zone of the South. The topography and climate favor large-scale, labor-intensive production of fruits, vegetables, and dairy products. The South also has a segmented, relatively unskilled labor force that could provide a source of low-cost labor similar to that of the CATF region. It is difficult to draw generalizations about the rest of the South, owing to the diversity of agricultural structure and production. There is evidence of a relatively strong association between rates of unemployment and agri-

cultural structure. Unemployment rates tend to be lowest in counties with a predominance of moderate farms. Unemployment rates are higher in counties with a predominance of small or large farms.

Dairy products are the single most important agricultural commodity group of the Northeast. Dairy farms are likely to experience widespread failure because of the combination of technological change and public policies. The structure of agriculture in the Northeast is therefore likely to change substantially during the next 10 to 15 years. However, rural communities in the Northeast have a low overall dependence on income from agriculture. Almost all of the most productive agricultural counties in the Northeast are in metropolitan areas where employment opportunities and services are relatively available. The most rural counties are not the most agricultural. Therefore, rural communities in the Northeast generally are not likely to experience adverse consequences from structural change, with the exception of a few localities with especially high dependence on dairy production.

There is no clear-cut evidence that rural communities in the Midwest were adversely affected by structural change during the 1970s. In general, alternative sources of employment in the manufacturing and service sectors have been relatively prevalent and are expected to continue to be relatively good in the Midwest. In general, indicators of social welfare tended to improve as farm structure moved from small and part-time farms toward moderate to large farms during the 1970s. However, there was a tendency for the population to decline in counties where the share of part-ownership of farms increased. As with the Northeast region, there

is a reasonable expectation that technological change in the dairy industry will result in a mass exodus of small to moderate dairy farms during the next 5 to 15 years. Rural communities in dairy counties may not be adversely affected, since off-farm employment is quite high in these counties. Mixed agricultural counties on the western edge of the Midwest that are relatively dependent on agriculture are the most likely to suffer adverse consequences from structural change. If the percent of part-ownership increases as agriculture becomes more concentrated, population, median income, and retail sales may decline in these counties.

There is a strong potential for the development of a high concentration of agricultural production in the Great Plains and the West, especially in terms of farm size, if not gross sales per farm. In turn, the number and percent of hired managers in this region is likely to increase. Unlike the South, there is low potential for development of industrialized agriculture with large numbers of hired field workers. The most likely adverse impact will be the loss of population and small retail firms in the region. In general, fewer alternate employment options will be likely in manufacturing and service industries in this region than in the other regions of the country.

One of the most important findings is that it is very difficult to generalize across regions of the United States about the impacts of changing agricultural technology and structure on rural communities. As a consequence, policies designed to prevent or ameliorate adverse impacts and promote beneficial impacts will run the risk of being inappropriate unless they are crafted with consideration for regional differences.

Regional Rural Development Policy

Rural development policies are carried out at the national, State, and local levels. Over the years, rural development policies have received high priority and at other times, including the early 1980s, they have received relatively little attention in terms of leadership and resources. This policy of "benign neglect" is based on the

view that rural communities have strong, cohesive social institutions and can help themselves better than the Federal Government and States can. There is strong evidence that many, if not most, rural communities have suffered a decline in their strength, cohesion, and capabilities and are now much less able to help themselves. Urbanization has reduced the traditional bases of cohesion in many rural communities (Wilkinson, Hobbs, and Christenson, 1983). Many of the gains in social welfare that were achieved in rural communities in the 1960s and 1970s are in danger of being lost. Moreover, the examination of indicators of social welfare of rural communities in this study has shown that poverty, substandard housing, unemployment, and lack of access to basic services continue to be widespread problems in major regions of the United States. There is strong potential for further declines in the welfare of rural communities in some areas. It follows that policy makers who are concerned about the quality of life in rural areas should give renewed consideration to regional development policies. Regional development policies that address the quality of life in rural areas will benefit from higher political priority and a new focus on the issues. It will take the cooperation and coordination of policy makers at all levels of Government to achieve this increase in priority and this improvement in focus.

The national role is critical in providing leadership and in setting national standards for the improvement of conditions in rural areas and regions that cut across State lines. This responsibility is shared by the Federal Government and national organizations. State governments and State organizations have the responsibility for selecting particular areas for assistance and for assisting State and local organizations in the delivery and use of services. Local governments are responsible for direction and implementation of programs to meet local needs and in the use of local capacities and resources (Bradshaw and Blakely, 1983). In this section, the general roles and capabilities of the three levels of Government are outlined, followed by a discussion of policy considerations for each region.

Robs and Capabilities of Government

The National Role in Regional Rural Development

The Federal Government can promote regional rural development in a number of ways:

1. Develop a strong Federal rural policy that would help coordinate the various activities of the several Federal agencies active in rural development and set a clear direction for Government involvement.¹¹
2. Develop rural human capital by targeting resources for training and skills development to minorities and the poor. The Federal Government is in a better position to do this than many State governments.
3. Integrate programs of economic development. The Federal Government can provide incentives for establishing in rural areas new industries that are integrated with the need for human resource development in those areas.
4. Directly provide resources for the most needy rural areas (especially the South). The Federal Government has the special ability to reallocate resources from areas and regions of affluence to areas in which poverty and depressed conditions prevail. The largest proportion of rural poverty in the United States is in the South. As a consequence, actions by individual State governments in this region are not likely to be as effective as national policies targeted at this region. At the national level many of the programs that have been most successful in achieving improvements in social welfare in rural areas have not operated under the label of rural development per se. Examples are the Interstate Highway System, the Social Security System, Environmental Protection Agency grants for pollution abatement, Corps of Engineers' waterway development and flood control projects, the Rural Electrification Administration, the

Farm Credit System, and the Farmer's Home Administration.

5. Create a context for improved assessment and analysis of rural development problems and policies. The U.S. Department of Agriculture is in a better position than single State institutions to promote improved scholarship on issues and policy options for rural development. At the same time there is a great need to sustain and improve the Federal collection and dissemination of information on rural communities. Only the Federal Government can establish the uniform national database and analytical standards required for an adequate definition of the problems of rural communities and rural development. Public policies are best established on the basis of well-defined problems. Public policies toward rural development in the past have been poorly formulated, in part due to the lack of consistent definitions and data about rural communities.
6. Provide certain governmental services with indirect but potentially substantial impact on regional rural development. For example, the welfare of many poor rural communities in the South and the CATF region is affected by the rate of influx of immigrant farmworkers. It will be very difficult to improve the incomes and housing standards of hired labor in these two regions in the face of uncontrolled competition from or nonregulation of immigrant labor.

The State Role in Regional Rural Development

Each State can play a pivotal role in many respects in the process of regional rural development. While the Federal Government can provide leadership and funding, regional development policies will be carried out to a large extent through State agencies and programs. To the extent that the States increase their level of responsibility and activity in rural development, they will also have to increase their organizational capabilities. States also have the opportunity to organize themselves into regional federations to coordinate programs and share

¹¹Federal agricultural commodity policies, other income support policies, and Federal research and extension policies also have an impact on regional rural development. These policies are discussed in other chapters.

resources for regionwide development programs. The States have roles that the Federal Government cannot perform:

1. Only individual States or regional groups can adequately coordinate the different interest groups and opportunities within their boundaries.
2. Strategies that are politically feasible can only originate with the States; they cannot be successfully imposed by the Federal Government.
3. The States are uniquely capable of improving the organizational capacity of rural development groups in those places where the need for development is greatest.
4. States can exercise leadership in creating multi jurisdictional organizations.
5. State responsibility for land use assessment and zoning can be an effective way to minimize some of the disadvantages of growth in rural areas.
6. Legislative and administrative actions by State governments within the broad policy guidelines of the Federal Government are necessary to ensure that benefits from development programs reach the most needy rural residents.

The Local Role in Regional Rural Development

The basic economic development activities that work to improve the quality of rural life are conducted by jurisdictions that lie below the level of the State government. These local efforts must work within national and State guidelines and priorities, but they must have a great deal of flexibility to create programs appropriate to local conditions and resources. Local organizations working at the local level ultimately have a great deal of responsibility to make sure that the needs of disadvantaged rural residents are met (Bradshaw and Blakely, 1983). Local organizations have some strengths relative to State and Federal agencies. Local governments and agencies are capable of developing more diversity in sources of funding and types of services that are delivered. Localities are better able to identify and use particular local resources in the process of development.

Regional Policy Considerations

The CATF Region

The social welfare of many rural communities in CATF counties is already very poor. Public policies aimed at rectifying the existing problems are needed in addition to policies to mitigate adverse impacts from continued concentration and technical change.

There are several essential elements of any program directed toward correcting existing problems in the CATF region:

1. Community development, cooperative extension, and poverty programs might be focused on the specific needs of the small communities and of displaced individuals.
2. Building codes could be enforced on rental properties, and grants might be provided to owner-occupants to bring their dwellings up to code.
3. Safe and sanitary public housing could be provided to migrant agricultural labor.
4. More rigorous monitoring and enforcement of water and air quality is needed in rural communities. Specific controls could be enacted on environmental problem areas—burning of crop stubble, disposal of pesticide containers, and drainage of irrigation water.
5. The general issue of below-minimum wages should be addressed:
 - a. barriers to unionization of agricultural labor could be removed;
 - b. benefit packages could be adapted for use by migratory labor;
 - c. job costs (charges for transport to the fields, lodging, and food) could be disallowed if they depress wages below the minimum levels; and
 - d. professional standards and licensing could be established for labor contractors.

The Great Plains and the West

The analysis of the Great Plains and the West indicates that public policy rather than technology per se accounts for most of the recent shifts in agricultural structure and will have the greatest impact in the foreseeable future. The prin-

cial impact of technology was the adoption of larger machinery on moderate farms, which resulted in predominantly medium-sized farm counties becoming more like large farm counties during the 1970s. Much of this change can be attributed to Federal incentives for the substitution of capital for labor. While this has been true since the 1940s, the process accelerated during the inflationary 1970s and received further impetus through increases in investment tax credits in 1981. The more recent reversal of monetary policy has resulted in a great deceleration of capital investment, but has also greatly decreased net farm income. Interest payment write-offs have provided a major subsidy for growth, especially in irrigated mixed crop and livestock counties.

The Northeast

The structural change in dairy production will have a substantial impact on the overall structure of agriculture in the Northeast because the dairy farm is the predominant type of agriculture in this region. One possible way to mitigate this impact will be to convert dairy farms to the production of fruits, vegetables, and poultry. These commodities are produced in large quantities in the Northeast, the markets are well developed, and demand is likely to be more elastic than the demand for dairy products.

The Midwest

As in the Northeast, there is a need to consider public policies for the Midwest that will

address the major structural changes expected in the dairy industry. Public policies that assist dairy farmers to shift resources into alternate types of production will benefit communities in areas that are relatively dependent on income from dairy production. Programs that enable dairy farmers to retrain for employment in new occupations and to leave agriculture maybe of more benefit to farmers than to the communities in which they reside if these programs result in outmigration to other parts of the country.

The South

There seems to be a consensus among the specialists in rural affairs about the character of a national or regional rural development program. Such a program would require a "two-fold attack, one that combines Federal initiatives with local initiatives—the former to increase resources, the latter to build a sense of community" (Wilkinson, 1984). Four general criteria are:

1. there must be a program aimed at the creation of jobs that generate a livable income;
2. basic rural services such as health care, education, water, sewer, and power must be provided or upgraded;
3. labor and civil rights laws must be strengthened and enforced; and
4. local participation must be included in any rural development program,

CHAPTER 1 ■ REFERENCES

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